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IA study on the Open, transparent, and merit-based recruitment of researchers

Final Report

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Executive summary

For the development of a single European labour market for researchers, transparent, open and merit-based recruitment has been recognised by the EU-MS as one of the main challenges.

This report presents an ex ante impact assessment for open, transparent and merit-based recruitment (henceforth OTM). It explores the costs and benefits of a series of policy options designed to improve recruitment practice and accelerate the rate at which Europe arrives at a situation where OTM is the default strategy for all public research organisations across the 28 EU Member States (EU28).

Nature and extent of the problem

The European Research Area (ERA) Communication 2012 identified as one of the most important barriers to an open labour market for researchers "*the lack of transparent, open and merit-based recruitment, which makes research careers less attractive and hampers mobility, gender equality and research performance.*" The Communication invited Member States to "*remove legal and other barriers to the application of open, transparent and merit based recruitment of researchers*".

The conclusions of the Competitiveness Council (December 2012) recalled that the absence of OTM recruitment, where it is not common practice, is the most important remaining factor blocking the completion of the European research labour market. Hence, the Member States acknowledge the positive impact of an open recruitment system on scientific quality and productivity, researchers' international mobility, the attractiveness of research careers, and equal access to job opportunities for women and men.

Additionally, academic research (Horta 2010, Perotti 2002, Cruz-Castro and Sanz-Menendez 2010) has found that poor recruitment practice can have deleterious effects on the quality and productivity of academic research as a result of what is sometimes referred to as 'inbreeding' and that good science benefits from open recruitment (OECD 2013).

Our approach

There is no single source of data that captures and reports on recruitment activity across the EU to assess the extent of OTM recruitment. There are several useful albeit partial data sources, including the MORE surveys, which provide data for all Member States, EURAXESS data on the number of research vacancies as well as a report on the extent to which institutions awarded the Commission's "Human Resources Excellence in Research" logo have reviewed (or are reviewing) their open recruitment practices.

According to most recent Eurostat data, there were more than 1.3 million people working as researchers within the university and almost 255.000 in public research institutes in 2011. Working with partial data streams, we estimate that about 24,000 academic positions have to be filled each year, as a result of movements in and out of the sector (e.g. retirements) and promotions within the sector. In addition, we estimate that another 32,400 appointments are made for new fixed-term contracts on average annually within the EU-28. However, there is less data available on the nature of recruitment practices making it difficult to gauge the application of OTM principles to these 55,000 recruitment exercises.

The MORE II researcher survey provides an employee's view of the situation from 2012 and tells us that a majority of individual researchers judge recruitment to be merit based, but not necessarily open or transparent. Perceptions do however vary considerably between countries and researcher's positions (i.e., junior/experienced researcher). For example, the perception if 'open positions are sufficiently publicly advertised', 77.5% agree to this in the UK, while only 30.6% agree in Italy (EU-

average: 60%). These employee surveys were used to estimate the extent of OTM practices within the overall recruitment endeavour, and as the basis for our modelling of the costs and benefits of different policy options.

In order to provide further information about the situation in the EU28, the study team conducted 140 interviews. Interviews were conducted with officials from relevant ministries, HR management and recruitment officers of universities and research institutes, as well as the senior officials of various employer and employee representative organisations. The insights obtained though the interviews were complemented by literature review to compile and analyse available evidence (studies such as the Researcher's Report 2012, academic research papers) as well as data from Eurostat and relevant empirical studies (MORE II study). The interviews provided both qualitative information on perceptions about OTM and were also used to obtain quantitative information (e.g. on the volume and cost of recruitment activity).

Structural factors

There is an important structural feature that must be borne in mind when considering the nature and extent of OTM recruitment in Europe. Notwithstanding the ambitions of the Fixed-term Employees (Prevention of Less Favourable Treatment) Regulations (EC 1999), throughout the EU the great majority of early career researchers are employed on fixed-term contracts of one to three years' duration. They can expect to hold several such appointments before they reach a level of experience and expertise sufficient to secure a permanent or open contract as a member of a faculty. As a result, the distribution of recruitment activity overall is highly skewed towards early career researchers, while there is very much more stability and lower levels of recruitment among the more experienced researchers (faculty members) employed on some form of permanent contract. In many of the EU28, a majority of permanent positions have the status of a civil servant. Professors are in general appointed, often following a second, post-tertiary degree or examination ('habilitation').

There are **differences in terms of legal requirements and OTM practices** depending on the nature of the appointment: permanent positions must, in general, be publicly advertised, while such a requirement does not necessarily exist for fixed-term contracts. Similarly, the formal selection processes for each type of position may differ.

The legal framework across the EU28 varies but always complex as it combines general employment law with sector-specific legislation that can be quite extensive in its own right. There is also the interplay of federal and regional legislation in several Member States and in almost all cases one can find hard law working hand-in-hand with soft law.

Where it is mentioned in national legislation, the requirements governing researcher recruitment are quite limited in scope and tend to encompass aspects such as the essential requirements to qualify for a post at more senior levels, the role and composition of appointment panels and possibly guidance on advertising. Legislation may also define a number of other HR principles and structures, which will have a bearing on open recruitment, including for example, grade and pay. Rules can differ across grades, with more senior appointments possibly being required to follow a more elaborate process with more external checks and balances. This differential may be more evident in those countries where access to tenured positions brings substantial increase in authority and remuneration and employment rights.

Thus, the European Code of Conduct for the Recruitment of Researchers[1], which comprises a set of general principles and requirements regarding OTM is followed more closely by EU-MS for permanent appointments as compared with the procedures followed for the large and growing number of researchers appointed on fixed-term contracts.

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[1] http://ec.europa.eu/euraxess/index.cfm/rights/codeOfConduct

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Recent years have brought several changes such as professionalisation of Human Resource Management (HRM) aspects but also fixed-term contracts are on the rise at the expense of permanent contracts and a stronger diversification of researcher's functions: typically, a researcher may have split his or her time in teaching, researching, and administration, with shifts in focus along the career. Today it is more likely that some researchers will be devoted to teaching only while others do research and dedicated managers perform the administrative duties. This shift requires also different profiles. Since in many countries "research excellence" is being pushed forward, the financial reward to hire excellent researchers are by far more pronounced than by hiring an excellent teacher. This incentive then leads to atypical recruitment practices, namely strategic recruitment which seems to be on the rise as well. With cherry picking, organisations able to identify suitable candidates will negotiate directly and hire the person without the position even been published neither internally nor externally.

There are several **common types of derogation**, where employers will agree to exempt a specific recruitment exercise from the full extent of the OTM principles set out in the Code of Conduct:

- Where successful grant applications name specific post-doctoral researchers, employers will generally accept that the peer-review process associated with the grant application is a sufficient test and will move directly to issue a fixed-term contract for the duration of the grant. This is a common occurrence, applying to a significant proportion of all post-doctoral appointments;

- Where existing researchers are coming to the end of a fixed-term contract, employers have a duty of care to minimise the risk of redundancy and will usually implement a range of redeployment actions, including providing those at risk with information about new posts ahead of full publication along with a presumption that these individuals should be interviewed where they chose to submit an application. Redeployment actions are a common occurrence, however, alignment of skills/experience is not a given and many of these types of recruitment exercise progress to a full OTM procedure;

- For the most senior positions, employers may use a more strategic recruitment strategy to proactively search out suitable candidates, possibly using recruitment consultants, rather than following a more open process. This approach would typically be approved on a case-by-case basis, however, it remains an entirely merit based approach if not fully open.

Principles of open, transparent, and merit based recruitment – how are they met?

Taking our collected evidence from across the EU-28, there is much diversity in the application of the principles of the Code of Conduct. The following paragraphs summarise the spectrum of OTM practices against the three main phases of an OTM recruitment procedure:

Are all research vacancies published openly? Are they published centrally on Euraxess and do they include clear job descriptions and requirements?

It is clear that not all research positions are openly advertised (within an organisation or externally). Given the legal requirements, permanent positions or those leading to civil servant status are in general externally advertised. For other positions, organisations often prefer their own websites or advertisements in specialised media, including online recruitment portals. A number of the EU28 have introduced mandatory publishing of research positions on Euraxess, which, allied to linkings from major job providers, has helped increase the number of open positions from 7,500 in 2010 to more than 40,000 in 2013.

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Do selection panels include experts from other institutions? Is the panel composition made public?

A Commission Expert Group[2] on ERA Implementation 2013 recommended that "Selection and evaluation panels (for recruitment and career progression, respectively) should be composed of independent and gender-balanced panellists, some of whom are external; the involvement of international members is recommended, particularly for smaller research systems."

Including external experts is not a systematically followed practice. Again, there are practical and financial reasons: competition among organisations, limited availability of (foreign) external experts, language skills of foreign external experts, and the additional expense of travel and accommodation.

For the most senior positions, appointment panels tend to be larger and more diverse in their membership and are more likely to include external experts. Employers will typically have guidelines regarding the composition of panels, and in some cases those general rules are published openly on institutional web sites. However, for most employers the rules on panel composition are internal documents that may be explained to applicants on a case-by-case basis as the progress through a recruitment process. The specific membership of panels is generally not disclosed. An exception is Sweden where official documents are made public.

Are results communicated to the applicants? Is there a complaint mechanism and are organisations responsible to prove that recruitment was open, transparent and merit-based?

In principle, all applicants should be given a decision in writing; however, it is unusual for employers to provide formal written feedback on an applicant's performance against the selection criteria or the wider field. In most cases, employers would expect the person coordinating the recruitment exercise to provide verbal feedback to an applicant on demand, however the level of detail will most likely be low. Most institutions have a complaints procedure and internal candidates can follow their employer's standard grievance procedures, should they judge there has been unfair treatment of some kind. None of the interviews pointed to the existence of a national complaint mechanism such as an ombudsman for academic recruitment. Employers are legally bound to treat all applicants equally, and can face legal challenges, however they are not typically required to 'prove' a recruitment exercise was fully open and transparent. Employers do not want to unwittingly provide grounds for legal challenge or appeals; therefore, the feedback may be somewhat bland.

Hampering factors – subtle and diverse

There are a number of factors that hamper the use of OTM procedures. The first and most important factor is historical: a tendency for academic employers to rely on the social networks and judgement of individual professors as the driving force within the appointment process. For post-doctoral appointments, there is, or at least was, a presumption that the senior lecturer or professor is the person best placed to identify the intellectual capacity and academic potential of their future colleagues. Promotions and more senior appointments may be tackled on a more collegial basis, however, the view of the faculty remains preeminent. With OTM, this variant of academic freedom is constrained to some degree and with the addition of more process and an increased workload for decisions that may look little different to the traditional approach.

Related to this first point, many employers continue to rely on their academic departments to organise and resource recruitment activities and maintain minimal HR capacity centrally. This also links back to the importance of annual national competitions as a means by which new graduates gain entrance to certain professions

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[2] http://ec.europa.eu/research/era/pdf/era_progress_report2013/expert-group-support.pdf

and public institutions. Limited professional HR capacity is reported to be a bottleneck for the development and implementation of new institution-wide HR policies. This can frustrate OTM ambitions in general, but can be a particular problem when it comes to the accreditation of foreign degrees and the recruitment of non EU-nationals.

Language is considered to be one of the main obstacles to OTM recruitment in universities. There are often specific language requirements for positions with teaching responsibilities. There is however more flexibility in the case of research staff with fixed-term contracts on the basis of a specified purpose and in the case of research institutions which lack the teaching component.

Explicit obstacles for the recruitment of non-(EU) nationals are delays linked to degree accreditation, lengthy administrative processes, and as such, a burden to the administrative staff in universities and public research institutions which are often not in a position to deal with the documents, often provided in various national languages. It is worth noting that administrative barriers affect EU nationals as well particularly the ones returning with degrees awarded from third-countries.

Another barrier is the perceived extra cost and time involved with following an OTM approach as compared with more traditional, internal procedures. While OTM is generally seen as being the right approach in principle, inasmuch as it is the most equitable approach and will help to ensure one can appoint the best person for the job, in practice the increased costs/delays of running an open process and reviewing a very much wider field of applicants may cause faculties to invoke various derogations where they can or find other means by which to fill a post other than through formal recruitment.

A number of responses suggest that a lack of transparency of internal decision-making processes is a barrier. This issue concerns the situation following the application, when the organisation is reviewing applications and inviting applicants. Such factors are subtle and even possible within a formal process.

How can the situation be improved?

Currently there are a number of policies trying to enhance the situation (e.g., the Human Resources Strategy for Researchers (HRS4R), the Code of Conduct, etc.). While these initiatives have brought about some changes, we tested which other policy options would enhance the situation. In order to calculate the economic impacts, a cost-benefit analysis was performed.

We devised five generic policy options: stop, continue or, intensify current EU-level activities in support of OTM; bring together the Commission and EU MS to develop additional measures (soft law); and lastly, move forward with proposals for EU legislation on OTM.

We concluded that it was inappropriate for the Commission to stop or otherwise pull back from its current level of activity, as the available statistics show a rather uneven and limited application of OTM principles. Continuing with current initiatives was also judged to be insufficient, as we see only very slow rates of improvement and continuing problems for ERA overall with regard to the diversity, mobility and attractiveness of research careers. An intensification of current EU-level activity would be a positive step forward, with for example an expansion in support for peer learning and case studies of OTM implementation/benefits. However, OTM seems particularly problematic for several EU member states and this third policy option may be insufficient to achieve the necessary breakthrough, and may even widen the performance gap between the improvers and the obstructed.

Given the diversity of national contexts – legal, institutional and current practices – and the shared competence for legislation in this area, we concluded that a EU-level legislative approach would be difficult to take forward OTM principles.

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On balance, we concluded that Policy Option 4 – the soft law approach - was the best compromise between intensification and legislation. A **soft law approach has the potential to narrow the gap between the use of OTM across the EU** - within a minimum period of 3-5 years, producing a measurable increase in the rate of diffusion at the EU level. This option could **especially benefit R1/R2 researchers who showed to be most negatively affected by current practices**.

This option builds on the current policy interventions such as the existing declarations, codes of conduct, and certification measures (e.g. HRS4R). They would however be brought together in a more obviously coherent and stronger package. The following aspects may need to be reinforced or developed:

- The Commission in cooperation with Member States and stakeholders could develop a modular OTM toolkit including good-practice examples, draft OTM policies and operational guidelines, templates for application forms, job descriptions, appointment panels, and other material useful for the HR practitioners as well as the university management and faculty members to demonstrate the feasibility and use of OTM procedures;

- Provide clear examples of good practice concerning each of the principles of the Code of Conduct. If possible provide more detailed recommendations according to researcher's differences (e.g., R1/R2 and R3/R4);

- Develop and promote the HRS4R initiative, requiring participants to assess and report on all applicable OTM principles of the code of conduct in their self-assessment and interim reviews as well as requiring the external peer review to judge / rate employers on each of those principles

- Provide support for EU employer and HR representative bodies to develop OTM training courses for various target groups including HR professionals, senior university officers and others involved in recruitment;

- Raise awareness of the benefits of OTM practices and of the low cost option by posting their vacancies on the EURAXESS Jobs Portal and improve the search function and user-friendliness of EURAXESS to increase attractiveness of the portal;.

- Develop a pan-EU monitoring system that relies partly on self- and mutual assessments and uses relevant quantitative monitoring indicators.

We recommend the Commission invite ERAC and the ERA SGHRM to consider setting up a working group to oversee the development of this soft law package and in particular to track progress in those EU MS where OTM has proved especially problematic, developing further measures or refining the approach as necessary.

We would anticipate this coordination effort could move forward with several of the more straightforward elements, e.g. development of the toolkits and good-practice examples. The suggested strengthening of the HRS4R initiative is likely to take longer as they require consultation and trialling. Notwithstanding this developmental effort, we would expect to see a measurable improvement in OTM in the near future – with greater transparency as regards the numbers of recruitment exercises and the extent to which OTM is observed in part or in full across that baseload of activity.

1. Problem definition

The European Research Area (ERA) Communication has identified as one of the most important barriers to an open labour market for researchers "*the lack of transparent, open and merit-based recruitment (henceforth OTM), which makes research careers less attractive and hampers mobility, gender equality and research performance.*"[3] The statement has been addressed in the ERA Communication 2012 (COM(2012) 392) by inviting the Member States (MS) to "*remove legal and other barriers to the application of open, transparent and merit based recruitment of researchers*". The conclusions of the Competitiveness Council (December 2012) equally recalled that the realisation of OTM recruitment where it is not available, is the most important remaining challenge for the genuine European research labour market.

Empirical analyses focussing on individual countries point out that recruitment of researchers at universities and public research institutes in the EU are not sufficiently open, transparent and merit-based (Perotti 2002 for Italy, Cruz-Castro, L. and Sanz-Menendez, (2010) for Spain). Difficulties, in particular concerning transparency are analysed for Sweden (Svensson 2007) and the Netherlands (van den Brink 2010).

1.1 Defining open, transparent, and merit-based recruitment

The principles for the recruitment of researchers are included in the Charter and Code as Code of conduct. According to these principles, we can define *openness* and *transparency* in specific ways:

Open recruitment includes the publication of open positions, in particular on international web-based resources such as Euraxess. The publication of a position should include information about the position, academic and other requirements, career development prospects and, ideally, also something about the selection process.

Academic literature characterises open recruitment as the opposite of internal recruitment (in an economic, labour market sense of 'insider vs. outsider'). In this respect, research focuses on the productivity of internal versus external recruited researchers.

Transparency in the sense of the code of conduct concerns the composition of the selection committee and transparent selection practices. After the selection, candidates should be informed about their strengths and weaknesses.

Transparency in academic recruitment is an aspect not well covered in academic literature. It is instead a concept often associated with the functioning of organisations and the accountability of public sector organisations. Increased transparency – in other words, openness about internal procedures and decision-making to the outside, will reduce the likelihood of improper handling of resources and decision-making. It encourages objectivity, discourages nepotism and other inappropriate behaviour (Svensson 2007). There are neither guidelines on what constitutes transparency in the appointment of academic staff nor are there suggestions how academic organisations can make the recruitment and selection more transparent (van den Brink 2010).

Two empirical studies one on Sweden and one on the Netherlands, suggest that formal transparency exists at all stages of documentation. In decision-making procedures however, recruitment and selection processes are characterised by bounded transparency and limited accountability. In the view of van den Brink et al, protocols, i.e., the documentation that should ensure transparency and accountability remain

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[3] Based on the Commission Expert Group on the Researcher Profession 2012: *Excellence, equality and entrepreneurialism. Building sustainable research careers in the European Research Area.*

'paper tigers' rather than enforceable proof (van den Brink et al, 2010). They tend to provide rather soft, non-contestable information.

Transparency as defined in the Code of Conduct is reduced to transparency aspects once a position is advertised; it concerns basically *external* transparency vis à vis candidates that respond to an open position. It leaves out all the internal processes that lead to the decision to recruit internally, externally or strategically. *Internal* transparency however concerns also a large number of researchers and potential researchers. Since in particular many non-permanent research positions (R1, R2, and R3 level) are internally decided upon, a lack of transparent internal processes can lead to a high degree of discontent. However, even existing internal transparency, for example an agreement and open, internal communication to recruit internally for job A, B, and C, and strategically for job D and F fulfils transparency criteria. These criteria are however not necessarily made public externally. Thus there remains a classic asymmetric information situation, and therefore room for the dissatisfaction of outsiders.

Despite its rather poor coverage as a research topic, transparency seems to be the most complex subject matter in the OTM recruitment package.

Merit-based is described in the Charter and Code: "The selection process should take into consideration the whole range of experience of the candidates. While focusing on their overall potential as researchers, their creativity and level of independence should also be considered. This means that merit should be judged qualitatively as well as quantitatively, focusing on outstanding results within a diversified career path and not only on the number of publications. Consequently, the importance of bibliometric indices should be properly balanced within a wider range of evaluation criteria, such as teaching, supervision, teamwork, knowledge transfer, management of research and innovation and public awareness activities. For candidates from an industrial background, particular attention should be paid to any contributions to patents, development or inventions"

All positions require some prior achievement, whether this is a formal degree or special performance. Formal job advertisements tend to include criteria an applicant needs to fulfil. These can be tangible achievements like degrees, awards, publications or a listing of courses taught. Merit can also be rated subjectively. In Europe, and particularly at UK universities, there is often a requirement for three 'recommendation letters' accompanying the application of a candidate.

Do the three principles open, transparent, and merit always come together? Ideally yes, but in practice open or merit-based recruitment can encounter non transparency or 'bounded transparency' (van den Brink 2010). The main problem with these three principles is that they are not entirely objectively measurable. Since humans select personnel, not only measurable factors matter but also soft factors are equally taken into account, even unconsciously. Openness could be measured by counting the positions published openly versus the number of positions that were internally advertised, ideally by distinguishing the type of researcher. Unfortunately, internal recruitment practices and their scope is not reported and measured widely. Merit is often linked to reputation, which is again linked to performance (and networking). Performance indicators such as courses taught, number of graduate students, doctoral students, publications etc. can relatively easily be collected at organisational level. Transparency can theoretically be established with clear processes, but as evidence suggests transparent processes on paper do not guarantee a fair, transparent process (van den Brink et al 2010).

1.2 Conceptual framework

The nature and extent of the problem – and how it is addressed within this IA – is laid out in Figure 1 OTM problematic There are assumptions concerning the expected outcomes of OTM, challenges and an analysis of OTM barriers on the left side, while structural aspects dominate the right hand side. We differentiate between

structural aspects including governance and regulation, incentives and practices. OTM is also addressed differently by different stakeholders such as the public sector research organisations (incl. universities), the government, but also companies. The analysis then distinguishes between several OTM levels and analyses the costs and benefits of different enforcement levels.

The main assumption of actions in the area of OTM are linked to expected outcomes. With OTM, there will be an increase in research excellence and innovation due to a transparent and thus wider labour market where demand and supply meet. There are several actions to support the overall goal such as increasing international mobility or boosting the attractiveness of a research career.

Figure 1   OTM problematic
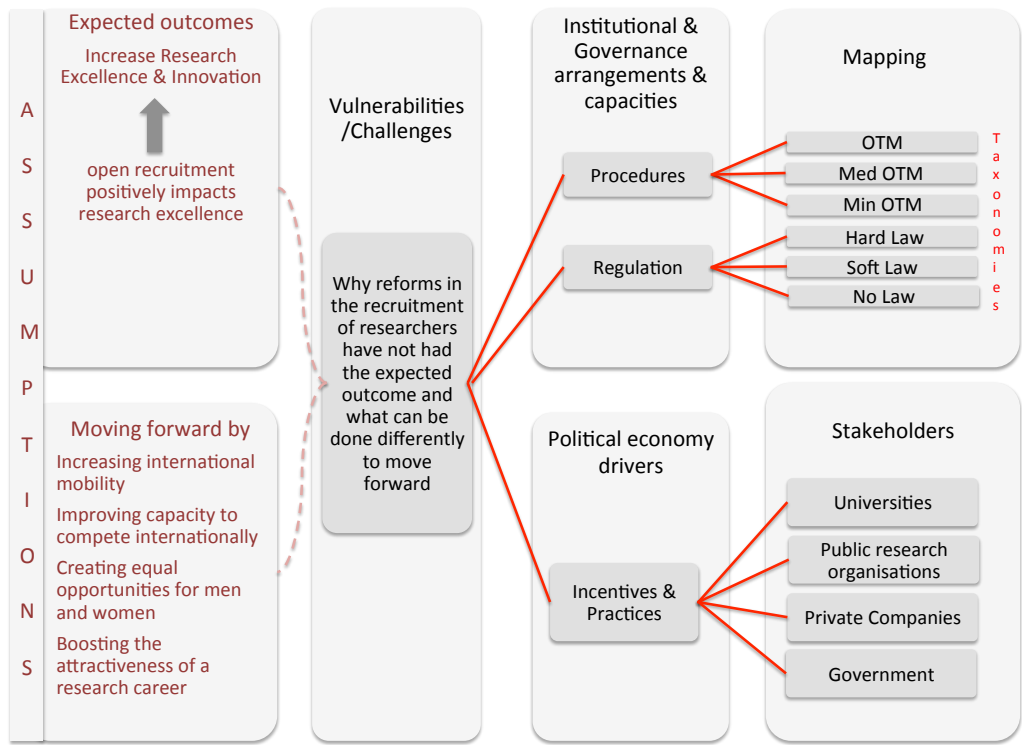
Source: Technopolis

1.2.1 Impacting areas

The ERA Communication mentions four areas where OTM has effects, namely:

1. Makes research careers less attractive;

2. Hampers mobility;

3. Hampers gender equality;

4. Hampers research performance.

These areas are analysed in more detail in the following.

A number of qualitative and quantitative studies suggest that there is a lack of OTM and that it hampers the decisions to be a researcher or to be a mobile researcher. The perceptions however are not uniform within Europe. They can vary by country, status, gender, and discipline and last but not least individual experiences. The MORE II study, which is based on representative data among university-based researchers indicates that in terms of 'openness', 55% of the EU27 researchers are satisfied (see Table 1 Share of researcher's satisfaction with OTM principles by career stage). Compared to the two other principles, this is the lowest satisfaction rate.

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Table 1 Share of researcher's satisfaction with OTM principles by career stage

	R1	R2	R3	R4	Average	Low	High
open	52,7	52,2	54,4	61,6	55,4	30,6	77,5
transparent	57,3	56,1	58,9	66,5	60,3	46,2	80,4
merit	61,6	57,8	60,7	65,9	61,5	44,3	83,1

Data: MORE II, Higher Education Survey 2012

In particular young researchers (R1/R2 level) express a low satisfaction with the level of public advertisement of open positions while dissatisfaction is much lower at senior-level positions. Discrepancies between the principles by age group are rather consistent indicating possibly structural differences. In fact, many countries have legal requirements to publish open professorial positions, but the situation for other types of researchers, in particular junior positions, are not regulated at national level and thus, the question whether or not a junior position is published or not (and where) is left to the recruiting organisation.

Concerning the influence of OTM on the **attractiveness** of researchers firstly, the survey results do not suggest a causal relationship. Given that in a number of EU countries positions are not openly advertised, young researchers, in particular, are hampered in finding a suitable position.

The public consultation on the ERA Framework (2011) also suggests that the working conditions and career prospects in research are less attractive compared to other professions with similar qualifications.[4] This is mainly due to a limited availability of research positions in academia (76%). Among the other possible factors that were available reasons and are core for the OTM aspect is the, "lack of information about vacancies". This scored among the lowest with 40% of respondents agreeing or agreeing strongly. For the international mobility of researchers the reason that "recruitment procedures are not sufficiently open and transparent" is however for 60% of the respondents important or very important. The perceptions on the reasons why recruitment is not transparent and open are that 65% (strongly) agree that "the existence of national/regional/university level rules prevents it from being so" –a perception that cannot be confirmed by the legal analysis of recruitment legislation at national level or (where applicable) regional level, where we did not identify formal legislation preventing organisations to apply OTM processes.

The second aspect concerns **'hampering mobility'**. Of course, mobility as such is not a goal in itself; in research it serves knowledge acquirement and circulation as well as building personal research networks. Mobility can be geographical as well as sectoral (inner or intra country/sectoral). If positions are not publicly advertised the option to apply is almost not given – other than if a person is cherry-picked and notified. Therefore, limited public access to a position does *per se* hamper mobility. The principle of transparency is important for all researchers – regardless of country or nationality. If procedures are not transparent, national and in particular foreign researchers unfamiliar with procedures may refrain from applying to open positions. While merit seems to be the least controversial principle, requested proof for 'merit' may pose a temporary[5] financial and time barrier at the level of the individual

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[4] Within the consultation, about 580 responses were provided. About 30% were from Ph.D. students, another 20% from other researchers. The remaining 50% were organisations, companies, individuals etc. Almost one quarter of the responses were from Spain and France. Raw data was provided by the EC services for this impact analysis. Several descriptive results are included in the EC publication: *Areas of untapped potential for the development of the European Research Area (ERA). Analysis of the response to the ERA Framework public consultation.*

[5] Required proofs may need to be produced once but can be used in a longer timeframe and provided to multiple job offers.

researcher when for example he or she needs to provide certified translations of degrees or employer records in the language of the country of the open position.

The aspect of mobility is often linked to knowledge and research performance. From social network analysis we know that specific structures of networks are benefitting the roles and performance of researchers. While researchers in general benefit from wide, homogeneous networks, innovation comes with structural dissimilar networks. Through mobility – including going to conferences as much as working at different places or for different employers – tends to increase the mobile individual's network and knowledge. This in turn increases collaborative research and its outputs, often in form of co-publications or co-patents. Nowadays, the large numbers of Erasmus and Marie-Curie fellowships indicate that during the tertiary education and in the early stage of the career (R1), mobility is high and has been increasing for the past 20 years. While international mobility is high at the stage of R1 and R2 researcher, mobility is less often in R3 and R4.[6] While this can be explained with parallel developments in private life, mobility – national as well as international - is fruitful for quality research and innovation, and thus it is a crucial factor for advancing knowledge societies.

A third factor, OTM's impact on **gender equality**, is not a well-researched aspect. There are legal provisions against unequal treatment (Directive 2006/54/EC, currently recast) but data such as the share of female professors or the glass ceiling index suggest that inequality in the research profession largely prevails (SHE Figures, 2012). This view is further acknowledged in the broader work of the Helsinki Group on Women in Science, LERU and the European Science Foundation (European Commission 2012a).

Gender equality is often treated with other factors such as transparency or research performance. LERU for example in an opinion paper pointed out that "*.Transparency of all assessment and recruitment procedures is essential at junior and senior levels; having consistent and rigorous recruitment processes for academic staff is critical for women's success.*" (LERU 2011). The Helsinki Group position paper on the ERA Framework argues that "*Transparency in careers and processes, (recruitments, promotions, mobility, etc.) favours a balance between sexes by showing inequalities, ensuring that no discrimination takes place, especially for top-level positions.*" The genSet[7] Recommendations for Action on the Gender Dimension in Science (2010) further argues that" *Transparency in hiring processes makes it easier to eliminate bias or ambiguity in selection criteria and encourages those re-entering the workforce after a break to apply, thus often increasing the amount of women who are applying and selected.*" (genSet, p. 16)

Anecdotal evidence on the country level reveal the complexity in addressing gender inequality in practice. Van den Brink et al (2010) analysed recruitment and selection protocols of Dutch universities focussing on concepts of transparency and accountability as tools for gender equality. She concludes that neither transparency nor accountability remedy gender inequality. The reason for this is the "*myriad of unintended gender practices and micropolitical processes involved in the selection of elites*" (p.2).

Studies that linked gender issues and research performance (see below) suggest that the outputs of mixed research teams are more creative and relevant. GenSet (2010) states "*Increased diversity in research teams correlates positively with the quality of research. Differences in experiences and perspectives between men and women may bring new approaches and questions into research*" (p. 16). Bibliometric analysis points to differences in publication behaviour of male and female researchers in a number of fields and disciplines. While there were historic distinctive differences in general in favour of men, these differences seem to erode in several fields and

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[6] For more details about mobility aspects, please see the MORE I (2010) report in particular.

[7] See www.genderinscience.org of the FP7 project genSET

countries. According to a review of Ceci and Williams (2011), productivity differences are "*due to differences in structural variables that, although correlated with sex, are causally unrelated to it*" (p. 3158). Van Arensbergen et al (2012) for example showed that young female researchers tend to outperform young male researchers in the social sciences. Abramo et al (2009) showed for the Italian university researchers not only a smaller than perceived actual performance gap but also a decline in the gap.

A fourth factor, that a lack of OTM is hampering **research performance**, is the most widely researched aspect. However, the literature uses the term *open* as synonym for *external* recruitment, versus internal, non-open recruitment. Therefore the literature does not start with the analysis if positions were publicly advertised but rather centres around researchers that were educated within the same organisation they then obtain their position as a researcher. The literature does not treat OTM per se, rather it provides reasons and effects of hiring 'inhouse' versus external researchers. It is thus focusing on closed, internal recruitment aspects.

The available evidence from literature on research performance is sometimes contradictory: open recruitment has a positive impact on the scientific output (Eisenberg and Wells, 2000), in particular when it is combined with financial autonomy and high shares of competitive funding (Aghion et al, 2010). There are bibliometric studies pointing out that mobile researchers outperform non-mobile ones (OECD 2013) confirming what social network analysis states in terms of wider professional networks.

However, externally recruited researchers are not necessarily more productive in the long run (Inanc and Tuncer, 2011; Horta et al, 2012) – but this can be observed for tenured or open-ended contracted personnel in general (Coupé et al, 2006). While 'inhouse' seem to do well when it comes to education and outreach tasks, a small share of them may even benefit from the research performance of externally recruited research personnel (Horta et al, 2010). This idea is, however, contested (Eisenberg and Wells, 2000). No difference in terms of research outputs between openly recruited and inhouse recruits were identified by Mishra and Smyth (2012).

Prior research performance of externally recruited researchers is a selection criterion that affects the overall performance of the recruiting organisation. In particular UK universities hire strategically so-called 'star' scientists with an outstanding publication record since this impacts their performance when measured by the research assessment exercise.[8] It is therefore not surprising when the performance of externally recruited staff compared with incumbents outperforms the latter. A lack of open recruitment has not a uniform effect on all organisations – *highly reputed* organisations even with high shares of inbreeding seem to offset the negative impact of a lack of open recruitment.[9] The reason is unclear but several authors speculate that 'inbred' personnel is predominantly hired for a higher teaching load than externally recruited researchers who would generally be more active in research than educational obligations. That said, assuming some form of OTM recruitment has already taken place on entry, the practise of OTM cannot be expected to exclude internal recruitment.

1.2.2 Vulnerabilities/Challenges

In the framework of the analysis we differentiate between procedures and formal regulations that govern the OTM complex. According to the MORE II survey there are

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[8] "Recruiting the right talent has never been more crucial...this fierce battle is being driven by the looming Research Exercise Framework which will distribute ...a billion pounds of government research funding annually." The newly recruited researchers prior publications "can be submitted as part of a university's research profile for the REF" (A. Fazackerley in The Guardian, 10/12/2012).

[9] See Eisenberg and Wells 2000. In their analysis of US law schools, Harvard (60% inbred faculty) and Yale (35% inbred faculty) were the most inbred, still with the highest citation rates.

different perceptions of the researchers about the level of OTM in the different EU Member States; one can speak about low, medium or high level of OTM practices. They are explained by differences in terms of regulations as well as practices in the MS.

So far, there are several attempts to remedy a lack of OTM, most often initiated at the European Commission level with implementation at MS-level. Here the Code of Conduct, the Euraxess network or the HR Excellence logo can be cited as relevant policies. The implementation at MS level however differs considerably when indicators such as the number of institutions having signed the Code of Conduct, job adverts on Euraxess or the number of institutions revising their HR policies and applying for the logo are considered.

Challenges to overcome low levels of OTM are numerous. One prominent challenge is prevailing institutional practices – things have been done for several years and practices may be difficult to change from within an organisation. Institutional resistance can be observed in any type of organisation. Increased transparency is also a threat to existing power structures. However, if framework conditions are changing, organisations such as universities and research institutes may be forced to change internal practices. In this respect one can expect changes in OTM practices when the incentives are changed. This can for example be a linking of institutional as well as third party funding to achieve OTM standards. It may also be achieved through regulation since laws and by-laws may to some extent enforce specific formal procedures (see 2.1). Whatever the means to influence or directly change from a low level of OTM to a high level, it is accompanied by costs. Given the different level of OTM in the Member States as well as the varying sizes of the research systems, one can assume higher costs for some countries while there will be more moderate costs for others in order to arrive at an equally high level. Differences may also apply to the benefits; some may benefit more from OTM than others. This is linked to framework conditions including for example reputation, geography, salaries, etc.

For those countries having already achieved a high level of OTM, further political drivers seem to be less necessary. Policy intervention may be useful to change the situation in those countries with low OTM practices and to some extent to countries with medium level OTM practices. Further to the level of OTM comes the aspect of size: in a Member State with a high number of researchers, a high level of OTM affects positively a high number of researchers.

2. Factors influencing the recruitment

2.1 Presence of legislative approaches

The legal position across the EU is pretty variable but always quite complex, combining general employment law with more sectoral legislation that can be quite extensive in its own right. There is also the interplay of federal and regional legislation in several Member States and in almost all cases one can find hard law working hand-in-hand with soft law. It is therefore difficult to capture the situation accurately in any definitive sense.

The majority of the EU-27 has national legislation that applies specifically to aspects of human resources management within public universities or research institutes, and typically this will include several aspects within the scope of OTM recruitment.

Where it is mentioned in national legislation, the requirements governing researcher recruitment are quite limited in scope and tend to encompass essential requirements to qualify for a post at more senior levels, the composition of appointment panels and possibly guidance on advertising. Legislation may also define a number of other HR principles and structures, which will have a bearing on open recruitment, including for example, grade and pay.

Rules can differ across grades, with more senior appointments possibly being required to follow a more elaborate process with more external checks and balances. This differential may be more evident in those countries where access to tenured positions brings substantial increase in authority and remuneration and employment rights.

There are also issues relating to the degree of institutional autonomy, with some Member States having a more centralised appointment process while in other countries the appointment of new staff is the sole responsibility of the university or research institute in question. In some countries, individual institutions have the right to decide on the need to move forward with an appointment process; however, they are legally obliged to work with national or regional structures. For example, in several countries a ministry will arrange regular national competitions to create / maintain a pool of 'appointable' candidates and employers are required to concentrate their recruitment efforts on those prequalified people. Elsewhere, national laws may grant final approval of a specific appointment to regional or national structures that are independent of the employer; this is more likely with more senior appointments, so for example, the appointment of a director of a national research council may require final approval of the minister or parliament.

A minority (ca. 20%) has a narrower legislative base, where the defined research funders and research performing institutions have autonomy to determine their approach to HR management. Our analysis found just one or two examples of MS where the full extent of the present understanding of OTM is encompassed by national legislation (e.g. Austria, Czech Republic).

In several cases, we were told about highly specific rules that may constrain open recruitment in some degree, for example:

- In some countries there is a requirement for applicants to specific grades or positions to have passed post-doctoral qualifications (habilitation). These are country-specific and held in the national language.

- In other cases, national law has quite specific (and sometimes limited) provisions regarding the recognition of non-national qualifications (e.g. the Czech Republic, Italy and Spain).

Every MS ought to have transposed into national law various employment-related EU directives on, for example, non-discrimination and equality or the use of fixed-term employment contracts.

2.2 Recruitment procedures

In order to understand where people are involved and in which step in the recruitment process – and which costs come into play – Figure 2   Procedural steps in planning and application procedure highlights the main decision steps prior to any formal academic recruitment.

Recruitment in academia typically involves the faculty, which has identified a vacancy and the HR department functioning as administrative arm. If HR services are not centrally provided, the function is often internalised by the faculty, involving its administrative personnel.

Once a vacancy is identified, there is generally first a check if the position is part of the staff appointment scheme or if it is an externally funded appointment. A decision needs to be made whether or not all positions need approval of the financial department or the financial responsible at faculty level. Since externally funded appointments do not affect the university/faculty budget, these positions do not often need prior consent from financial units. Given that all researchers need a working space, their employment contract or appointment is constrained by the availability of working space. This can be regulated centrally or can be decentralised. Some organisations or faculties may further distinguish between levels of researchers: while for example an externally funded junior researcher would not need approval for being

recruited, a more senior position like a temporary endowed professorship may still need approval.

Following the initial identification and financial approval, the actual planning starts for the search involving academic as well as supporting administrative personnel. The job profile and job description needs to be established by those academic personnel offering the position while the administration typically deals with processes such as putting it in the right format and posting the vacancy on the organisation's website. Before it is published however, internal rules for deployment, or general rules requiring external publication need to be respected. In several countries positions leading to civil servant status need to be publicly advertised, thus, the same applies to positions in the universities/public research organisations. In the case of Germany, there is however no legal consent if all employee positions in the public sector need to be publicly advertised.[10]

The internal publication is intended to provide an opportunity to those researchers facing termination of their fixed-term contract (this is generally the reason within UK universities), or taken as a means for career development (as practice in the public sector research in Germany and enforced also in the German private sector under certain conditions). The internal candidates need to apply and pass a selection process. If no suitable candidate is identified internally, the vacancy will be published. At that point, several publication means need to be considered. Considerations are in general financial but they also take into account the specificity of the vacancy. While publishing on the organisation's website is free of charge, publishing on commercial job portals costs money. Many open positions for young researchers will only be published on the website while more senior positions may be advertised in focused media or job portals. In most EU countries, there are legal requirements to publish in a print medium the vacancy for R4 level positions since they tend to be open-ended.

The important role of selection committees in academic recruitment decisions has been analysed in several studies. Power, networking and 'micro-politics' are frequently the ruling principles. Thus, the selection and setting up of the selection committee can affect recruitment decisions beyond any formal transparency principle.

The recruitment process may or may not involve a selection committee. While this is common practice for more senior and almost certain for open-ended, professor-level contracts, this procedure is not systematically applied at the junior level. In general this committee also reviews the applications. There can be a pre-screening necessary (depending on the number of applications), but the analysis of the submitted documents, discussion within the committee and the decision whom to invite for interviews can take several working days.

A possibly important cost factor can be expenses paid for interview – or not. Many organisations do not pay the expenses of the interviewee. Given that for many interviews travel costs occur which then need to be borne by the applicant, this is a serious constraint for the recruitment process. Technical advancement has however enabled web-based, virtual sessions that are gaining importance in some countries, and in particular in the private sector.[11] Arguments against online sessions are the lack of observable body language – a factor unconsciously or consciously taken into account by recruiters as well as interviewees. Cases in academia for online recruitment are so far not documented in academic literature.

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[10] BVerG, Decision of the 14.01.2010, Az. 6 P 10/09

[11] 'No author (2013): Recruitment goes virtual; use web-based technology intelligently for best results in recruitment, Human resource Management International Digest, 21/3, pp19-21

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2.2.1 Recruitment costs

Firstly, we have two types of cost when looked at in chronological terms and from a systems perspective:

1. The cost of setting up an OTM system (e.g. designing protocols, training everyone)

2. The cost of doing OTM (recurrent)

We can then distinguish two types of cost, direct expenditure and staff time.

We have three broad types of expenditure (advertising, expenses, recruitment consultants), and these apply differently at different grades or positions, A new rector may be more costly than a professor who will in turn cost a great deal more than an experienced researcher. Post-docs may be relatively inexpensive on a per capita basis, using free-of-charge media only, paper-based short-listing, skype interviews and so on.

When it comes to staff time, we have multiple resources / staff to consider: administrators, recruiting departmental colleagues, other department or organisation's representatives, possibly independent peers etc.

The resource burden is likely to differ across grades, with a more comprehensive / intense process for more senior people.

The burden will also reflect the size of the field. Dealing fairly with 100 applicants will inevitably consume more institutional resources than dealing with a field of 10, all things being equal (i.e. similar grade). This is a major OTM cost factor, as the great majority of all researcher recruitment exercises relate to early career appointments where the size of the potentially eligible field for each post will tend to be much larger than for appointments at a higher grade, where specific past experience and specialisation may be part of the requirements. . Larger institutions may have to make hundreds or thousands of appointments each year, and each open appointment will attract much larger fields of applicants as compared with an internal or selective procedure. Without a good HR system behind them, individual organisations or departments will bear the brunt of these costs, which may not be prohibitive at the institutional level but may be considerable for individual professors

Lastly, there is the aspect of thoroughness / intensity of the recruitment process. Do shortlisted candidates have to be interviewed directly or give a lecture? Are these visits paid by the organisation or by the applicant? How expansive is the written feedback / oral debrief to all applicants? These are factors determining largely the resource burden.

Figure 2   Procedural steps in planning and application procedure

Main procedural step	Sub-steps	Involvement		Time requirements
		HR[12]	Faculty	
Identification of position to be filled			x	-
Type of position: start of procedure(s)		x	x	-
Check financial authority		x	x	Time needed to check and obtain ok for filling post (1h)

Planning	• Preparation of documentation
	  – Define job profile and
	  – Provide job description
	• Decide evaluation criteria
	<possibly incl. weighting>
		x	x	• Time needed to prepare description (1h)
				<Possibly several hours if criteria are discussed in a group (estimated average 4 people discussing 1h: 4h)>

	• Planning selection process		x	• Discussion in faculty if no alternating rules are established (2h)
	• Advertisement:	x		• Drafting text and posting (1h)

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[12] Human Resources department/ administrative personnel

Main procedural step	Sub-steps	Involvement		Time requirements
		HR[12]	**Faculty**	
	– Internally (possibly prior to external publication) – organisation's website (national/other languages) – External websites (commercial/ free printed media			• 200€ for two weeks on commercial website • Printed media: varies widely between regional/ national/ international sources (800€)
	Involvement of recruitment agency/executive search	x		Varies widely and depends on pricing model (percentage fee pricing/flat fee or by name, by month, by hour). Estimated average costs: 40,000€ >
Application procedure	• Review of applications • Establishment of shortlist • Setting dates for interviews • Invite candidates <Admin follow up with candidates>	x	x	Can very widely depending on number of applications and division of work. Estimated average number of hours for 30 applications: administrative costs 20h
	- Interviews	x	x	Time spent by committee members; varies widely. Assume 3 panel members and 5 interviews a 1h on average plus preparation time and ex-post assessment: 30h
	- Travel expenses of candidates	x	x	Decision if travel expenses are covered yes/no. Can vary widely/can be capped, impacts administrative follow up costs

Source: Technopolis Group

2.3 Underlying structural factors

2.3.1 Differences in entry point procedures

In order to analyse the thematic systematically, it is necessary to distinguish two modes when OTM practices matter, namely, upon entry into the researcher's system and upon progress when researchers move hierarchically. Entry points are linked to contract types.

The first mode is in particular important for young, early-stage researchers (R1/R2) who obtain most often short, fixed-term contracts. A second entry point can be distinguished when it comes to receiving an open-ended contract. This is in general associated with R3 and R4 positions but there are cases where these positions are equally on a fixed-term basis. The second mode concerns career progression, which can happen within an organisation or by switching between organisations.

While the Code of Conduct provides several guidelines for open and transparent measures, there are a number of written and unwritten rules that shape and guide the recruitment procedures in academia. A strong difference of procedures and formal regulations can be identified between R1/R2 on the one hand, and R3/R4 positions/researchers on the other hand.

Given the results of the MORE II study, one of the main problems for R1/R2 researchers is a lack of openly advertised positions. In no EU country does a legal requirement exist for public sector research organisations to publish R1/R2 positions systematically. These positions tend to be fixed-term contracts.

The different shares of satisfied R1 researchers with job vacancy publications in the various EU countries as identified in MORE II suggests two reasons: either the organisations do not publish externally and thus recruit from within or they publish externally but not necessarily widely. For almost all countries, the share of R1 researchers that are satisfied is lower than the R3/R4 levels. Given that the latter positions tend to be published (for R4 positions there are legal publication requirements in most countries) while there is no legal requirement for the former, there seems to be room for improvement for the R1/R2 level researchers.

The high numbers of R1/R2 researchers[13] and often short-term demand arising from third party funding suggest that the opportunity costs for a full-fledged open recruitment procedure for each position may be prohibitively high. Further taking into account the level of autonomy (in terms of funding and recruitment) of universities, it remains widely a decision at organisation, faculty, or even individual level as to whether or not a position is published (internally or externally) or not.

A coherent approach to publish open positions and thus to provide broad access to job-hunting young researchers within a country or Europe-wide could be a means to enhance the situation. Even if all R1/R2 positions were advertised on Euraxess it would not necessarily ensure that a significantly higher share of external young researchers would fill these positions. Several interviewees mentioned the high costs of large numbers of applications if published on Euraxess. When it comes to the selection, R1/R2 insiders have a better chance to be selected in the wide pool of otherwise unknown candidates, who may display formal good grades etc., but are otherwise untested in research. Also, several interviewees confirmed that many professors aim to retain their excellent graduates, offering them R1 positions. Thus while external R1/R2 researchers may have a good reason to be dissatisfied with the publication habits of positions, it needs to be specified whether this concerns the lack of a central publication means (like Euraxess), decentralised publications on institution's websites, or (non-transparent) internal recruitment practices.

Publishing positions is a rather straightforward agency problem. While employers aim to find the best candidates for a position at the lowest cost, candidates have higher search costs if they need to screen several websites for job offers. Employers seek candidates with a certain motivation, thus they expect an active search by candidates – which explains why several universities only publish their open positions on their website or in targeted, or even via local publication means.

R3/R4 researchers encounter different challenges. They are more often concerned when it comes to permanent, open-ended contracts. Many countries have legal requirements for the publication of permanent positions and organisations have formal procedures for the selection and recruitment process.

For academia as well as research organisations, the recruitment of open-ended contracted personnel is associated with much higher risks than fixed-term researchers. If the latter turn out to be not suitable, their (often) short-term contracts will just end. On the contrary, open-ended contracts tend to be much more difficult to terminate and thus micropolitics come into play already at the recruitment stage. "M*icropolitics refer to the use of formal and informal power by individuals and groups to achieve their goals in organisations*" (Blase 1991). They do not refer exclusively to tension and conflict but also to cooperation and coalition building. They include a broad range of activities – how people exert influence, network, challenge, lobby, resist or use other personal strategies in order to effect or resist change or assert their own interests (Morley 1999). Since the recruitment and selection of new professors is not a purely technical process, which involves judging which scientists are the best, it is also a political endeavour, involving negotiations between multiple actors (van den Brink et al. 2010). Does it help to overcome micropolitics by including for example external research in the selection committee? Available studies show a disheartening picture: in Italy, a quid pro quo policy spanned over institutions and thus helped a system of favouritism (Perotti 2002). Spanish evidence suggests that it did not matter *what* you knew but *who* you knew in the selection committee to be successful. Having women in the committees may help even more that male candidates are chosen. Van den Brink and Benschop (2013) report that female gatekeepers in the recruitment process actually look for 'proven masculine success models' – thus contributing to structural gender inequalities (van den Brink et al

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[13] There are no official statistics about doctoral students or Postdocs at EU-level. This lack is often proxied by Ph.D. graduates.

2010). While at entry level a high share of females in selection panels raises the employment chances of females in Spanish organisations, Zimovyeva and Bagues (2011) find that for internal promotions, a larger share of female evaluators is associated with fewer successful female applicants. These micropolitics will most likely not show in recruitment protocols, but they are decisive for recruitment and promotion decisions.

2.3.2 Differences in contract types

An important factor for OTM concerns the **type of contract**. Contract types impact on recruitment procedures and the extent of their openness and transparency. There are two main types of contracts offered: fixed-term contracts and permanent, open-ended, contracts. Fixed-term contracts can be for research or teaching duties while permanent contracts tend to combine teaching and research duties alike. A number of other duties may arise with these contracts such as writing proposals or being involved in academic management functions. In a number of countries, the permanent position is coupled with the status of a civil servant. In the academic sector, tenured positions declined in importance relative to temporary ones (OECD, 2009). In the UK and Germany, the share of permanent contracts in 2010/2011 was 17%.[14]

Recruiting internally for fixed-term positions offers rather low opportunity costs for not having found someone potentially better from outside. On the other hand, the incentives for the fixed-term recruited researcher are high: if he or she aims at an academic career, he or she will be likely to perform high. One could however argue that low ranked universities with low autonomy in selecting their university students may have only a small pool of very good, and a larger pool of mediocre, graduates. If these source their research and/or teaching personnel mainly from within, this may trigger negative effects in the longer run. Put differently, even **if open recruitment may not lead to immediate positive effects, one would expect positive effects of an open recruitment policy in the longer run**. If they are not able to attract larger numbers of external researchers – as this seems to be the case in several eastern MS, organisations use different channels to be involved in international research such as research projects or temporary mobility (promoting for example visiting researchers). Open recruitment is not a synonym for international recruitment. A higher inner-country mobility may already be beneficial for countries with low inter-institutional mobility and a high share of internal recruitment.

This situation is prevalent in many eastern and southern European countries the public sector conditions with permanent contracts and a limited propensity for competition were common. In eastern European MS it can also be pointed out that until the end of the 1980s, national (employment) mobility was low; international scientific mobility was often directed one way to Russia whereas internal recruitment was the norm.

Recruitment of staff for permanent positions follows different recruitment procedures compared to fixed-term contracts. In the latter, more flexibility is practised including exceptions to open recruitment processes. These fixed-term contracts are used for third-party funded research projects with a similar fixed time span, or for teaching assignments. Often proposals for third party funding need to contain the names and CVs of the researchers who will perform the work. Once a project obtains the funding the positions need to be filled quickly; universities and research institutes are likely to include people from within the organisation for two reasons: time and experience. Internal (transparent as well as non-transparent) is less time consuming than open recruitment and even the internal assignments for a research project will happen most often on merit. For teaching positions, the likelihood for hiring from within is also

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[14] See footnote 15.

high: graduates or post docs having shown good performance within the organisation before can be rewarded with a teaching position.

Box 1   Combating fixed-term contracts

Fixed-term Employees Regulation - United Kingdom

The Fixed-term Employees (Prevention of Less Favourable Treatment) (Amendment) Regulations 2008 is a part of (anti-discrimination) legislation that is judged to have had an important positive impact on public research organisations' management of research staff. In general terms, the Fixed-term Employees (FTE) legislation sought to limit the use of fixed term contracts and where they are used to prohibit employers from treating those employees differently to similar permanent staff. In the UK HE sector, the principal positive impact of the FTE directive has been employers' improved treatment of researchers on fixed-term contracts, rather than a dramatic reduction in the use of these types of contracts. Early-career researchers – post-docs – make up the great majority of all research-active staff and these individuals still tend to be employed on FT contracts linked with specific grants. A move away from this contingent contractual arrangement would imply a profound change in the HE business model in the UK, and there is no obvious appetite for that change at present. The variability of grant income leads employers to favour the flexibility of fixed term contracts for the majority, which provides system level adaptability. There is also a general sense that the movement of post docs through the national and international system is critical to their professional development and social capital.

2.3.3 Stronger diversification of researcher's functions

In the past few decades, academic work has become more diverse in the sense that academics have not only to follow the Humboldt ideal of research and teaching (education), but they also need to attract research funding or be active in science and technology transfer. Along with functional diversification, specialisation can also be seen along the career development path: younger researchers tend to be more involved in research than more senior ones, whose repertoire of duties tends to shift markedly to administration as well as to securing third party funding (thus, partly explaining the decreasing publication rates of senior scientists). Another specialisation pattern evolves since some countries tend to separate teaching and research positions more clearly, thus recruiting young or visiting teaching personnel often on a short term basis, while requiring for their longer-term research personnel a different profile (Musselin 2007). Very often, different hiring and employment conditions prevail.

2.3.4 Reputation as a driver

In academia, reputation is a marked factor that can explain mobility, attractiveness of job offers and career prospects. Extremely productive researchers in general achieve mobility to higher ranked organisations. They tend to be twice as productive as the researchers at the target organisation (Coupé et al 2006, Chan et al 2002). The attractiveness of elite organisations is very high, whereas the less attractive and less reputed ones have (often also) financial difficulties unable to offer attractive positions. In several of the interviews, the situation of the individual organisation is described precisely like that: a lack of funding is perceived as the key barrier to hire international talent. National talent on the other hand is often hard to retain. Therefore, for a large majority of less well endowed universities and research organisations (in terms of funding and prestige), the main issue concerns less favourable framework conditions including a lack of reputation that hamper scientific leapfrogging through OTM or strategic recruitment of talent.

For several years, reputation is measured and included in academic rankings. Various rankings are often used (or marketed) as tools for providing guidance for informed choices. The available rankings suggest an objective truth of the standing of universities, to which is referred to in various recruitment decisions. A highly reputed institution benefits from an oversupply of prospective talented students, Ph.D.

graduates, postdocs etc. Stenstrom et al (2013) have shown that the reputation of the department of a Ph.D. graduate is the most important predictor for further career prospects. When two graduates with similar performance apply for a position, it is the reputation of the department, not the university that makes the difference for recruitment.

2.3.5 Alternative careers in the private sector

Researchers are highly qualified professionals, often with an advanced degree (Ph.D.). They often not only work in the public but also in the private sector. In the EU about 55% of researchers are working in the public sector but in several EU countries, the shares of researchers in the private sector is higher than in the public sector (e.g., Austria, the Netherlands, Sweden, Ireland, Denmark, Germany). The share of Ph.D. holders (ISCED 6 qualification) dominates in the education sector with an average of 65% of FTE researchers in 2010. In some countries, high shares are also found in the public research sector (e.g. Bulgaria (60%) and Slovenia (50%)), possibly due to the heritage of the strong system of Academies, which are traditionally classified as public sector research. While the private sector employs large shares of researchers, it employs a relatively low share of Ph.D. holders with 10% (Eurostat).

Thus the majority of jobs for Ph.D. holders are by and large in research and education in the higher education sector. Academia however offers less and less open-ended and more and more short fixed-term contracts. In Germany and the UK, the two largest countries in terms of academic employment, the share of open-ended contracts in the higher education system is 17% (2010/2011)[15], providing a small share of top-positions. In Austria, a more medium-sized research system, permanent and full-time employment is basically limited to the share of professors while the academic personnel are working part-time (32.500 head count scientific personnel is reduced to 18.100 full time equivalents, while the 2.309 HC professors are 2.236 FTEs in 2011) (Statistik Austria 2013). Ten years ago, the share of permanent positions in Germany was ten percentage-points higher. The indicator is used in Germany as "indicating the professional perspectives for young academics in German higher education institutions" (Statistisches Bundesamt 2013). Given the decreases in permanent positions and the growing share of non-permanent academic research personnel, obtaining a permanent position in academia is a challenge. On the other hand, the private sector offers to researchers permanent positions as well as competitive salaries, thus becoming a more and more attractive employer.

In interviews, Irish and Estonian technical HEIs confirmed that retaining talent is difficult and the competition with the private sector, which offers more attractive remuneration packages and other advantages, is high.

Restrictive recruitment policies in the public sector – be it due to financial restrictions or the need to decrease public-sector employment as well as open-ended employment contracts are factors influencing the decision of researchers to look for a position in the private sector. Given that in the private sector internal recruitment practices and referrals are common in particular for entry-level positions (see Box 7) it is worth noticing that neither prospective researchers nor other types of candidates accept these structural recruitment features without complaining.

2.3.6 Researchers careers in academia

Reaching this top position in academia is organised differently in the EU countries but at the same time, the organisational models are becoming more blurred. The UK has been largely known for its tenure-track system while continental Europe has been

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[15] Vitae (2013): What do researchers do? Early career progression of doctoral graduates; Statistisches Bundesamt: Hochschulen auf einen Blick 2013

known for a different type of academic reward, mostly known as habilitation.[16] The main difference in terms of recruitment is that under the tenure-track system the most decisive recruitment occurs at entry-level while within the other system, linear progress is not inherent and thus entry to a number of different positions (typically and similar to the differentiated ranks of academic jobs in the tenure-track system) can happen throughout the career of a researcher. At the top of both systems is the permanent (tenure) position, which in several countries is equal to a civil servant status.

Whether linear (starting as a lecturer or assistant professor, via associate professor, to full professor) or non-linear careers, in both systems, a number of fixed-term positions exist, often with a strict functional cause. Lecturer, reader, adjunct professors are positions mostly filled with fixed-term contracted personnel, often with sole teaching functions.

Tenure track systems show similarities with internal labour markets (see Box 7), having highly competitive entries, a well-defined incentive structure through progress and remuneration schemes largely independent of the labour market, and a defined exit. This system has a built-in mechanism of internal hiring, however, this does not mean that the progress is entirely non-transparent. It is clearly open only to a specific group of internal researchers (those eligible for progressing) and progress is largely merit-based. However, if the criteria leading to progress, evaluation mechanisms and the final decision 'who is progressing' are not openly communicated within the eligible pool of researchers, this provides ample room for the perception of non-transparency and unfair treatment internally.

Box 2   OTM under the tenure-track system

OTM in tenure-track systems

In the **UK**, first appointments are in general with a Lecturer position. Once appointed to permanent lecturer, there are three ways for promotion:

1.   Applying for a vacant post

2.   Being nominated for promotion by the heads of department

3.   Applying for promotion under the internal career advancement system within the institution

Requirements for promotion are experience in teaching and research performance. Promotions depend largely on the financial constraints of the organisation. Academic appointments involve requests for references, which advocate the candidate (EUI, ACO UK profile). This recommendation of a mentor can be a decisive recruitment factor; the higher the prestige of the recommending mentors, the better for the candidate. In the USA, the number of required external letters is around five and higher at Ph.D. awarding institutions (Rothgeb and Burger, 2009). Mobility between UK universities (thus progression through job applications) is high. This is also true for the US; however, graduates from Ivy League universities have much better chances to find positions elsewhere than graduates of a less prestigious university to move to an Ivy League institution (EUI, ACO USA profile).

In the **Belgian Catholic University of Leuven** (Haeck and Verboven, 2012) that introduced tenure-track in the early 1990s, four ranks are offered (assistant professor,

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[16] Habilitation qualifications exist in France (*Habilitation à diriger des recherches*, HDR), Switzerland, Germany (Priv.-Doz. and/or Dr. habil.), Austria (Univ.-Doz., Priv.-Doz.), Denmark, Bulgaria, Poland (dr hab., doktor habilitowany), Portugal (Agregação), Spain (acreditación), Romania (abilitare), Sweden and Finland (Docent or Doc.), Czech and Slovakia (Docent), Hungary, Latvia, (Dr. habil.), and Lithuania Slovenia (Habil. dr.). The system was abandoned in Belgium (Aggregatie voor het Hoger Onderwijs/Agrégation pour l'Enseignement Supérieur") in 1995. Italy has introduced the system (abilitazione scientifica nazionale) with the Gelmini Law.

associate professor (two ranks), and full professor. There are tenured and non-tenured positions, full-time as well as part-time. The government restricts the number of professors that can be hired relative to the number of employees (technical staff and Ph.D. students) with implications to hiring and promotion policies. Every year a university decides on the number of job openings and announces the maximum number of promotions per academic rank and per university group. Promotions are granted through an annual competition based on the criteria research, teaching, and management. Out of the total number of professors for the period 1972-2007 (about 2.700), only 18% were external hires, for the period 1991-2007 (about 2.300 persons), this share even dropped to 14%. Following the tenure track system, 90% of the hiring occurred for the first, assistant professor rank. Almost 70% of the professors are tenured.

Tenure-track career progression is also introduced in other countries, more known for the non-linear academic career system. The Finnish Aalto University established the system when it resulted from a merger (Herbert and Tienari, 2013), the **German Technical University Munich** announced tenure-track for up to 100 positions until 2020. External evaluation of the performance of the 'Assistant professor' will happen at a two-year interval. If all three evaluations have been positive, there is automatic progress to Associate professor level and tenure and the option to become Full professor.[17]

In the **US**, the tenure track system is discussed: if there is no positive evaluation following the Assistant professor level, there is basically only an exit option since finding an academic position somewhere else with the 'stigma' of not having passed the level is high. In the case of the TU Munich, a grace period of a one-year contract is given following negative evaluation.

For permanent positions, there is much less leeway. Permanent positions can be acquired either through the tenure-track system (positive evaluation after associate professorship can be rewarded with a tenured associate professor position), or by applying to tenured positions. Depending on the country, these positions are teaching positions (lecturer) or – predominantly - a mix of research and teaching positions (professors).

The recruitment process of the open-ended posts is typically more closely prescribed and tends to be more demanding on both employers (departments / faculties) and applicant's side. In most EU-MS detailed publication requirements for the post exist. The selection process is equally more complex, involving external and internal peer review.

The permanent position can be seen as the top of a career, providing research autonomy to the individual scientist and thus is only awarded to a small group of people. In many countries the age where this position can be achieved is around 40. Coming as a perk to this top position are a higher degree of administration and management functions – the more senior scientists are more and more responsible for securing third-party funding, for representing and marketing the university. When it comes to these management functions, the university (or public research organisation) may envisage strategic recruitment via executive search as a viable means to make sure that the right people will get the job.

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[17] The recruitment process for the various career positions is published in English and available from the university's website under
http://portal.mytum.de/kompass/personalwirtschaft/EN_TUM_TenureTrack_Statute

Box 3   Open ended-contracts

> Open-ended contracts – tenure – civil servants
>
> In a number of countries the status of professor is synonymous with civil servant status and a lifetime employment guarantee. Only grave misconduct may be the reason for ending the civil servant status and the employment. In the UK, the civil servant status was abandoned some 20 years ago. Here, one speaks about open-ended contracts, which are difficult but possible to terminate.
>
> **Austria:** The University Act 2002 regulates that employment beyond R3, i.e. both fixed-term (more than three years) and permanent professorships (i.e. R4) have to be announced publicly and internationally. Candidates have to succeed in an appointment procedure ("Berufungsverfahren") specified in the Act.
>
> **Germany**: Open-ended and civil servant status comes for the W2 and W3 (and the previous equivalents C3 and C4) positions within the public sector career stages. These positions need to be published according to the university laws by the Länder and formal application and appointment procedures apply. In general there is no progress from W2 to W3 within an organisation due to the 'Hausberufungsverbot', which is under scrutiny for the W1 – Juniorprofessor-type of positions that formally do not provide for a progression. In terms of function they are similar to the assistant professor type under the tenure-track system.
>
> **Romania**: Career advancement is subject to open competition, i.e. researchers need to compete with outsiders for the same position when applying for a promotion.
>
> **Slovakia/Czech Republic:** Researchers go through a process of periodical assessment (called attestation) where an attestation committee challenges one. The attestation takes place every 5 years and results in a re-evaluation of the qualification category (can be lowered, remain the same or improved).
>
> **Ireland:** the Irish tenured position system does allow dismissing somebody if a person is not performing at the expected level.

3. Derogations from OTM principles

There are in particular two different avenues public research organisations apply in derogating from standard OTM practices. Most hiring activities concern internal personnel: if fixed-term contracts are ending or when it comes to negotiations with personnel that otherwise would leave, new contracts are established. The other one is strategic recruitment, which seems to be rising in practice, particularly in organisations that strive for excellence, have administrative and financial autonomy and see strategic recruitment as a more successful means when hiring new personnel.

3.1.1 Strategic recruitment

While open, transparent and merit-based recruitment is the main subject of the impact assessment, another form of recruitment is gaining popularity: strategic recruitment. Where it is applied, it is most often linked to funding and excellence aspects. Strategic recruitment can be used to fill in vacancies with pre-identified and selected candidates. In the UK, strategic recruitment is often linked to the most recent publication history of researchers. In our interviews, Finnish universities mentioned that strategic recruitment is more efficient than open recruitment, in particular when it comes to excellence. This is confirmed by leading Austrian, Swiss, and German universities where pro-active communication with targeted researchers can lead to shortened recruitment procedures. The Technical University Munich for example aims to find the right people for strategic research fields to address quality and competition (Armbruster 2011).

With strategic recruitment, a somewhat second recruitment avenue is created that is limited to those organisations having the HR personnel capacities and administrative autonomy to organise such a flexible recruitment track. Strategic recruitment is a practice common and accepted in the private sector.

Is strategic recruitment compatible with OTM? While it is generally based on merit, it is however neither open nor transparent for anyone but the selected candidate(s). It may serve as a further means to increased competition and widening the intra-European academic divide between the haves and the have-nots.

Increasing pressure to attract competitive funding has been emphasized in countries like Germany and Sweden. The recruiting organisation needs to know very well the candidate and his or her experience. 'Cherry-picking' is often seen as a much more effective way to recruit talented researchers – considering also the high costs of consistently keeping open processes.

Strategic recruitment can also be an instrument to gender mainstreaming. Fiscal policies in Austria and Germany are in place to incentivise universities to hire female professors (fFORTE excellentia since 2005 in Austria, Professorinnen-Programm since 2007 in Germany). These programmes (as well as other specific programmes directed towards young researchers for example) are discriminating in nature, and may be considered unlawful in other countries. Based on national or regional (if applicable) equal opportunity law, many organisations have an active gender or equality policy, which provides the basis for positive action. This is leading to a 'positive action programme' of advertising that for example invites specific underrepresented groups at the workplace – such as women.

3.1.2 Redeployment practices

Internal recruitment is often used as a means to redeploy or retain talent. Universities and public research organisations see themselves in general as responsible employers and thus HR management, including securing jobs and providing a career development does not compromise the need to attract meriting researchers.

Many research organisations will have a clear, or sometimes less clear, policy for redeployment of staff. This tends to be internal policy and details may not be communicated to the outside. Several UK universities for example – which tend to provide their recruitment policies on their websites – include the notion of redeployment. The obvious reasons for this policy is to "*ensure security and continuity of employment for as many of its staff (…) the requirement to redeploy staff may arise due to redundancies, organisational change and the non-renewal of fixed term contracts, as well as reasons connected to individual employees. The University wishes to retain the skills, knowledge and experience of its staff wherever possible and recognises the benefits of redeploying staff to ensure their continued career elsewhere in the University.*" (University of Kent).

Which position will be open for internal recruitment is subject to internal needs. In the German case, open access to vacant positions in the public sector is guaranteed by the constitutional law and the public sector employee laws of the Länder. In case of derogations, the personnel councils of the public sector organisations need to be involved. Therefore, as in the UK, redeployment is a matter of internal decision-making involving formal administrative decision-making bodies. The University of Birmingham for example has a system where specific graded posts (academic and support posts) are exclusively advertised internally to redeployment candidates, five working days prior to further advertising. The University of Hamburg has categorised third-party funded posts under a number of conditions as those, which can refrain from public advertisement. They still need to be agreed by the personnel council.

While there may be formal rules and agreements internally about which posts will be internally advertised, which do not need external advertisements, and which ones will follow strategic recruitment aspects, internal but in particular external transparency about these agreements may not be widely achieved.

While it serves internal transparency if strict criteria are established and pursued, specific, often spontaneous needs – in particular arising with third-party funded research jobs – may counteract established rules, or they are excluded from open procedures as in the above mentioned case of the University of Hamburg. This tendency has been confirmed by several interview partners (e.g., in Estonia, Austria, Greece). Given the growing shares of short-term, third party funded project-based employment in academia derogations from OTM principles seem rather the norm than the exception.

4. The scope and scale of OTM

Besides the perceptions on satisfaction about OTM from the MORE II study, information on OTM, its scale and occurrence is not systematically collected for the EU as a whole. We also lack sufficient information about the scope of the problem: for example, we do not know how many researchers by career stage are affected. We also do not have a thorough understanding about barriers. While the MORE II study addressed the researchers directly and thus obtained perceptions on OTM, underlying factors for a lack of OTM were not addressed in greater detail. The insights from the ERA public consultation provide some general findings, which are in line with other, more representative studies, but they also leave some questions unanswered. The Researchers Report (2012) identified specific institutional and cultural barriers on the country level (see Figure 3 below). Existing scattered examples cannot however be overly generalised, and they do not inform about intensities.

Figure 3   Barriers to open Recruitment as identified in 2011

Institutional barriers	**Cultural Barriers**
• Tendency to protect/favour internal candidates, claiming that they are 'the best possible' for the available position (e.g. Italy)	• Strong institutional sense of attachment of doctorate holders to their Alma Mater (e.g. Portugal)
• Recruitment in laboratories performing research related to the interests of the nation is considered as "sensitive" or "protected" and thus inimical to the hosting of foreign scientists (e.g. France)	• Knowledge of the national language (e.g. Estonia);
• Absence of a legal instrument to influence the autonomy of the institution (e.g. Czech Republic)	• Language and tradition of the host country (e.g. Greece)

Source: Technopolis Group

In order to further obtain information about hampering factors (e.g., legal, economic, cultural) on OTM, interviews in all EU-28 MS were conducted with representatives of universities and public sector organisations, as well as with ministries. The level of detail addressed the most pressing items. However, not all interview partners were able to provide information on all questions.[18] The following analysis is based on roughly 140 interviews conducted in all EU-28 Member States between June and September 2013, if not otherwise indicated.

4.1.1 Potential scale of OTM affected researchers

There is no data available telling how many positions are filled on average annually through internal or open recruitment.

In the interviews we asked how many research positions are filled on average annually. Almost none of the interviewees were able to provide exact figures at organisation level. This is often due to the fact that temporary research personnel moves from one contract to the next one and third party funded researchers does not count as statutory

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[18] The interview guideline is provided in ANNEX D

personnel and – depending on the accounting practice – may or may not be counted. Due to the patchy information obtained, we used Eurostat data.

A rough estimate can be based on the annual net increase of researchers in the public sector plus a certain natural fluctuation rate, which would need to take into account retirement, death and dismissal. The former net increase can be calculated using Eurostat data (Figure 4). The differences among Member States are large. The smallest MS have increased the numbers of their researchers in the past ten years on average by less than 100 persons (head count) annually. The largest net increases occurred in Germany and the UK with 7,200 and 6,400 head counts. For the EU-28, we calculate thus an annual net increase of 32,400 positions, which potentially could all be subject to open recruitment. Given however that head count figures tend to be decreased in full time equivalents by one third to one half, we can conclude that many of these positions are part-time, fixed-term contracts. Assuming that these fall largely under derogation rules, the net number of new full-time, permanent new positions for researchers may be much smaller. Fluctuation rates for the short-term personnel cannot be calculated. Many may exit following R1 or R2 positions; others will change contracts and positions along their career path.

Since there are no estimates about the natural fluctuation rate in research, an estimate was based on the share of researchers in the age groups 55-64 and +65 given that public sector employees benefit largely from lifetime employment. The breakdown by the older age categories is however not provided by all EU-MS and to a fuller extent only as of 2005. The average share of researchers in both age groups combined is 20% in both types of higher education and public research organisations. Given differing retirement ages in the MS, a straightforward linear depreciation cannot be made. Thus, a comparison of positive and negative average growth rates between 2006-2010 in the four groups (two organisation type times two age group) supports an average 1.7% natural fluctuation rate to use. Thus based on the average annual number of researchers between 2006-2010 in the EU-28 of 1.42m in both sectors, we estimate that about 24,000 researchers are subject to natural fluctuation.

These calculations, in particular those based on the extra, natural fluctuation are nonetheless very rough estimates. Country differences are marked and the availability of data varies greatly among the EU-28 countries.

Figure 4　　　Number of net added researchers (head counts)
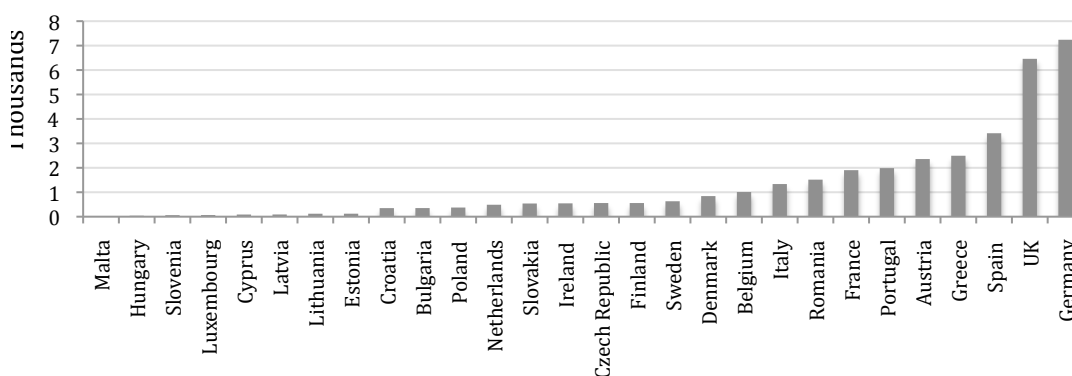
Data: Eurostat, Calculations: Technopolis,
Notes: Numbers are calculated as the median of the available time series (with d_Researcher=Researcher[_n]-Researcher[_n-1]; max duration: 2000-2010); EL, SE: limited data available

These calculations based on available data on researchers and thus the size of a research system suggest that there are more people affected in the large MS and a move from less open to more openness will benefit a larger number of researchers

than in a small MS with limited numbers of researchers and limited numbers of open positions.

According to one UK interviewee, about 20% of new contracts are openly advertised. Also German examples confirm that the majority of new contracts are prolongations for existing personnel.

4.1.2 Hiring from within

While there are reasons, pros and cons hiring internally there are only rough estimates on how many researchers are hired from within. The Careers of doctorate holders (CDH) survey 2006 and 2009 (OECD/Eurostat) include information on inter and intra-sectoral mobility. According to the survey, around one quarter of the doctorate holders in the 11 covered EU-MS have changed jobs within the past 10 years, ranging from a high of 61% in Poland to a low of 12.8% in Romania. The intra-sectoral mobility of the educational sector is in particular high for Belgium, where 43% have changed jobs (Auriol et al 2013). This does however not reveal, if the intra-sectoral mobility occurred within the same organisation since job changes can also happen within an organisation.

In order to obtain insights for the EU-28 countries, an analysis of the publication histories for a random sample of about 580 researchers from the interviewed EU-28 organisations was performed using two measurements. Through analysing the affiliation mentioned in the author's references in his or her scientific publications, one can observe if the person's publication history is systematically with one or more affiliations over the entire publication period. Exceptions can happen since researchers may have a sabbatical and credit the guest organisation. Returning to the home organisation and further publications under the home affiliation indicates continuity. The second analysis took only into account the first and the last publication. If they were two different affiliations, we considered the researcher as non-inbred, if there wasn't they were considered in-house. The disadvantage of the latter analysis concerns young researchers who are either in a R1/R2 position and thus having lower publication intensity – and most likely only one affiliation.

Table 2 Inbreeding tendencies measured by publication histories (1)

Country	Publication history	First-last publication
Austria	●	●
Belgium	●	● (grey)
Bulgaria	● (red)	●
Croatia	●	●
Cyprus	● (red)	●
Czech Republic	●	●
Denmark	● (grey)	● (grey)
Estonia	● (red)	● (red)
Finland	●	●
France	● (grey)	● (grey)
Germany	● (red)	● (grey)
Greece	●	● (red)
Hungary	● (grey)	● (red)
Ireland	●	●
Italy	● (grey)	●
Latvia	● (red)	●
Lithuania	●	●
Luxembourg	● (grey)	● (grey)
Malta	● (grey)	● (red)

Country	Publication history	First-last publication
Netherlands	●	●
Poland	●	●
Romania	●	●
Portugal	●	●
Slovakia	●	●
Slovenia	●	●
Spain	●	●
Sweden	●	●
UK	●	●

Data: Scopus; calculations: Technopolis Group
Note: red bubble– high inbreeding tendency, black bubble – mixed inbreeding/non-inbreeding tendency, light grey bubble– non-inbreeding tendency
(1) as measured by the sampled entire publication history of researchers employed by organisations in 2012 and by comparing the first and the last publications only.

The results of Table 2 correspond largely to the qualitative findings from the interviews (see Table 3). Countries with restricted financial autonomy tend to have more inbred researchers. Small countries like Luxembourg, but also the Netherlands and Denmark seem to have less pronounced inbreeding tendencies. In case of Luxembourg, the explanation is simple: Luxemburg's single university is a recent one and it awarded only in 2010 the first Ph.D.'s. Malta and Cyprus on the other hand tend to employ their few Ph.D. graduates. One could however argue that due to the limited number of academic institutions, this can be expected.

Table 3 Inbreeding tendencies by countries (based on interviews)

High inbreeding	Mixed inbreeding	Non-inbreeding
BG, CY, CZ, EE, EL, HU, LV, MT, PL, RO, SK	AT, BE, FI, HR, IT, LT, PT, SE, SL, ES	DE, DK, FR, UK, IE, LU, NL

Source: Technopolis Group

Box 4   Inbreeding on the decline in France

Inbreeding France

According to the calculations of the European Mathematical Society, the practice of inbreeding in France is declining. This is based on the Academic Mobility Index (AMI) calculated as the number of academic staff currently working in a given department with their highest academic degree from another university divided by the corresponding total number. The current average absolute level of inbreeding does not show cause for concern either - according at least to the current sample of French universities/research institutes.

year	2000	2002	2004	2006	2008	2010	2012
AMI average	0.682= [1044 / 1531]	0.707= [1274 / 1802]	0.738= [1287 / 1743]	0.732= [1462 / 1997]	0.785= [1687 / 2150]	0.830= [989 / 1191]	0.877= [291 / 332]

Source: The European Mathematical AMI-League Tables, available at: http://www.matematik.lu.se

4.1.3 Scope of researcher's perceptions on OTM

Is a lack of OTM a perceived problem everywhere? The MORE II survey differentiated recruitment into open, transparent and merit-based. Perceptions about OTM vary widely in the EU-28, as can be seen from Figure 5. Taking the perception if 'open positions are sufficiently publicly advertised', 77.5% agree to this in the UK, while only 30.6% agree in Italy (EU-average: 60%). When it comes to 'sufficiently transparent recruitment processes' a similar perception occurs with 80% agreement in the UK but only 46% in Italy (EU-average: 65%). In terms of merit based recruitment, the UK is

again leading with 83% agreeing, while the least agreement can be found in Bulgaria and Italy with 44% and 45% respectively (EU-average: 66%). Based on the perceptions of researchers, the discrepancies within the EU suggest that there is greater room for some countries in becoming more open and transparent (Italy, Croatia, Bulgaria, Slovenia etc.), while others have already achieved a high level such as the UK, Luxembourg, or Ireland.

In a few eastern EU MS, a higher share of researchers perceives that recruitment is transparent; a lower share thinks it is based on merit. This is contrary to the majority of countries where the merit-based recruitment principle tends to obtain the highest affirmation.

In order to obtain more detailed ideas about obstacles, the interviews for this IA provided further information on the practices at institutional level. They included detailed questions on the 'Application of the basic principles for open recruitment', which are laid down in the Code of Conduct for the recruitment of researchers.

The principles can be grouped under three main headings. The first one concerns the advertising process, including questions of advertising means and language, and on content information, corresponding to the 'openness'-level as addressed under MORE II. The second group concerns the selection process while third one concerns the ex-post process in terms of information (i.e., can feedback be obtained and an option to complain). This corresponds to the 'transparency' aspect. The most detailed is the group of advertisement and this is also the group with most variation and options.

Figure 5   Share of researchers satisfied with three aspects of OTM procedures
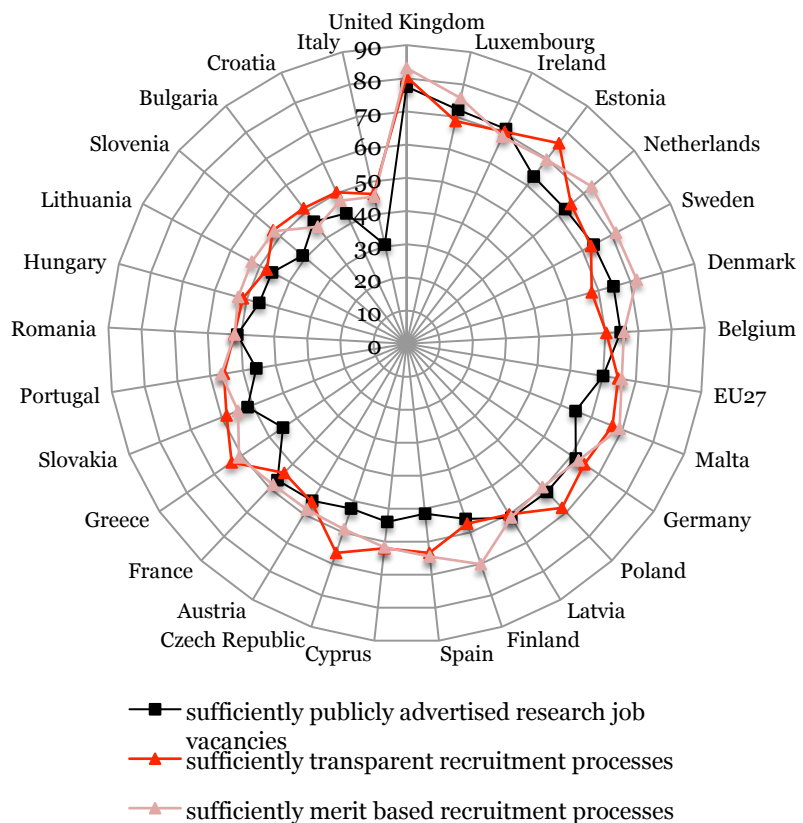
Data: MORE2 Higher Education Survey (2012)

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4.1.4 Scope of institutions' perceptions and application of OTM

Institutional level practices as perceived by interviewees are illustrated in Figure 6. The high share of open advertisements of jobs (87%) seems to be in contrast to the general perception of researchers (60% of the EU-average found the level of openness sufficient). The much lower publishing rate of 57% of jobs offered on Euraxess may explain these differences. Administrators at public research organisations and universities may be in line with required publication standards if jobs are published on their websites or in a more nationally frequented job portal or newspaper. Researchers may not find this practice very practical since 'their' potential job market is thus not readily transparent but requires individual searches through various websites.

While there is a difference in intensity of OTM practices across the EU28, there is equally variety at institutional level within the countries. Interviewees suggest that in several eastern but also western European countries, there is room for improvement given a low intensity of OTM. With a few exceptions (in the negative, low OTM in the Czech Republic in all interviewed organisations, in the positive, high level of OTM in the UK), most countries seem to have average intensities.

Figure 6   Application level of the basic principles for open recruitment

Value	Question
87%	Are all research vacancies publicly advertised?
57%	Do you publish on Euraxess?
59%	Are all vacancies published in national language and/or English?
81%	Are clear job descriptions included in all vacancy publications?
87%	Are the requirements for the position and selection criteria published in the vacancy announcement?
73%	Is there a minimum time period between vacancy publication and the deadline for application?
94%	Does your institution make use of selection panels for their recruitment processes?
79%	Are there clear rules for the composition of the selection panels?
72%	Do the selection panels include experts/peers from other institutions/countries?
61%	Is the composition of selection panel made public?
55%	Is the institution responsible to prove, when necessary, that the recruitment procedure was open, transparent and merit-based?
76%	Is feedback offered to applicants?
73%	Is there a complaint mechanism in place?

Source: Technopolis Group survey

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4.2 Hampering factors

Via the interviews, information came to light about a number of individual hampering practices. However, they do not necessarily occur systematically within a country or across the EU28 and thus it is difficult to speak about general hampering factors. There are two factors that were frequently mentioned, namely:

- Language

  Language is one of the main obstacles to OTM recruitment in universities. Specific language requirements are particularly expressed for positions with teaching responsibilities. There is however more flexibility in the case of research staff with fixed-term contracts on the basis of a specified purpose and in the case of research institutions which lack the teaching component.

  Positions advertised requiring 'native' or 'mother tongue' language capacities are a barrier to all non-native, non mother tongue researchers. This barrier could be lowered, for example if 'near native' language capacity is required or fluency needs to be achieved in a specific later point in time (already practiced in some HEIs for example in Belgium and Estonia).

- Barriers and delays in recruiting third nationals and returning nationals

  A frequently mentioned obstacle across units refers to the **recruitment of** other EU, but in particular to **third-country nationals**. In many cases (for example where the position is linked to civil servant position) EU citizenship is required. Employment legislation as well as immigration legislation[19] are regulations that can severely alienate the recruitment of third-country nationals. In several cases lengthy processes were noted coupled with additional delays due to the process of recognition of academic degrees - although the degree and frequency of occurrence varies. Difficulties still occur with the application of the 'Scientific Visa' directive[20] due to procedural rules that vary per country

  Explicit obstacles for the recruitment of non-(EU) nationals are delays linked to degree accreditation, lengthy administrative processes related to social security questions, and as such, a burden to the administrative staff in universities and public research institutions which are often not in a position to deal with the documents, often provided in various national languages. It is worth noting that administrative barriers affect EU nationals as well particularly the ones returning with degrees awarded from third-countries.

Box 5   Returning nationals administrative burden

Example of documents requested from a Spanish National with a US PhD degree:
- Official certificate of having met the requirements of the Programme for the Promotion, Incorporation and Intensification of Research Activities (the I3 Programme);

- Official validation of a US PhD degree and documents necessary to process it (all documents with the Apostille certification under the Hague Convention, the signature of the State Governor, the official translation from English into Spanish, and the official certified copies signed by the Spanish Consul in New York);

- Detailed descriptions of all courses followed while working towards the PhD;

- 700 pages of certificates and documents requested to certify the veracity of the curriculum vitae;

- The official accreditation from the National Agency for Quality Assessment and Accreditation (ANECA), an accreditation that can only be obtained if one has a previous link with a Spanish university (necessary to apply for a faculty job in a Spanish university)

Source: Farewell letter to the Spanish PM from a scientist (available at:
http://www.theguardian.com

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[19]Belgium in particular noted that work permits are easily obtained for academics, but not for young researchers.

[20] The Directive is currently under recast (under revision)

A number of practices were mentioned that can in fact be an obstacle. Often these practices either lead to favouring internal people, or provide a disincentive to foreign researchers.

Legal obstacles

Based on *legal* requirements, recruitment processes in particular for R3/R4 positions can be very long, posing a threat to a successful recruitment: in the meantime, a candidate may accept another offer (the case of Austria and Sweden). Malta, for example, remarked that a formal call for applications takes about two months, thus providing ample room for administrative burden. While research related regulation such as university laws have a direct impact on the researchers, other legal policies play a role such as visa requirements of non-EU nationals (the case of the Czech Republic), or tax regimes favouring national researchers (the case of Denmark).

Cultural obstacles

A mix of cultural and legal factors has shaped national research systems: the civil servant status of most professors was mentioned as a disincentive to internal and international mobility in Germany. Mobility of established researchers is also traditionally low in Romania and Poland. In these countries as well as in other countries such as Greece, Malta or Cyprus, the rule of internal progression (at least from R3 to R4 level) prevents mobility as well as hampers open recruitment. If these procedures are known, one may however speak about transparent processes. In this respect the MORE II survey concerning relatively high transparency compared to merit-based factors for the Eastern MS in particular, seem plausible.

The lack of a clear national strategy or concept for promoting OTM procedures was mentioned equally (the case of the Czech Republic) while in the case of Slovenia, the official policy to attract leading international researchers has not been translated with actions. On the contrary, at least under the current financial situation, the few open permanent positions are filled entirely internally with civil servant status researchers. The tendency to fill in open positions with incumbents has also been mentioned by other countries, which are hit by the financial crisis (Greece, Cyprus, Slovenia).

'Old school' attitudes prevail in many universities – this particularly the case when professors want to retain their talented students and keep them as doctoral students. While this non-transparent internal recruitment is not in line with OTM practices several interviewees mentioned this practice (Belgium, Austria and Hungary). The direct transfer of excellent graduates to Ph.D. positions is a habit often explained with less bureaucracy and administrative burden, and low to no recruitment costs.

Very particular country specific habits can also be mentioned as a barrier to OTM: in Latvia for example all reporting to state authorities needs to be done in Latvian; in Italy, nepotism is a practice that has helped numerous persons to obtain positions their formal qualification and merits would not allow for. In Romania, research-wise mediocre 'gate-keepers' that did not move abroad and now fill the leading positions often prevent the recruitment of skilled, external researchers.

A particular case seems to be Italy. While the country has the formal legal framework in place for OTM, real life recruitment practices have built a system based by and large on give and take (Perotti 2002). Only a radical change such as the enacting of the Gelmini law may have an effect and improve the conditions for recruitment based on merit. However, these changes (in particular of mind-sets) are unlikely to be achieved within a few years. Very often it needs a full generation shift to obtain sustained results. For example currently it is still difficult for qualified foreigners or "non-connected" Italians to get into certain positions because of the subjectivity in the interpretation of certain indicators.

More common in several countries are the limited language skills of the HR personnel preventing basically a higher employment level of foreign researchers. Since this lack often falls back to the academic selection team, complicating the recruitment process

it can lead easily to picking a simpler case such as from within the country (the case of Slovakia and Slovenia).

Economic obstacles

In terms of economic factors, several hampering practices have indeed a financial aspect, but they equally reflect cultural habits. The recognition of degrees – in particular foreign ones can be a costly and time-consuming procedure. Spanish interview partners mentioned that foreign researchers barely have a chance to have the documents ready for the application deadline. In Italy, the time and costs where equally mentioned as an obstacle.

Box 6   Degree Accreditation

> Given the sheer numbers of degree awarding institutions and various types of degrees also outside of Europe, a national accreditation system seems to be the most cost-effective means to ensure transparency and the validity of these degrees. If however a single university needs to check and verify the applicants' foreign degrees, this is a more time consuming task for the involved HR personnel that could be used differently, and it indeed extends the recruitment process for the single candidate rather unnecessarily. Since it is replicated at x-universities it prolongs the recruitment procedures where foreign (in general non-EU degrees) are involved, unnecessarily.

Several interview partners reasoned that 'open recruitment' results in higher costs compared to other forms. Their reasoning was namely based on the lack of HR capacities (i.e. processing applications namely) - which several smaller universities do not necessarily have and would imply either training or hiring additional personnel. A particular case, the Irish interviewees, concluded that despite the higher costs there are equally benefits.[21] Most other interviewees while positive regarding the impact OTM could have on performance indicators, did not assent to research benefits due to the lack of studies and empirical evidence on this issue.

Internal procedures

Within the current study, a number of responses suggest that a lack of transparency of internal decision-making processes is a barrier. This issue concerns the situation following the application, when the organisation is reviewing applications and inviting applicants. While openness of recruitment may and is often regulated at national or regional level, the recruitment procedure is in general left to the organisational level. The majority of hampering factors are subtle and even possible within the formal processes. Transparency can be impeded in many ways and the selection of a preferred candidate can be arranged for example by terminating the selection process during the holiday season (mentioned in a Spanish interview).

There may also be formal requirements for the documentation of recruitment processed such as mentioned in the literature in case of Sweden and the Netherlands (other countries or universities may have documentation duties as well), but all organisations seem to be in a position to select whomever the selection committee favours. What is really going on in these selection meetings remains in the dark - the official reply will seek to provide only limited details to avoid giving grounds for anti discrimination claims, as confirmed by several interview partners. Further to this, too much information may compromise those researchers having provided requested references.[22] Swedish interview partners confirmed that too much transparency is

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[21] In case of Ireland, the increased OTM procedures were coupled with the introduction of a central HR department. After initial discontent, the departments saw the benefits of the central unit.

[22] "*Referees will be asked to direct their comments on the individuals ability to meet these criteria. […] If the references obtained prove to be unsatisfactory, the offer of employment may be withdrawn. However, it is very likely that reasons will have to be provided to the applicant, which might then compromise the referee*" (University of Swansea, Guidelines for recruitment and selection (2010), p.17

counter effective: in Sweden, all official documents are public, thus also the names of applicants or the reports explaining the selection of one candidate versus the others. Many researchers however do not want for example their current employer to know that they apply elsewhere. Also the reference letters are made public – providing an uncomfortable situation for the referencing researchers, which lead to a situation where many researchers are not willing to provide reference letters.

One can conclude that the reaction to the wide publication obligation leads to rather clean, non-detailed reports. Thus, van den Brink's conclusion of these documents remaining 'paper tigers' seems to be supported more widely. Even if there are formal transparency requirements, this will not bring full transparency. The responses also suggest that taking the current external, measurable aspects of the Code of conduct for measuring the status quo or progress of OTM, may not be sufficient.

Excessive formal requirements

As noted elsewhere, publication of the post is one of the prerequisites of OTM. However, anecdotal qualitative evidence in particular in Polish and Croatian job adverts shows that not all published posts reflect OTM principles. We have randomly checked Euraxess ads and found in particular for Polish vacancies very particular requirements such as a request of the opinion of the head of the division the candidate is expected to work for, while others ask for the criminal record and health certificates. Polish universities also often ask to provide a statement that once the position is taken, it will be the one and only job while the post may be for part-time, non-permanent, or a limited 8-hour job. Again, in Poland and in Croatia we found many ads where national citizenship and/or native speaker level were required regardless of the type of job. The very detailed requirements are almost impossible to obtain for non-nationals, thus it seems obvious that the jobs are 'reserved' for incumbents or at least nationals. The mandatory requirement to publish all positions (N.B.: Poland has an exception for this clause for FP funded posts) seems to fulfil the openness criteria fully, but in terms of qualitative aspects of the ad, they are often discriminating outsiders.

4.3 Recruitment as a key factor

4.3.1 The role of recruitment in the public sector

Public sector organisations in research, i.e., universities and public research institutes can be characterised from an institutional perspective: they are complex structures regulated by norms. The recruitment practices in the EU MS evolved over decades. The implicit and explicit rules and norms governing the European public sector research enterprise are numerous and diverse. Varying recruitment practices have thus evolved and are either accepted or disputed. However, during the past decade in particular, the diverse landscape within Europe has changed towards a more unified model, following by and large an Anglo-Saxon market model.

This model based on merit-based funding has impacted the rest of Europe's governance and funding systems alike – albeit to varying degrees. The truly market oriented research system has identified recruitment as its key to success. The idea is that star researchers are likely to bring in project funding or - via their excellence status - influence budget allocations in favour of the recruiting organisation.[23] Star recruitment is however unlikely to be achieved with OTM practices. Instead strategic recruitment is favoured (The Guardian 2012, duz 2011, interviews).

Hiring and retaining talent from leaving to places that may offer more benefits and higher salaries is becoming a strategic management decision in wealthy universities.

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[23] *Academic recruitment: beware, predators at large*, The Guardian, 10/12/2012
http://www.theguardian.com/education/2012/dec/10/research-excellence-framework-recruitment-competition

The same seems be true for the majority of second-tier universities, possibly with the focus on how to retain talent under severe competition since the number of open-ended contracts and new openings are rather scarce. The situation thus parallels the one of the private sector - the economic reasoning (see Box 7 below) is apparent.

Box 7   Private sector hiring practices

Recruitment practices in the private sector

Labour, and thus human resources, is next to capital (machinery, other fixed investments etc.) the classical determining factor for productivity, profits and thus the success of a firm. This simple model is in general extended to technological factors but it is rarely argued that *ceteris paribus* the explanatory factor for differences in productivity comes from a differing human capital stock. It is thus also not much argued that human resources management (HRM) plays a substantial role for the economic success of firms. Companies have developed strategies to hire, maintain, and train personnel in order to obtain high profits. Unlike machinery, that can be purchased and installed anywhere, companies are often bound to the geographic availability of human capital. As a function of their incentive structure (e.g., overall image as an attractive employer, reputation, levels of wages and salaries, career options) and labour market condition (i.e., employment levels), employers may or may not resource personnel also from a rather distant location, including other countries.

In terms of recruitment, one can distinguish between **internal and external recruitments** and for the latter, **active and passive** forms.

Internal recruitment has several aims such as to minimise initial training costs, a synergetic use of knowledge of personnel, or the provision of career paths. Where fixed-term formal training positions are offered, internal recruitment offers a transfer to a permanent position.

A long-term internal recruitment planning is often linked to human resource development planning. Due to uncertainties about capability barriers and costs for career development, this is often limited to executive personnel.

External recruitment can be done actively or passively.

Passive forms are:

1. Issuing a notice and waiting for applications (a cheap form, functions on local labour markets and is equivalent to spontaneous applications).

2. Use of media, incl. announcements on company website or via employment portals (very wide range, risk of too wide and not enough focussed applications).

3. Job adverts in newspapers or specific journals (higher cost option, a wider or more specific labour market can be addressed depending on the choice of the medium).

Active forms are:

1. Direct recruitment at education level (e.g., through participating in placement meetings, offering of internships).

2. Use of employment offices (this form is often used under tense labour markets and for lower qualifications).

3. Use of intermediary such as a general placement firm, executive search firm, or headhunter (high costs but tends to be effective; tends to be used for highly qualified personnel demand).

4. Use of referrals (i.e., current employees refer to relatives or other people they know).

Companies are free to use one or a combination of forms. Recruitment decisions fall under the premise of **asymmetric information**; i.e., a company has less

information on the capabilities of the applicant than the applicant. The company, trying to maximise the expected present value of profits need to make choices in recruiting the right person and to maintain the person's productivity (e.g. through training, incentives (wage/salaries increases), career development etc.). Hiring of new personnel produces transaction costs on the company side, which works as incentive to search for the right candidate. If otherwise the hiring process and the discharge of labour would be for free, companies could try any promising candidate and fire if that candidate proved to be not suitable. Since this is not the case, companies have an **incentive to reduce the uncertainty**, under which they hire by obtaining information from the applicant to determine the applicant's productive capacity. Observable characteristics are for example sex, education, and employment histories.

Whether to favour internal or external recruitment is often bound by the company's human resource principles. The success of internal recruitment is influenced if not bound by human resources development, serving as a filter to observe growing capabilities of personnel.

The literature on recruitment draws from a plethora of individual empirical studies; in general, surveys or interviews with companies in a given sector and country, or comparable studies exist. Despite the extensive research, there are no stylized facts telling which way (or combination) works best. This may be due to the fact that every company's recruitment decision is bounded by a more or less complex labour market, employment regulations, as well as framework conditions such as the attractiveness and accessibility of a company location. Employers are likely to base their recruitment strategy on previous experience – what did not work will be excluded, what worked repeated. What works and does not work can vary between different function levels, types and by size of company, industry, and country.

In finding a job, a seminal work concluded that "*it's not what you know but who you know*" (Granovetter 1974), referrals are indeed treated in the literature extensively. Studies suggest that referrals work well for lower qualification levels, however, the higher the position and the more specific the searched profile is, the more formal, external recruitment processes are used.

Large, often multinational companies provide an *internal labour market* that is characterised by hierarchy, a difficult entry, internal promotion and stable labour conditions. According to the hiring process of a large US-owned multinational company, the common practise is "hiring out of universities and developing talent almost exclusively from within". Applicants have to go through two online tests, where the competences of the applicant are tested. There are two rounds of interviews, one behavioural-based, the second more skills based. Career progress is linked to progressive human resource development (training, geographical mobility within the company).

Limited numbers of higher career steps are a serious motivation-hampering factor if these positions are already filled and vacancies unlikely. Multinationals tend to recruit locals (at local conditions), in particular for lower skills requiring administrative and technical positions. Maintained management positions are filled with highly educated and experienced personnel, having progressed internally. In a European multinational in the chemical sector, higher positions are more likely to be filled using executive search intermediaries. However, in countries with employee participation such as Germany or France, internal recruitment practices are often pushed in order to promote (company-)insiders.

Formal regulations in favour of insiders (in the private and public sectors alike) can however be circumvented by the HR department simply by formulating requirements for the open position which will not be matched by available insiders. Thus, while there may be interviews with internal personnel, these are by and large pro forma if the HR manager and/or the management have already decided to favour an external candidate.

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4.3.2 Autonomy as an explanatory factor for OTM?

Previous research findings suggest that autonomy of universities is a factor explaining better research performance. Evidence from a comparison of US and European universities on the link between the autonomy of academic organisations and their performance suggests that universities with higher levels of staffing autonomy coupled with more reliance on competitive funding have better results in terms of publications and patenting activities (Aghion et al 2009). A 2011 report by the JRC also shows that a higher level of financial autonomy is linked to a more diversified funding structure for the universities, especially in countries where total institutional autonomy is present (de Dominicus et al. 2011).

The Autonomy Scorecard of the European University Association (EUA) report classifies four types of autonomy: organisational, financial, staffing and academic autonomy. Trends identified by the 2011 Scorecard report show that universities have been moving towards greater organisational and financial autonomy.[24] Academic autonomy has also been rated very high in all European countries surveyed. Staffing autonomy with regards to recruitment of personnel has been found to be high in most countries; only a few of them need approval for recruiting academic staff. In terms of staffing autonomy Estonia, the UK, the Czech Republic and Sweden are top ranking while the lowest levels were obtained by Greece (14%), France, Spain, Cyprus, and Italy. There is however only very limited autonomy in terms of setting salaries. Salaries are more strictly regulated in most systems, or they are more or less fixed through the public sector/civil servant status of scientific staff at universities or public research organisations (UAS 2011).

Our findings are in line with the European Autonomy Scorecard results, as around 70% of the 91 respondents believed their organisation was very autonomous or had total autonomy in terms of staffing decisions, but slightly less reported financing autonomy (see

Figure 7). At individual organisation level, one can notice inner country variations in the assessment of the autonomy levels and their effect on the openness of the recruitment system.

Figure 7   Perceptions of own staffing and financing autonomy levels
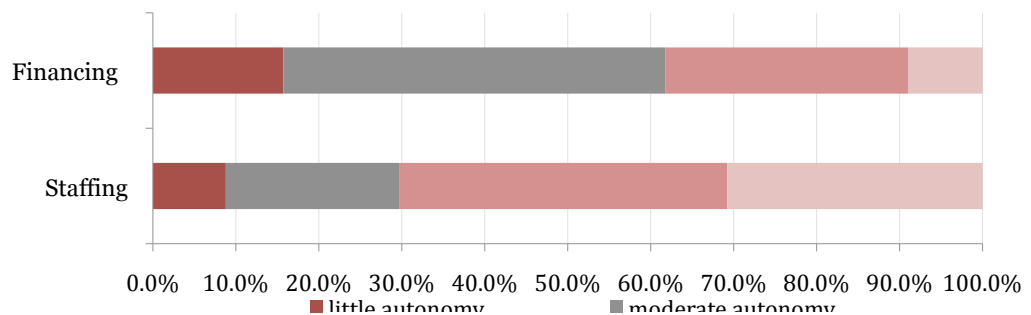
Source: Technopolis survey

There are several countries where stakeholders perceived a negative impact on OTM of autonomy levels such as Bulgaria, Croatia, Hungary, Poland, or Spain. The most critical impacts of autonomy are the one related to the staffing of the organisation, as well as on financing. There is however no clear, consistent positive or negative perception of autonomy within each country; organisation A may rate it positive while organisation B rate it negatively or neutral.

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[24] Note that the UAE Scorecard does not include data on Bulgaria, Croatia and Romania.

Figure 8   Impact of autonomy on the OTM features
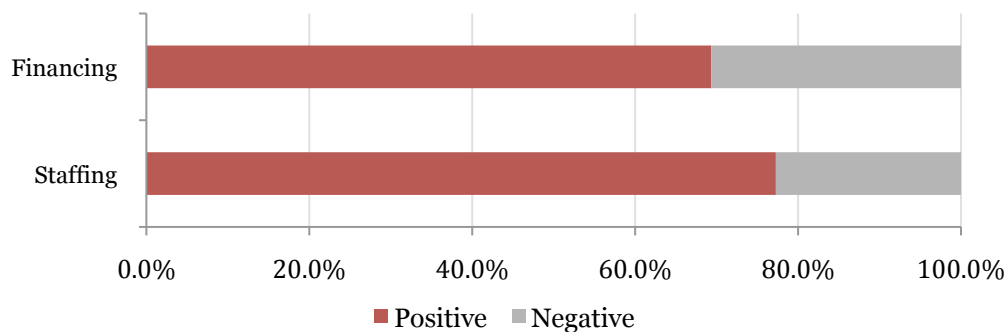
Source: Technopolis survey

The survey showed this mix of perceptions: about one third of the respondents did not provide a clear answer to this question. Within the group of organisations with low or moderate levels of financing autonomy, about 30% think that their autonomy level has a negative impact on the openness of the recruitment process while 38% see it has a positive impact on the application of OTM principles. A more consistent view can be seen within the group of autonomous organisations: all but one organisation perceived that the impact of financing or staffing autonomy had a positive effect in relation to OTM principles of the recruitment process.

The application of OTM principles is irrespective of high or low autonomy levels in terms of staffing or funding. As indicated by interviewees, formal regulations (national or EU-level) seem to be more decisive factors for the application of OTM practices rather than autonomy levels.

Figure 9   Perceived impact on OTM practices by level of autonomy
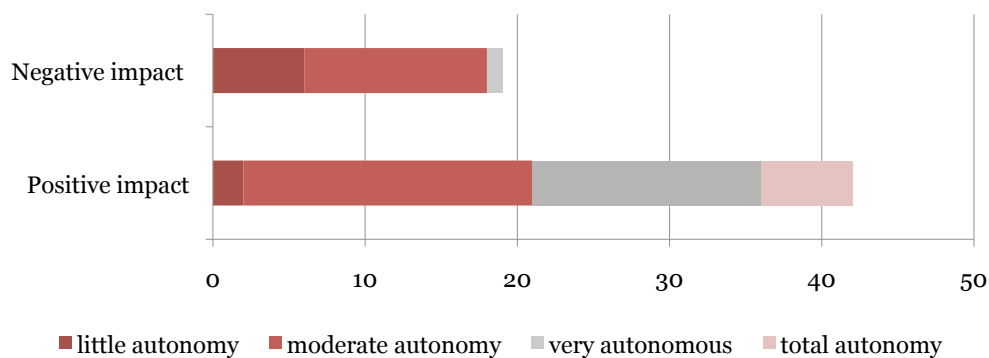
Source: Technopolis survey

4.3.3 Selection Criteria

In general the selection criteria vary from one position to the other. As shown in Table 4, the landscape of the importance of selection criteria varies from organisation to organisation. In general there are differences depending on the priorities of the recruiting organisation. One can note that previous scientific performance and international experience are considered key in recruiting researchers by most research organisations. They are thus likely to ask about a list of publications or the top publications, demonstration of 'connectedness' and other examples. In many cases, external recommendation letters are requested.

Table 4 Rating of selection criteria (1)

Merit factors Rating	Very important	Important	Moderately important	Of little importance	Unimpor-tant
Previous scientific performance	16	4	1		
International experience	13	10	5	5	
Recommendations of internal/external researchers	7	9	12	5	2
Equal access for women and men	7	3	5	4	6
Academic reputation of previous institution	6	6	7	4	1

Source: Technopolis survey
(1) Number of organisations having rated the criteria

While the organisations aim to recruit the best person for the job, personality is a factor that is taken into account. This is by and large a subjective factor but given equal formal performance measures, this 'soft' factor may make the difference. As interview partners from Sweden put it '*scientific output and pedagogical competence are the most important factors as required in the HE Ordinance. Besides those, other factors depend on the position and field of research. R3 & R4 are judged on merits, R1 & R2 on potential. Academic output is a requirement according to the HE Ordinance, but other factors may be taken into consideration as well*'.

4.4 Bottleneck to OTM: administration and HR management

OTM levels can be improved significantly in many countries. However, the development and introduction of new procedures, the training of personnel and organisation-wide dissemination activities are cost factors. Given that the development levels of the HR departments are heterogeneous[25], there are unequal investments likely: while the UK has adopted a clear managerial and systematic approach since several years which is diffused widely in UK universities.

Open and transparent recruitment that follows the principles of the Code of Conduct requires, at least for organisations who recruit a certain number of researchers per year, a well-organised team of human resource professionals in order to keep the transaction costs attached to recruitment under control. UK universities tend to have a central HRM department that is managing and overseeing the processes for all types of research grades and positions. This central model is not the predominant one in many other countries' universities with their faculty or department-level autonomous recruitment policies for most academic staff categories. The decentralised staffing at department/faculty level coupled with limited HR capacities at that level are factors hampering open recruitment simply because of capacity problems: if all positions are published on Euraxess and in English the potentially large number of applications may be a problem if all applications are checked in detail at department level. A more targeted publication of the position and/or central, professional HRM departments could remedy this issue as Irish and UK examples suggest.

Several UK universities with their centralised administration models have moved to an online recruitment process allowing to filter suitable candidates from the potential

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[25] See for example Nickel, S.; Ziegele. F. (2010): Karriereförderung im Wissenschaftsmanagement – nationale und international Modelle. Eine empirische Vergleichsstudie. Study by CHE, CHEPS and esmu for the BMBF.

masses of applications.[26] The UK model of the universities is following new public management practices to a degree that is not matched widely in other EU countries.

The quality and/or a limited size of the administration is also a barrier in particular for the recruitment of non-EU nationals. The administrative procedures for these researchers often require dealing documents in foreign languages causing delays and more work for the administration to verify them. If on the other hand non-EU degrees need to be provided certified and in national language as it is often the case in Spanish public organisations, the process may be quicker but more costly for the job-searching researcher.

In many countries a lack of managerial HR departments combined with a lack of transparent processes, the development and implementation of new or reinforced transparent implementation practices in these countries will require predominantly a change in mind-sets plus training costs. If an organisation invests and develops all this, but does not attract excellent researchers that may boost the research capacities and the prestige, these seem to be sunk costs for the organisation. However, OTM practices can be seen as part of the package to attract researchers. Thus being able to show transparency will be an important driver to the overall attractiveness of an organisation.

A good example of introducing OTM principles more widely can be reported from an Irish university. When open recruitment was first piloted and then expanded, there was a huge reluctance of public research institutions to run the process, which shared the view that the HR division was introducing additional administrative burden and getting into their way. Some still share this view but many have now seen the benefits of open recruitment. Moreover as a result of open publications, supervisors who are hiring had to become more selective and rigorous in their screening process.

4.5 Recap of the current situation

According to interviewees perceptions there are no 'significant' legal obstacles to open recruitment procedures – at least, there are no hard or soft laws in place preventing organisations from applying OTM principles. However, in practice, the principles of OTM are not always followed for each and every job offer and deviations from the Code of Conduct for researchers are common.

Most likely equally common are derogations for open recruitment. A UK university estimated that about 20% of all positions are openly advertised – the majority of recruitment concerns the extension of contracts, redeployment or contract renewal negotiations.

The details by country practices differ widely, they are included in the Annex of country overviews. The following table is a recap of deviations.

Table 5 Principles of open recruitment (1) and deviations

Principles	Deviations
Advertising	
Are all research vacancies publicly advertised?	Not all research positions are publicly advertised, however it is unknown how many new positions remain non-published externally (i.e. on organisation website, job portals, or Euraxess). In many cases, the lower R1 and R2 positions are only advertised internally or on the institution's website in order to obtain a manageable number of applications.
What are the means that you use to advertise? - Euraxess	In several countries established means for academic recruitment are favoured. Often these have extended their services to online job portals. Several organisations

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[26] The University of Swansea reports for its 412 vacancies published through their online system in 2012, that almost 10.000 applications were processed. See http://www.swan.ac.uk/personnel/recruitment/

Principles	Deviations
	expressed a reluctance to publish vacancies on Euraxess since it may attract large numbers of candidates, which may in turn require a lot of resources to deal with and filter. Several institutions prefer using focused publishing tools for vacancies. Most open positions are advertised through the organisation's websites.
Are all vacancies published in national language and/or English?	Vacancies advertised are in general done so in the national language or in English. However, not all positions are published in English. In many cases mother tongue other than English is required, rendering English-language advertisements as additional cost factor for no obvious benefit other than showing transparency.
Are clear job descriptions included in all vacancy publications?	Not all vacancy publications contain detailed job descriptions, in particular in printed publications. This is explained with the high costs for printed advertisements. Online (non-commercial) job offerings do mostly not fall under this constraint. Job descriptions posted on the organisation's website contain are in general clear.
Are the requirements for the position and selection criteria published in the vacancy announcement?	Selection criteria are not necessarily listed separately. They are often congruent with the requirements, which are in general listed.
Is there a minimum time period between vacancy publication and the deadline for application?	In general yes
Appraisal and Selection Panels	
Does your institution make use of selection panels for their recruitment processes?	This depends on the position. It is a general rule for R4 positions but not necessarily for junior positions.
Are there clear rules for the composition of the selection panels, i.e.: number and role of members, inclusion of experts from other (foreign) institutions, gender balance? - Insert yes/no	In general yes but there are exceptions (e.g. Spain, Finland, Hungary, Poland)
Do the selection panels include experts/peers from other institutions/countries?	This is the case rather exceptionally than the rule. The main reason against this principle is (travel) cost and complexity to organise the process in a timely way. In Italy international experts are included in the national accreditation of professors since Gelmini law (2010)
Is the composition of selection panel made public within the institution and/or wider (e.g. website)?	Selection panel composition is rarely made public wider than internally. In some online offers, the names of the selection committee is mentioned (this seems to be an exception rather than the rule)
Dissemination of results and appeals	
Is the institution responsible to prove, when necessary, that the recruitment procedure was open, transparent and merit-based?	No. This only applies to cases when it comes to an appeal and in general not OTM but discrimination aspects are the basis for appeals.
Is feedback offered to applicants?	Mixed. In many cases, feedback can be asked but is not necessarily provided automatically. French institutions do in general not offer any feedback. Feedback is however often not too telling since organisations are afraid to provide reasons for appeals.
Is there a complaint mechanism in place?	In the majority of countries, the right to appeal is legally possible (this concerns discrimination aspects). However, there is no formal central 'complaint mechanism' in any EU-MS that serves as ombudsman in terms of recruitment practices.

Source: Technopolis
(1) Note that the principles as broken down here are not identical with the general principles and requirements of the Code of Conduct (2005). They reflect the requirements of the Term of References of this IA study.

The largest variety of individual approaches can be seen in the advertisement of vacancies. This most likely reflects the individual situation of the organisations, departments, and individual positions. Organisations facing large numbers of applicants when publishing on Euraxess may need a strict semi-automatic pre-

selection – which may be given for online applications, or the position is more narrowly defined to prevent too many applications. Other organisations prefer more targeted publication means, which however implies a targeted readership. In this respect, the organisations face the same decisions as private companies (see Box 7).

The level of detail concerning the post varies according to position as well as publication means. Since advertisements in newspapers or journals are rather expensive, the size of the advertisement matters. Thus, HR departments point out that advertisements should be short in order to keep costs down. A certain balance between information content and size of the ad are of less concern when it comes to electronic ads, and to least concern when it is published on the organisation's website. Several ads in professional web-portals thus include short descriptions but include links to longer descriptions on the organisation's website (see for example economistjobs.com, academics.com). Highly informative job offers tend to include a description of the work place, the general work to be performed (research/teaching/other duties), as well as the required documentation, which indicates also the selection criteria. However, several ads on Euraxess for R3 positions require for example a specific citizenship, a country specific diploma (habilitation), or fluency in the language. Thus formally, several OTM criteria are fulfilled but nevertheless, the job offer includes barriers in terms of citizenship, degree, or language[27] that act as a formal barrier at least to international recruitment.

In terms of the appraisal and selection panels, there is a structural difference between juniors (R1/R2) and senior (R3/R4) positions. As mentioned already, formal appraisal and selection panels for every junior position is seen as a high cost factor and not practicable since it would require substantial resources from HR and research personnel, resulting in high opportunity costs for the latter. Panels are in general established for R4 positions. In a few countries, there are no clear rules about the composition of the panel whereas in the majority of countries, the panel composition is defined. Experts from other countries are not required as a governing rule with the exception of the new Italian university law (2010).[28]

Selection panels tend to be treated internally – beside Sweden where extensive publication requirements exist, the selection panel composition as well as verdicts remain internal documents.

The dissemination of results and the possibility to appeal are tightly linked. In order to avoid providing grounds for appeals, many organisations do not provide detailed feedback. Similarly, the panels are not required to prove that processes were open, transparent, and merit-based. The only reason for appeal and the need to respond to candidates' claims are provided with discrimination aspects. None of the interview partners pointed to a national formal complaint mechanism, such as an ombudsman for academic recruitment.

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[27] See for example Job ID 33895375 (requiring Croatian citizenship) or 33896283 where Polish language fluency is required as well as a medical test

[28] It is however not clear whether this requirement applies only to nationally run 'concorsi'. Since the implementation of the new law, no national concorsi for professors has taken place.

5. Intervention at European level – options and limitations

The Union is committed to "*strengthening its scientific and technological bases by achieving a European research area in which researchers, scientific knowledge and technology circulate freely (…)."* This is an overall objective of Article 179 TFEU, which is relevant to OTM inasmuch as it foresees all RTD activities of the Union encouraging and supporting the aims of free circulation of researchers.

The principle of proportionality is defined in Article 5 of the Treaty on European Union, and refers to the mechanism by which EU and MS institutions determine the boundaries of their authority in respect to a specific aim.[29]

The EU has the right to legislate in this area, in principle, although it has yet to do so in practice. With no precedent, however, the situation is not straightforward: the OTM recruitment of researchers encompasses matters to do with both research and employment, and the EU has distinct and different competences in these two arenas.

The EU and Member States have *shared competence* in the field of research, technological development and space, according to Article 4 of the Treaty on the Functioning of the EU (TFEU). However, contrary to the general rule on shared competence, paragraph 3 of article 4 states that the exercise of the EU's competence in this area *does not limit the competence of the Member States*, which may take action on their own account, jointly or severally, regardless of whether the EU has acted in the same field. EU action should not act as a limit on Member State competence.

In practical terms, this version of 'shared competence' would appear to require very much closer collaboration between EU and national levels in order to arrive at a universally acceptable EU-level programme of activities to promote, in this case, the harmonisation of national policies on OTM and otherwise accelerate the rate at which OTM becomes the norm for research posts at all grades across all EU member states.

Our baseline work suggests that the use of OTM recruitment procedures is widely variable across EU MS (and employers) and the rate of improvement is uneven and the gap between the most and least advanced employers is possibly widening, which suggests strongly that the desired end game – OTM as the universal default approach for all appointments – will not be achieved quickly with action only at the MS level. In that sense, there is a prima facie case (necessity) for EU level action.

Past EU initiatives – the Charter and Code – have had a positive impact in several MS, with the adoption of these voluntary codes being followed up with national initiatives to support and monitor the move to more progressive HR management, among other things. In that sense, EU level actions hold out the promise of contributing to an improvement in the rate of change in this particular area. Clearly, this kind of approach – coordination and exhortation – has its limits: the Charter and Code is pretty well universally adopted however the degree to which this has changed practice among employers is very much less clear. For example, when we look to the more prescriptive promotion of the Charter and Code, specifically through the Human Resources Strategy for Researchers, we find a skewed response with a number of member states absent.

Turning to the issue of employment, the EU has a somewhat different remit: Article 5 of the Treaty on the functioning of the European Union (TFEU) is more straightforward than Article 4 and states that the EU "shall take measures to ensure coordination of the employment policies of the Member States, in particular by defining guidelines for these policies." In that sense, the EU is expected to devise legislation that will ensure MS policies are aligned with the overarching goals of free

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[29] The articles (179-188) do not explicitly rule out the harmonisation of national laws.

movement of workers within the EU, non-discrimination, improved working conditions and several other important features. As a result, the EU developed various employment-related directives, which the majority of EU-MS has transposed into national law. We know from our programme of interviews with the HR directors of universities and research institutes, that EU legislation has led to quite profound changes in employment practice whether that is the equivalency of treatment of researchers appointed on fixed-term contracts or the provisions for parental leave.

For the most part, this employment legislation is sector-neutral and the employers of researchers are required to observe laws on for example, equal pay or equal treatment of the self-employer, in much the same way as any other sector. As such, any attempt to bring forward legislation about OTM recruitment must address the key tests (necessity, added value) across a very much broader set of constituencies, across both the public and private sectors, and covering all occupations.

On balance, while we consider there is a strong case for more determined EU action to promote the further take up of OTM approaches to researcher recruitment, the case for moving forward with a legislative proposal, under either Article 4 or Article 5, remains unclear and would need to be explored further and particularly in connection with the scale of the potential benefits of OTM.

Given the combined effects of shared competence and highly skewed practice across countries and employers, any ambition to introduce 'hard law' governing OTM will need careful consultation with MS to understand the level of support for this option. There are many bodies that are supportive of OTM however, and MS may be prepared to support a Soft Law approach, which will combine various declarations, codes of practice, support measures and other incentives in a singular but flexible package. This approach would permit Member States to move forward in slightly different ways and even at different speeds, and as such it is likely to be more effective in achieving the overarching policy objectives relating to OTM.

At the same time, adoption of soft law measures may encourage reluctant Member States to consider and eventually adopt policies and strategies. For example, the Commission has made extensive use of 'action programmes' to promote equality between women and men in the workplace, and the European Employment Strategy implemented through the open method of coordination combines soft law employment guidelines, which do not have legally binding effect, with the hard law in Article 148(2) TFEU. Equally, 'soft law' measures such as the non-legally binding Community Charter of the Fundamental Social Rights of Workers of 1989 have put pressure on the Commission to propose and on Member States to adopt directives, which might otherwise not have been contemplated.

5.1 Perceptions about a legal intervention

The interviews also addressed the question whether a further legal intervention was an option to rectify the current situation. The responses were in general negative to the idea. Interviewees from Bulgaria, Greece, Italy, Finland, Lithuania and Romania mentioned that they did not see a need for more legal intervention.

- In Italy, the new Gelmini law appears to be comprehensive and many decrees have been issued. Interviewees pointed out that there is no need for more legal intervention but rather a focus on implementing the new law and its provisions and procedures.

- The regulatory framework in Greece is considered quite detailed and comprehensive and, according to the interviewees, there is no further need for regulation. Some universities/institutes also mentioned the substantial administrative burden that is already legally imposed. One of the interviewees did mention the need to regulate the progression to a tenure track in a way to strengthen the accountability of researchers.

- In Bulgaria, interviewees did not consider the existing regulatory framework regarding the recruitment of researchers as restrictive or burdensome. At the same time, the interviewees noted that the research institutions barely use the leeway to introduce institution-specific measures and procedures for a more open and transparent recruitment process. They simply abide to the minimal requirements laid down in national law. Institutions use their autonomy mainly to specify or strengthen the eligibility criteria of researchers.

- In Finland, the idea of introducing legal interventions to guarantee OTM recruitment was perceived as unnecessary – given the move towards strategic recruitment and cherry picking, this is thought of as the opposite direction of where Finnish organisations are going. Yet, the ministry has guiding instruments, especially soft law, which are used to guide the universities to certain directions towards OTM.

The responses to the OTM survey carried out among the representatives of research organisations and academic institutions in the EU28 show that 46% believe that employment or immigration legislation are of little importance or mostly unimportant (see Table 6). There are, however, 24% of the respondents who consider legal obstacles as very important. Among them, the majority of organisation in countries such as Czech Republic, Denmark, Latvia, Romania, Slovenia and Spain noted the **administrative burden** created by the national framework conditions for **hiring non-EU nationals**, including the need to obtain a work permit and residency permit. Some respondents commented that the Scientific Visa still poses administrative burdens on their institution. Spanish universities also pointed out towards the burden of obtaining **accreditation for academic degrees** from abroad, which is costly for researchers.

Table 6 Perception of legal obstacles to OTM at organisation level

Perception of legal obstacles	Share (in %)	Countries
Unimportant	29	GR2, HUx2, IEx2, LT, LUx2, ES, SE
Of little importance	17	DE, IT, LV, NL, PT, RO
Moderately important	16	FI, LT, LU, RO, ESx2, SE
Important	14	CZ, IE, IT, LT, PT, SIx2
Very important	24	CZ, DKx2, DE, LV, RO, SK, SIx2, ES

Source: Technopolis survey

At the national level, the representatives of national ministries were asked about legal obstacles. In ten countries they believed that there are particular legal specifications that could be an impediment, but similarly to the responses received from the representatives at the level of research organisations, the obstacles are perceived mainly for the employment of non-EU researchers. In particular the need for obtaining work permits and residence permits were thought to pose administrative burdens on the institutions in Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, the Netherlands, Spain and Sweden. Other types of legal barriers were mentioned in the Netherlands, Sweden, and Finland. In the Netherlands, there is a limit to acquiring potential further temporary contracts for researchers. In Sweden, a potential obstacle was seen in the principle of open public access to official documents (see section 4.2). Further examples of how specific and diverse the legal requirements are for employing researchers, are given for Belgium and Denmark below.

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Box 8   Recruiting non-EU researchers

Example: Recruiting non-EU Researchers in Belgium

According to the Belgian Euraxess guide, non-EU researchers and guest lecturers who are coming to Belgium are in principle obliged to obtain a work permit type B. The company/university/institution is not obliged to verify whether other EU nationals would be suitable for this position. The process to obtain the work permit is largely similar as for regular employees. There exist however several exemptions from the obligation to apply for such a work permit for specific categories of researchers:

• Post-doctoral researchers (Article 2, 25° Royal Degree of 9 June 1999): Non-EU Post-doctoral researchers completing fundamental scientific research at a host university and enjoying a fellowship are exempted from the obligation to apply for a work permit. The university must notify the competent authority within one month of the student/researcher's arrival. The duration of this exemption is limited to a period of 3 years.

• Researchers who sign a host agreement (Article 2, 26° Royal degree of 9 June 1999): Non-EU researchers who are coming to Belgium in order to perform research at an acknowledged research institution are not obliged to apply for a work permit. The duration of the exemption is limited to the duration of the research project. In order to enjoy this exemption, the Non-EU national must sign a host agreement with the approved research institute and must declare his arrival in Belgium.

Example: Recruiting non-EU Researchers in Denmark

For the Danish labour market for researchers, there must be a particular reason why the research should be carried out by a non-EU foreigner. Normally, research work is considered to be so closely linked to the individual researcher that the general employment situation in Denmark is not decisive for whether or not a researcher can be granted a residence and work permit. The researcher must have a written job contract or job offer which specifies salary and employment conditions. These must correspond to Danish standards. Researchers on short-term stays may be exempt from the regulations. Researchers, scientists or lecturers to teach or give lectures can do so without a residence and work permit, provided the stay does not exceed three consecutive months, calculated from the day of arrival in Denmark. Citizens of a country with a visa requirement to enter Denmark, must obtain a visa valid for the entire stay before entering Denmark. For stays longer than three months, a residence and work permit covering the entire period, including the first three months is required, obtained prior to arriving in Denmark.

It is possible to be granted a residence permit for the purpose of seeking work, and subsequently working, in Denmark. A residence and work permit under the Greencard scheme is issued on the basis of an individual evaluation using a point system designed to assess the likelihood that the applicant will be able to find qualified work in Denmark. Persons granted a residence permit under the Greencard scheme do not need to obtain a work permit. A residence permit under the Greencard scheme gives the right to carry out paid or unpaid work. There is a special Greencard arrangement for higher education students. Nordic citizens are free to reside, study and work in Denmark. EU/EEA citizen or Swiss citizen seeking residence in Denmark based on the EU regulations on freedom of movement may be subject to special rules. Some tax regulations in particular act as barriers in relation to non-national researchers moving to Denmark.

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6. What would happen under a 'no policy change' scenario?

The baseline scenario represents the basis for comparing policy options. It represents the policy option PO1-Continue, the continuation of the current policy framework without any change, i.e. any new intervention.

The current policy intervention consists mainly in providing incentives (e.g., the HR Excellence logo), infrastructures (i.e., Euraxess), and a dialogue with the MS and organising (if necessary) expert groups or launching studies. All these activities are cost factors, financed or at least co-financed at EU-level. The no policy change scenario takes this current policy-level intervention into account.

Possibly due to the on-going public incentives, the IA study found that behaviour at universities and research institutes is changing gradually and it seems that this trend continues. At national as well as individual organisational policy levels, OTM is being addressed, albeit with different priority. While several organisations are addressing the issue proactively, others do not see an immediate need for further actions. With peer pressure, the wider adoption of OTM principles and accompanying measures, also the late-movers will gradually introduce changes. The path for the structural change will remain rather slow.

Table 7   Baseline

	PO1 – Continue
DESCRIPTION	In this scenario, the Commission Services will continue to • Promote the Charter and Code through ad hoc events • Co-finance Euraxess • Co-finance SGHRM as the lead pan-EU group promoting national action in this space
RATIONALE	This IA study has found: A small number of EU-MS where OTM is not even a work-in-progress

The baseline scenario is supported by a number of observations:

MS-level policies
Most MS already have in place soft or hard laws for the employment and recruitment of researchers with only a small minority of MS who do not.

According to the ERA-Law study (Technopolis, 2010) as well as the interviews conducted for this study, not all MS have specific regulations (soft or hard law) concerning the employment of researchers. While the great majority does (~82%) there is a minority group of five MS that does not report specific laws (Bulgaria, Ireland, Netherlands, Slovakia, Slovenia). However, while the majority of employment regulations may not be addressed to researchers, it affects them (e.g. temporary employment contract limitations such as in the Netherlands). Similarly soft or hard laws for the recruitment of researchers are largely implemented across MS with only 5 exceptions (Ireland, Latvia, Netherlands, Slovakia and Slovenia).[30]

EU policies
The great majority of the universities/research institutes was aware of the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers.

The European Charter for Researchers and Code of Conduct for the Recruitment of Researchers have been endorsed in 66% of the universities/research institutes interviewed, of which 12% are in the process of endorsing it. Moreover 16% of the

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[30] See section **Error! Reference source not found.** for more details.

universities/research institutes interviewed are HRS4R Acknowledged Institutions. Since there is a large bias by countries in terms of endorsement of the Charter as well as the HRS4R label, the sample may have been biased in favour of those institutions aware of the problem.

Principles of open recruitment

Our interviews found that all OTM principles were applied in a majority of cases (among our sample of interviewed institutions). The most widespread OTM principle was the 'use of selection panels [94%],' the least widespread was the 'proof of openness' [54%]. The applied processes vary significantly depending on the type of post and their formal and informal requirements and procedures. Moreover, differences exist between practices at universities and research institutes. For example in Finland vacancies are not always published in English in research institutes and do not always contain clear job descriptions. For universities on the contrary these principles apply.

Trends

According to the Commission's Recommendation of 2005[31] MS should endeavour to offer researchers sustainable career development systems at all career stages, regardless of their contractual situation and of the chosen R&D career path. Nevertheless we observe significant differences in the career path offered to researchers with fixed term contracts as opposed to researchers with permanent contracts.[32] According to the Vitae review of the implementation of the HR excellence in Research logo (Vitae 2013), more than 90% of the organisations had reviewed, or were in the process of reviewing, recruitment processes 46% of universities and research institutes said they had taken action to address career path discrepancies and another 14 were planning to. Moreover, 55% of universities and research institutes said they had increased the number of positions that were openly advertised and another 15% were in the process of working towards this. These figures are however not equally diffused throughout Europe due to a strong UK bias (61 vs. 51 similar organisations in Europe). The report also points out that the implementation of recruitment, employment contracts, management, recognition and reward is complex and so is the collection of evidence.

Expected results of continuing with the existing policy framework

We assume there will be an increasing use of open recruitment across the EU based on current trends. Approximately 62% of the universities/research institutes interviewed qualified their recruitment process as having moved towards a more open, transparent merit based process in the past ten years. Universities/research institutes reporting no change to their recruitment process include those who have applied OTM practices for many years.

Main costs associated with a more open and transparent approach to recruitment, as compared with a less open approach

Qualitative information obtained from interviews at universities and research institutes regarding the perceived costs associated with an open recruitment approach compared to a less open approach are:

- Publishing costs in (inter)national journals/newspapers;
- Costs for screening and assessing large quantities of applications;
- Costs to reimburse external experts in selection committees;
- Costs to reimburse invited candidates;

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[31] On the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers

[32] See**Error! Reference source not found.** for more details.

- Training costs of personnel towards a more managerial HR function;

- Opportunity costs of research personnel involved in selection panels.

These cost categories are included and estimated in greater detail in the cost-benefit-analysis (see chapter 7.2 and 0 Clearly, the degree or intensity of OTM practices vary according to the willingness to pay. While some organisations may opt for open recruitment of all positions, the selection processes and reimbursement policy for applicants may be rather differentiated.

Box 9   OTM Costs

OTM costs

Sweden: Interviewees mentioned that there are high costs involved with OTM recruitment, both in time and in money (Organisation A for example has lost applicants because of not being able to make an offer soon enough). Especially when publishing ads internationally there are high advertising costs, plus the selection process takes more time. Significant costs are also incurred when using experts. All those reasons have led to recruitments being less open in practice than in theory. E.g. ads are often directed/adapted to a specific candidate.

Finland: The interviewees implied that maximal openness and transparency in recruitment may result in thousands of applications, which cannot be sufficiently well handled and analysed, and as a consequence the best candidates may be missed. Here a few interviewees raised the quality vs. quantity dichotomy and argued that maximal openness in advertising the open positions may result in a large quantity of applications, but that this may not raise the quality of the candidates.

Italy: There was no reference to OTM being more costly than current practices. The expectation is that through more standardised and uniform procedures, the implementation costs would decrease over the long run. The Gelmini law is specifically aimed at OTM practices. Italian interviewees stated that implementing the provisions of the law is a normal part of their job.

Main benefits of a more open and transparent approach to recruitment
Broad political consensus on the importance of an OTM recruitment system exists among the EU-MS. This is reflected in the Researchers Report (2012) that refers to OTM's contribution to functioning research systems, acknowledging at the same time OTM's impact on:

1. scientific quality and productivity;

2. researchers' international mobility, attractiveness of research careers; and

3. equal access to job opportunities for women and men.

Moreover the Council's conclusions (2012) stress the necessity of OTM recruitment in realizing more attractive research careers, fostering mobility and ultimately research quality.

Anecdotal evidence pointing towards the role OTM recruitment procedures may play in recruiting top talent stem from the work of the Innovation Union Scoreboard and ERAWATCH. Those studies refer to the link between research excellence and open research systems that tend to promote the mobility of researchers more actively (Innovation Union Scoreboard, 2011; Fernandez-Zubieta and Guy, 2010). OTM recruitment practices as an integral part of open research systems are hence linked to the view that they broaden the scope of potential candidates and thus a broader pool of potentially excellent researchers.

OTM recruitment processes can be seen as an important cornerstone in the goal to achieve a labour market for researchers and to push forward the European research Area. As an individual aspect, it is however very difficult to measure its positive impacts. One can mention however cumulative causation as the main 'mechanism'

that induces positive changes. Within a package of measures to attract individuals to become researcher and to provide adequate working conditions, OTM is a means to attract (internationally) mobile researchers and hence increase the propensity of achieving research and education excellence. Institutions running a less OTM recruitment process may reach outcomes different from zero, but we assume that they could reach higher levels if they were to modify their existing procedures and be able to hire the 'best candidate' for the job. The same reasoning applies for researchers. It is hence assumed that the existence of a less OTM recruitment process precludes researchers from finding the best institution where they can apply their specific knowledge and expertise.

Empirical evidence quantifying the link between OTM recruitment and the aforementioned benefits on the institutional or individual level of researcher is scarce. Past studies focussing on inbreeding and thus the effects of internal recruitment provide ambiguous results. One of these studies concluded that inbreeding led to "15% less peer reviewed publications, 8% less patents and prototypes and 40% less exchange of information with external colleagues" (Horta et al 2010). Recently, a study found that international and domestic PhD students to be substitutable at the margin, in the sense of large reductions in enrolments of either group would likely lead to substantial drops in productivity in academic research if the more talented members of one group were to be replaced by the less talented members of the other (Stuen et al., 2012). A recent OECD equally pointed out the higher publication rates of mobile researchers (OECD 2013), thus supporting the notion that international mobility fosters the publication productivity of individual researchers. However, while most evidence focused on the merit in terms of publications of mobile, non-inbred researchers none of the available studies was able - or aimed - to provide a direct link to open and transparent recruitment practices.

7. Impacts of main policy options

7.1 Main policy options

Given the legal base and European Union competencies in these fields, we have devised five 'idealised' policy options (PO1 to PO5) in order to test the costs and benefits of the European Commission doing more or less or different in respect to OTM. The baseline scenario included the financing or at least co-financing activities of the EC. In the policy options, we remain with the funding at EU-level for coordination and promotion of OTM. If funding responsibilities would be delegated to MS level, it is possible that the overall costs increase due to the (then) necessarily fragmented activities. Without concerted coordination and motivation at the EU-level and in the absence of legal requirements, it is also questionable that all MS continue or reinforce (where necessary) OTM practices.

The five Policy Options are described below and schematised in Figure 10, to facilitate comparison:

PO1 – Continue with current activities. In this scenario, the Commission Services continue with current efforts to encourage and support the adoption of OTM. These comprise a number of important activities, including

- Cooperation with the Steering Group on Human Resources and Mobility (SGHRM), the committee of senior officials from across the EU member states that has the lead in implementing the European Partnership for Researchers. The SGHRM is mandated to promote, monitor and report on the implementation of the Partnership at EU and national levels. It does this through information exchange and peer learning, the agreement and definition of Community level actions and the development of common guidelines as a means by which to reinforce consistent implementation of activities of common interest. This includes researcher recruitment. SGHRM also has oversight of the activities of the Scientific Visa package and the Euraxess Jobs Portal

- Co-finance the Euraxess Jobs Portal, with the EU member states, through the EU RTD Framework Programme and Horizon 2020. Euraxess comprises an online service for employers to post their current researcher vacancies (in full in English) and researchers to search for those vacancies (free of charge). The multilingual site also provides a free-to-use EU-wide advice and assistance service for researcher employers and researchers, covering almost any topic from work permits to the recognition of qualifications to more practical information about locations (e.g. accommodation, childcare, schools)

- Promoting the Charter and Code more generally through general communications activities and also more bespoke support for conferences and events (financing, venues, speakers, promotion, etc.), including the recent "Researcher Careers & Mobility Conference" (Dublin 2013) or the "Raising Researchers' Voices – opinions on jobs, careers and rights" (Brussels, November 2013). These events are addressed to various stakeholders, including policy makers, intermediaries, employers, researcher representative organisations and researchers themselves

PO2 – Intensify efforts to encourage and support the adoption of OTM

In this scenario, the Commission Services fulfil PO1 and also substantially strengthen their policy focus and associated activities to promote the adoption of OTM. The additional activities are indicative, rather than definitive or exhaustive and are based on the IS teams interviews and a priori knowledge.

- Launch a marketing campaign to encourage further take-up of the Commission-sponsored HR Strategy for Researchers among those employers and countries that have made least progress in its roll out. The HRS4R includes 10 (0f 40) principles, or tests, relating to researcher recruitment (e.g. a definition of the standard an employer should aim for in judging the merit of different applicants within the selection process). The HRS4R is a voluntary initiative that supports individual employers go through a process of self-assessment, which should lead to improvements in performance albeit the scheme does not comprise an objective test of HR performance. Recent surveys by the EUA and Technopolis suggest that awareness of the HRS4R is still quite low among employers in many EU-MS, and while there are other factors that reduce its attractiveness, poor awareness must be diluting its wider effects.

- Related to the previous point, and based on the IA teams interviews, there is clearly a question in the minds of many employers about the costs and benefits of moving to OTM as the default recruitment process. It is generally accepted that it costs more than direct recruitment and is slower and more cumbersome to execute, in particular for fixed-term R1/R2 positions. Persuading more employers to prefer OTM to direct recruitment will be facilitated by good examples of successful implementation and the resulting longer-term benefits. The examples from Irish universities with their internal testing and subsequent broader introduction are certainly a good case. The development of a portfolio of case material, detailing the experiences of early adopters of open recruitment practices and the costs and benefits therein, posted on the Euraxess website perhaps, should help to make the case and would strengthen the arguments of HR professionals within the research base (as they are likely to be more naturally inclined to this approach for reasons to do with greater transparency and improved risk management (e.g. increase confidence about institutional compliance with various anti-discrimination laws) and ensuring the employer recruits the right person for the job more often than not.

- Commission a selection of case studies of those countries where problems have been identified using a representative sample of HEIs among those willing to co-operate and properly equipped to provide the necessary quantifiable information – using contrasting methodologies – to demonstrate more fully and more robustly the social and economic benefits of OTM as compared with direct recruitment. This might be done through the EU RTD Framework Programme (H2020) or a

direct commission, but with the ambition of encouraging debate and providing national policy teams, funders and employers with more robust, EU-relevant empirical evidence about the nature and extent of the benefits. These studies provide the stylised facts used by national policy makers to rethink existing policies and measures, and will also feed into other ex ante impact assessments and business cases.

- In conjunction with increased communication and improved evidence, implementation would be facilitated in some degree by improved support for employers. The most cost effective solution may be for the Commission to fund preparation of several 'linked' implementation toolkits (model operating procedures, templates, etc.), which begin with the same fundamental principles but comprise distinct packages suited to particular types of employers (e.g. university, institute, research council, academy of science, etc.) and settings. The toolkit might also include elements of the previously mentioned case material and empirical evidence, for use by employers in the necessary internal communication campaigns. This may also incentivise individual academic recruiters that may resent these changes even while their schools or departments – and institutions – benefit in the longer term. Costs and the benefits may be experienced in different parts of the system and with different temporalities; it seems important that these different parts are addressed properly.

- Lastly, this IA was hampered by the paucity of data on current OTM recruitment practice, and where we do find good data we may see quite stark differences between the perceptions of employers and researchers. Persuading policy makers and employers of the need to do more OTM recruitment more often is contingent on showing people the nature and extent of the activity as well as trends over time. The Commission could launch a sample-based annual survey to monitor progress in the use of OTM recruitment across the EU, which could feed into a published scoreboard and support on-going evaluation of the effectiveness of the preceding measures. There are various examples of success in this regard, ranging from the Community Innovation Survey to the She Figures or the MORE researcher mobility studies, which are proving to be invaluable as a source of statistics and analytical reflections for politicians and policy analysts. It could also make use of new surveys (e.g. a continuation of the MORE survey), the HRS4R exercise and continued reporting by Member States via the SGHRM to gather quantitative and qualitative information in this area

PO3 – Develop 'soft' law to encourage and accelerate the move to OTM

In this scenario, the Commission Services fulfil PO2 and sharpen the policy focus further still through the development of what might be termed OTM soft law whereby various existing declarations, codes of conduct, guidelines, monitoring systems and certification measures (e.g. HRS4R) are brought together in a more obviously coherent and stronger package.

- Develop a toolkit including good-practice examples, templates, and other material useful for the HR practitioners as well as the management to demonstrate the feasibility and use of OTM procedures;

- Provide clear examples concerning the principles of the Code of Conduct. If possible provide more detailed recommendations according to researcher's differences (e.g., R1/R2 and R3/R4);

- Develop further and promote wider the HRS4R approach. Training of HR leading to a higher professional level could be an important aspect in several lagging countries;

- Improve the search function and user-friendliness of Euraxess to increase attractiveness of the portal;

- Develop a monitoring system that relies partly on self- and mutual assessments and uses relevant quantitative monitoring indicators. In this respect, just counting

the positions per country published on Euraxess is not a relevant indicator as such. Given that qualitative aspects are more important (such as non-discriminative requirements, job description, selection criteria), systematic and automated content-analysis would point out strengths and weaknesses of open positions. Other aspects may need to be tackled using dedicated surveys (such as MORE I and II), including more detailed questions on recruitment practices.

PO4 – Develop hard law to require MS to adopt OTM recruitment practices for all researchers in the public sector

In this scenario, the Commission Services fulfil PO2 and also implement new legislation to require all universities and research institutes to observe OR principles in full. For example:

- Devise and implement EU legislation to require all research / academic appointments are made through an OR process

- Devise opt out protections, whereby an appointment meets one or other of several fundamental exceptions (e.g. named in grant, protection from redundancy, strategic requirement)

- All open recruitment activities must satisfy the minimum standards set out as principles in the Charter and Code

PO5 – Do nothing / discontinue current activities

In this scenario, the Commission Services withdraw their support for EU or MS-level initiatives to promote the further diffusion of OTM recruitment principles and practice. This would release funds that might be redirected to other important ERA-related activities, such as career progression and researcher development, or simply 'used' as part of the necessary efficiencies / savings that will need to be made to cope with various financial and budgetary pressures.

7.1.1 Assessment of the options

When considered together, in terms of their relative effectiveness, the IA points to PO3 as the preferred option. We judge PO4 (Hard Law) to be unattractive to Member States in general (and possibly the benefits are not sufficient or sufficiently clear to meet the proportionality principle). PO5 is equally problematic, with evident and marked differences among member states as regards both the use of OTM and the related performance aspects (e.g. international mobility and scientific excellence). Moreover, while these is some progress evident in our statistics, the improvements are uneven and may even be indicative of a growing gap between the better and less good performers.

PO1 may be acceptable to Member States and a majority of employers, however, given the rate and direction of travel, we judge it to be insufficient as a response to the ERA objectives. PO2 is the obvious natural compromise, however, ahead of looking more closely at the broader costs and benefits, we judge the soft law approach to be the most coherent and robust response, for the following reasons

- The combination of exhortations, support measures and other incentives would not be legally binding on researcher employers, however the promotional weight of the portfolio of measures, as well as the implied synergies, ought to deliver a meaningful additional boost in take-up and greater potential impact in practice as compared with PO2. It would also provide a very much stronger marketing platform for both the Commission and OTM advocates in other member states and leading employers; it is a much more perceptible position and obvious demonstration of political intent

- This kind of soft law approach can impact on policy development and practice precisely by reason of its lack of legal effect, because it exercises an informal 'soft' influence through, for example, the effects of case material or demonstration projects, which showcase positive attributes and debunk various myths. Member

States and other actors may undertake voluntarily to do what they are less willing to do if legally obligated

7.2 Economic Impacts

The economic impacts of the policy options are discussed in terms of costs and benefits - partially obtained by the cost benefit analysis and partially on own assumptions of the implied costs by type of action. The description provided in Figure 10 includes various aspects. Column 2 summarises the actions taken, columns 3-5 describe the costs for the European Commission, national governments and universities/research institutes; while column 6 identifies the benefits.

The major cost related observations for universities/research institutes include:

- Costs of OTM procedures can vary significantly depending on the number of posts and applicants.

- The additional costs implied by the volume of applicants assuming the capacity to handle such added load is available are not significant (e.g. doubling the number of applicants leads to only marginal increases in costs see PO2 in Figure 10).

- The additional costs can however increase rapidly when coupled with e.g. hiring additional HR personnel, training of HR personnel and/or academics involved in recruitment processes, purchase of e-recruitment systems, set up of centralised support to recruitment from an HR department.

- Economies of scale play an important role in bringing down costs of OTM related investments. Defining therefore the critical point where costs per additional applicant decrease is important.

- Imposing the principles of OTM to all universities/research institutes increases costs of the least OTM oriented group by an average of ~2.5%. Whether such increased expenditures are significant or not depends on the financial situation of the university/research institute and budgetary prioritisation.

- The discussion on costs diverted in many interviews from OTM costs towards financial capacity of universities/research institutes either due to the crisis or due to more structural issues of the Economy and HE systems in particular. Some interviewees noted that until more competitive remuneration packages for research positions are possible to offer, the debate over the openness and transparency of the recruitment procedure is less of a priority in their particular country.

Figure 10   Policy options for open recruitment: Costs and Benefits

SCENARIOS	Composed by the following actions:	Incurring the following Costs-scenario assumptions EC costs:	Incurring the following Costs-scenario assumptions National costs:	Incurring the following Costs - scenario assumptions units costs:	Benefiting from – scenario assumptions unit benefits:
PO1 – Continue					
In this scenario, the Commission Services will continue current activities	1. Promote the Charter and Code through ad hoc events 2. Co-finance Euraxess 3. Co-finance SGHRM as the lead pan-EU group promoting national action in this space	• Costs for CEC • Costs to fund OR team in DG RTD, attending events, making presentations, briefing officials, etc • Euraxess core costs attributable to ambition to promote OR • Costs for OR-share of SGHRM secretariat	• No specific extra expenditures will be made by National Governments	• No specific extra expenditures will be made by Universities /Research Institutes	We assume there will be an increasing use of OR across EU based on current trends
PO2 – Intensify					
In this scenario, the Commission Services fulfils PO1 and intensifies their campaign to promote the adoption of OR practice	1. Launch a marketing campaign to encourage take-up of HR Excellence logo among those countries that have made least progress 2. Commission case material, detailing the experiences of early adopters of OR practices and the costs and benefits therein 3. Preparation of implementation toolkits (model operating procedures, templates, etc) 4. Commission a sample-based annual survey to monitor progress in the use of OR, which would feed into a published scoreboard and support ongoing evaluation of the effectiveness of the preceding measures	• Costs to fund OR team in DG RTD, attending events, making presentations, briefing officials, etc • Euraxess core costs attributable to ambition to promote OR • Costs for OR-share of SGHRM secretariat • Costs to fund OR studies and accompanying measures	• No specific extra expenditures will be made by National Governments	• Extra expenditures will be made by Universities /Research Institutes to accommodate the larger number of applicants	We assume this will produce a meaningful improvement in successful implementation but only a marginal increase in the rate of diffusion at the EU level
PO3 – Legislate soft					

SCENARIOS	Composed by the following actions:	Incurring the following Costs-scenario assumptions EC costs:	Incurring the following Costs-scenario assumptions National costs:	Incurring the following Costs - scenario assumptions units costs:	Benefiting from – scenario assumptions unit benefits:
In this scenario, the Commission Services fulfil PO2 and also implement new soft legislation to require all universities and research institutes to observe OR principles in full.	1. Devise and implement EU soft legislation to require all research / academic appointments to develop a recruitment policy 2. Devise and implement EU soft legislation to require all research / academic appointments to abide by the basic principles of open recruitment (i.e. advertising, appraisal and selection panels, dissemination of results and appeals) 3.Devise a monitoring and enforcement system at MS level	• Costs for CEC • Costs to fund OR team in DG RTD, attending events, making presentations, briefing officials, etc • Euraxess core costs attributable to ambition to promote OR • Costs for OR-share of SGHRM secretariat • Costs to fund OR studies and accompanying measures	• Costs putting in place a monitoring system for this legislation	• Expenditures made by Universities /Research Institutes drafting an OR policy • Expenditures of implementing the OR procedures as compared with direct appointments. These costs will be calculated by stage following the principles of OR	We assume this will narrow the gap between use of OR across the EU within a 3-5 year period
PO4 – Legislate hard					
In this scenario, the Commission Services fulfil PO2 and also implement new legislation to require all universities and research institutes to observe OR principles in full. For example:	1. Devise and implement EU legislation to require all research / academic appointments are made through an OR process 2. Devise opt out protections, whereby an appointment meets one or other of several fundamental exceptions (e.g. named in grant, protection from redundancy, strategic requirement) 3. All OR activities must satisfy the minimum standards set out as principles in the Charter and Code	• Costs for CEC • Costs to fund OR team in DG RTD, attending events, making presentations, briefing officials, etc • Euraxess core costs attributable to ambition to promote OR • Costs for OR-share of SGHRM secretariat • Costs to fund OR studies and accompanying measures • Costs to fund development, consultation and implementation of new directive and its supporting standards	• Costs of consultations dedicated to new/adapted legislation with the government • Costs putting in place a monitoring system for this legislation	• Expenditures made by Universities /Research Institutes drafting an OR policy according to legal requirements • Expenditures of implementing the OR procedures as compared with direct appointments. These costs will be calculated by stage following the principles of OR	We assume this will transform the use of OR across the EU within a 3-5 year period

PO5 – Do nothing					
In this scenario, the Commission Services withdraw their support for EU or MS-level initiatives to promote the further diffusion of OR principles					We assume this approach would see a flattening of current trends and possibly a reversal

Notes

The monetised policy options are illustrated in Figure 16 (found in Appendix C) in summarising the results by option and stakeholder. The figures are based on the analysis of the CBA, which roughly approximates the costs of recruitment on the basis of the primary data collected with the interviews and external data.

It should be noted that the assumptions made regarding the number of staff days by stage of the recruitment process rely on scenarios based on the available information as reported by the interviewees. They represent the range of minimum and maximum estimates of time allocated by stage of the recruitment process. The results discussed are based on the average time by stage scenario (see Figure 15)

Major cost related observations for the EC and National Governments:

- Costs increase together with the level and form of intervention. Naturally a legal imposition to put in place OTM represents the most costly option in terms of implementation costs by the MS and possibly monitoring costs by the EC.

With respect to the benefits and under the assumption that the more OTM oriented a university/research institute is, the less likely it is that inbreeding occurs allows us to implement the coefficients of the Horta study. Bearing in mind the indirect nature of the monetary benefit, we observe that shifting to more OTM procedures does yield a ~15% increase in monetary benefits – when shifting from least to medium OTM and medium to highly OTM oriented and ~ 32% - when shifting from least to highly OTM oriented (see also Annex B2).

The allocation of national versus EC cost are calculated assuming that arriving at a situation where a majority of member states (rather than only a few already there) can see a case to prioritise the increasing use of OTM - against the backdrop of very many other priorities and calls on their time and investment - will require a concerted programme of advocacy, evidence gathering, and support for peer learning.

The following measures could be accounted:

1. Support to create an (evolving) portfolio of case studies of positive impacts and successful implementation;

2. Creation of some additional support/network focused on sharing good practice, through seminars / visits / mentoring;

3. Creation of annual statistics to allow monitoring of progress/comparison of progress;

4. Creation of a series of model policies and procedures (common principles, different formats to cope with differing national contexts), which national agencies and individual employers may choose to adopt.

EU-MS may not be willing to initiate these measures themselves. Pushing forward may add substantial local costs and rigidities without much immediate benefit in return. Since this is a classic coordination/system failure, the EU would be in the position to take a conceptual, coordinating and financial lead.

Under these assumptions, the MS would not encounter major extra costs, since the EC was paying for such coordination and promotional support. However, representatives of various national agencies, intermediaries and leading employers would participate and as a result they will need to devote staff time and some funds to contribute and take value out of the EU activities, and implement actions subsequently nationally or locally that they would not otherwise have done. This is likely to entail a transfer of effort from one priority to another, or potentially extra costs of the MS, which are however not included in the scenarios.

PO 1 continue
We assume there will be an increasing use of OTM across the EU based on current trends for those universities/research institutes, which are currently in a transitory period, having hence made first steps towards more OTM procedures. Universities research institutes will not bear additional costs and the marginal costs of additional applicants will be negligible. No further costs will be born by national governments either while the EC will continue to invest to support its activities. Benefits will not translate into monetary terms in the short term especially in the case of countries with a less attractive HE system. Risks may arise due to some employers and MS being more receptive, while others hold to current practice and create greater disparities. They are however considered of low intensity.

PO 2 intensify

We assume this will produce a meaningful improvement in successful implementation but only a marginal increase in the rate of diffusion at the EU level. As a consequence universities/research institutes will receive more applicants, which will lead to higher costs due to the additional time to process applications. These costs are however marginal under the assumption that more invasive solutions to deal with the additional workload are not taken by universities/research institutes e.g. hiring additional HR personnel, training of HR personnel and/or academics involved in recruitment processes, purchase of e-recruitment systems, set up of centralised support to recruitment from an HR department. No further costs will be born by national governments either while the EC will invest to support its activities. Similarly as in PO1 benefits will not translate into monetary terms in the short term especially in the case of countries with a less attractive HE system. Risks entail the widening gap between the best and less good performers.

PO3 legislate soft

We assume soft legislation will narrow the gap between the use of OTM across the EU - within a minimum period of 3-5 years, producing a measurable increase in the rate of diffusion at the EU level especially for post-docs in the early years. However, in particular in those countries where new hiring is very limited the suggested time frame is optimistic. Universities and research institutes that choose to follow the suggestions stemming from the soft law will bear additional costs of drafting policies, and implementing the OTM principles (see PO2 above). Benefits will be grasped in terms of the potential for future qualitative or even monetisable benefits, a result of the performance of OTM hired researchers. Diversity and mobility of research groups and researchers is also expected to increase moderately. A risk is the uneven progress in a voluntary system, which may allow institutions to default.

PO4 legislate hard

We assume hard legislation will transform the use of OTM recruitment across the EU within a 3-5 year period. Similarly as in PO3 in those countries where new hiring is very limited the suggested time frame is optimistic. The costs of designing and enforcing hard legislation will be substantial for all stakeholders. The rate of diffusion will be measurable for post-docs as well as senior posts. Diversity and mobility of research groups and researchers is also expected to increase moderately. In this case too benefits will be grasped in terms of the potential for future qualitative or even monetisable benefits, a result of the performance of OTM hired researchers. Major risks include likely resistance among a proportion of EU MS to the proposed implementation of new legislation. There would also be risks relating to the feasibility of defining meaningful EU-level legislation that is open enough to cope with the complexity and diversity of national legal and institutional settings.

PO5 do nothing

We assume this approach would see a flattening of current trends. Turning off the policy support would be highly likely to see a reversal of progress in several EU MS and a reinforcement of the gap between the best and less good performers. This risk is considered of high intensity.

7.3 Social and environmental impacts

Social and environmental impacts are summarised in Figure 11.

Figure 11   Social & Environmental impacts

	PO1 – Continue	PO2 – Intensify	PO3 – Legislate Soft	PO4 – Legislate Hard	PO5 – Do nothing
Social	Medium Behaviour is changing gradually and looks likely to continue	Medium Behaviour is changing gradually and looks likely to continue	Medium Behaviour is changing gradually and looks likely to continue	High If new legislation were implemented and enforced, the transformation would be permanent	Low Behaviour is changing gradually at present, but may revert without continued encouragement
Environmental	Low There are no obvious major additional environmental costs or benefits associated with this option	Low to medium, Increasing OR as a share of all recruitment may increase the sector's carbon footprint with the implied increase in mobility of interviewed applicants and recruited researchers beyond a local proximity. The impact on HR costs and timeliness may cause employers to switch to virtual panels however, attenuating the environmental impact	Medium A substantial change in the approach to recruitment (more OTM) will inevitably worsen the sector's environmental footprint as a result of more geographically extensive applicant pools and the resultant increase in rail and air travel (e.g. 0.1 kg CO2 per additional passenger kilometre based on figures published by British Airways for its flights)		Low There are no obvious major additional environmental costs or benefits associated with this option

7.4 How do the options compare?

To compare the options the following criteria have been considered: Costs for universities/research institutes, costs for the EC; costs for national governments; benefits: social, as well as environmental costs. The conclusions drawn are the following:

- PO1 – is the baseline and while there is evident progress the rate of progress is insufficient
- PO2 – would be a useful albeit limited improvement in the rate of progress and in particular reduce the risk of a widening performance gap
- PO3 – would intensify rates of improvement assuming the monitoring and enforcement system can be effectively implemented. There are risks, such as the feasibility of MS to respond and institutions to use OTM as default, but these ought to be manageable

- PO4 – would transform the present situation, but can have very substantial political, economic costs depending on concrete requirements. The value of the delivered benefits would need to be much clearer and more robust evidence needed before MS would contemplate supporting.
- PO5 – would reduce the amounts spent so far by the European Commission but would be very likely to result in a reversal of progress and a widening of the performance gap between the best and least good (lagging) performers.

Based on this analysis, policy option 3 is the most promising strategy, assuming it will be properly developed, tested and implemented with financial support from the EU-level in its early years at least.

8. Good practices and room for improvements

Given that universities and public research organisations are in general free to organise recruitment processes on their own, regulation, soft law and good practice examples can steer developments in a certain direction. The following looks thus at two levels: first what are research and sciences policies doing to foster open, transparent and merit-based recruitment, and second, what do universities and public research units do in this respect.

Testing and learning

- The testing of open recruitment procedures on a pilot basis before formalisation for the whole university at UL proved to be a good way for this Irish university.

- Aalto University is currently carrying out an assessment on the use of recruitment channels, aiming to improve the quality of the recruitment channels (e.g. portals). The university is also undertaking a benchmarking on international recruitment portals, in order to improve the quality of Aalto's recruitment practises.

Transparency about open positions

- The Danish Research Council recommended in 2000 the formulation of job advertisements at the professor and associate professor level at universities and similar levels of government research institutes. Similarly, the university laws of the German states postulate the need for public advertisement of professor positions in national leading newspapers.

- Publication of posts in other languages than the national one is not common in non-English speaking countries. However, if the strategy of a university is to attract foreign researchers, it will publish its open positions in general in English.

- The initiative of optimising links between national platforms with EURAXESS has proved helpful (Galaxy in France, Nature Jobs) and increased the number of openly published vacancies. Moreover, some countries have also adopted national legislation to make it mandatory for publicly funded institutions to advertise their positions at EURAXESS Jobs (i.e. Poland, Croatia, Italy).

- A number of less popular places may also benefit from a pro-active process: the Finnish University of Oulu introduced a new international recruitment portal where applicants can register their CV's even if there is no position open at the time.

Transparency of HR processes

- A number of universities and public research universities provide detailed guidelines or descriptions about recruitment procedures on their websites. "Good practises of recruitment" or recruitment guidelines are not only providing guidance for the internal procedures, but they inform potential candidates.

- University College London has the most fulsome public disclosure of HR policies and procedures among UK institutions. Several other universities such as the universities of Strathclyde, Bristol, or Edinburgh do not have all of their policies and procedures in the public domain. The basic principles and headline policy are published on the institutional web site, possibly with an overview of the HR structures and staff committee too, but a lot of the most important procedural guidance is for internal use only and is only available through the institutional intranet. This level of disclosure is more typical in the UK, as compared with UCL.

- On this basis a more informed decision-making is possible and this can be seen as models for transparency. Several see these activities as part of their overall strategy to attract leading national and international researchers (mentioned for example by Czech, Spanish and Finnish organisations).

- A high level of transparency is achieved if the organisation provides information about internal and external recruitment practices. There are good examples (e.g. the universities of Kent or Birmingham in the UK, the German University Hamburg), where information on redeployment (i.e., the UK term) or exemptions for open recruitment is listed by grades/types of contracts.

- The presumption for both researchers and academic posts that any vacancy would be advertised even where there are self-evidently very strong candidates internally. Since it is critical to find the best person for the job and with a rapidly expanding HE and research community globally, it cannot be presumed that the right candidate is known already. This view is shared across the units interviewed in the UK.

- The German 'Hausberufungsverbot' (literally 'ban to appoint internally') is a very strong self-imposed soft law. According to this rule researchers having completed their Ph.D. in university A need to be employed by an institution B before they can be appointed professor at institution A. The same applies to progression of professorships: a W2 professor will not be appointed to a W3 category position within the same university but for very specific circumstances. This principle ensures at least a one-time institutional mobility among the public sector researchers but it is under review for tenure track progression models.

- Selection panels are of core significance. A Finnish university has rules regarding panel formations. They are the strictest in the recruitment of professors (R4) where for example outside experts are involved. For post-docs (R2) and senior researchers (R3), the panel consists of the head of the department or his/her representative, a tenure track or a professor of practise who is on a terminable contract or a senior university lecturer, a student representative and a representative of the HR department. Selection panels/working groups are constantly educated on questions of equality.

- The fact that feedback is provided to all applicants can be seen as a good practice. In Slovakia, the results are given to all applicants within 10 days after the termination of the recruitment process. Results are in the form of a ranked list based on received number of votes by the committee members.

Fostering the knowhow of recruiters

- The 'effective interviewer' course for staff that act as interviewers in selection panels at UCD and Tyndall in Ireland are seen as effective means.

- In many countries, a centralised HR department does not exist. Instead, the departments manage the recruitments processes autonomously. A shift of this practice was done in Ireland with the introduction of an e-recruitment system and a centralised support to recruitment from the HR department (for example at DIT).

- Since HR departments are in particular concerned when it comes to the employment contracts, social security issues and dealing with this in often

unknown languages can be a local barrier to recruitment practices of non-nationals. The document 'Recommended Process for hiring Researchers from Third Countries' of the Czech Mobility Centre is an example addressed at the employing organisation.

- Recruitment and HR policies are now subjects of the performance contracts which allocate General University Funds between the Ministry and each university. Thus HR is made a core issue of debate and contracts (Austria).

Keeping costs low

- Interviews in particular with foreign researchers are costly. Thus, the introduction of "virtual interviewing procedures" in Italy can be seen as a good example. The process proceeds in the following steps: 1) Internet application form—anonymous procedure; 2) short list; 3) Interview by Skype undertaken by a board that guarantees its plurality; 4) standard evaluation procedure using numerical indicators, monitored by the board. Another improvement could be requiring universities to publish more detailed TOR and selection criteria.

In many countries good practices on their way to more transparent recruitment practices were mentioned by the interviewees or identified within the assessment.

Signing the European Charter for Researchers and the Code of conduct for the recruitment of researchers is seen as a good basis for improving the career prospects of researchers. Individual institutions tend to mainstream their recruitment processes aligned with the principles. Coping strategies with possibly large numbers of applications can result in a two steps selection process such as remote assessment and followed by an assessment by a dedicated team/commission (following the model of the ERC, DFG etc.) or the e-screening possible with online standard applications.

The Irish universities are pushed for more open recruitment and are all trying to receive the HR excellence endorsement of their recruitment policies and working conditions for researchers via permission to use the HR Excellence in research logo.

While the EC initiatives of the Code of Conduct and the HR logo have certainly raised awareness and initiated change, individual organisations may also respond with changes following their own research and education strategies. Spreading good practices serves to inspire strategies. Finnish universities for example recognized that a more "standardised" recruitment processes and procedures across different universities and research institutes – similar to the UK model – is more efficient and provides more transparency and could also benefit in attracting researchers from abroad.

The interviewees noticed a differentiation between research and teaching activities needs to be made although doing both at the same time is often required. Both types of activities require very different set of skills and a differentiated knowledge of the local context. There is a need to think differently about the recruitment of researcher-teachers and recruitment of 'pure' researchers. However, the underlying OTM principles remain the same for any category of researcher.

Clearly, the level of awareness differs substantially as differs the degree of openness and the willingness and capability to make changes.

In a few countries, changes can only be implemented if required by law. This happened in Italy, where the formal legal framework and processes for OTM recruitment have been put in place as a result of very recent reforms.

The interviews have however shown that formal legal requirements can be circumvented. This happens across the EU whether it concerns summaries of selection committees in order to avoid possible legislative actions, the interpretation of selection criteria, or poaching of candidates prior to publication of posts, to name a few aspects where procedures can be perforated.

While many organisations provide information on some of their recruitment practices, this information is not always immediately found. Much information regarding open positions that is published online could often be organised in a user-friendly way. It is sometimes difficult to find the necessary details as university and research institute websites display a tremendous variety in their organisation, navigability, and the way information is presented.

More could be done with regard to informing candidates about the validity and equivalence of foreign academic degrees and professional qualifications, especially from non-EU countries.

There were no particular recommendations proffered for improving or increasing OTM in the UK. The Concordat and individual institutional strategies are in line with the European partnership for Researchers, and both comprise policies and practical measures to facilitate mobility of researchers across institutions, countries and sectors. Open labour markets and mobility are seen as being the best means by which to ensure early career researchers experience the best possible professional development and ensuring employers have the best person for the job at hand. Research is highly specialised and mobility is central to the efficient functioning of what is an open and dynamic system. Universities are fully autonomous in terms of HR management and staffing, and as a result the structure/organisation of the HR function does look a little different from one institution to another. Autonomy impacts positively on the openness of recruitment procedures, however, with pretty intense competition among institutions on (global) research excellence and the quality/suitability of staff appointments are generally seen as being critical to the realisation of these strategic objectives

8.1 Comprehensive options towards more OTM

As mentioned earlier, supporting OTM in its uptake would be a toolbox of good practice examples and templates individual institutions could use and adapt to their own needs. The underlying idea is that organisations develop a recruitment grid based on a self analysis. This analysis can take many facets into account such as the short or medium term financial situation, the legal framework and it certainly need to analyse current HR recruitment processes. Figure 12 for example offers a classification according to resources and reputation. An organisation low in resources and low in reputation may need a different hiring strategy than one where resources and reputation is high.

In all cases however, limited resources or limited reputation do not justify a predominant practice of internal, non-open hiring. In all cases, there may be groups of people or types of jobs which need to be published externally, need to undergo a strict selection procedure while for others this may not be necessary or feasible due to excessive actual costs or opportunity costs.

Figure 12   OTM irrespective of Resources or Reputation

High Resources
Low Reputation

- ▶ Advertise posts: Euraxess & other national/ international media
- ▶ Collect and assess applications: e-recruitment; training of HR personnel
- ▶ Disseminate results: standardised email (initial stages); personalised feedback only on request; online notification of successful candidate
- ▶ Mind-set: Low reputation does not justify inbreeding or internal recruitment for all positions

High Resources
High Reputation

- ▶ Advertise posts: Euraxess + other national/ international media
- ▶ Collect and assess applications: e-recruitment; training of HR personnel
- ▶ Disseminate results: standardised email (initial stages); personalised feedback only on request; online notification of successful candidate
- ▶ Mind-set: Reputation and intense competition in attracting top talent do not justify cherry picking or other forms of strategic recruitment for the majority of posts

R E S O U R C E S

R E P U T A T I O N

- ▶ Advertise posts: Euraxess (free translation tool)
- ▶ Collect and assess applications: manual review of applications; online Interviews. panel expert inclusion only for permanent staff
- ▶ Disseminate results: standardised e-mail; personalised feedback only on request; online notification of successful candidate
- ▶ Mind-set: limited resources & low reputation does not justify inbreeding or internal recruitment for all positions

- ▶ Advertise posts: Euraxess (free translation tool)
- ▶ Collect and assess applications:
- ▶ Disseminate results: standardised e-mail; personalised feedback only on request; online notification of successful candidate
- ▶ Mind-set: Low resources does not justify inbreeding or internal recruitment for all positions or distortion of career path through continuous temporary contracts

Low Resources
Low Reputation

Low Resources
High Reputation

Notes: Low/High Resources: limited/available funds for training personnel or for hiring additional personnel or for setting up an e-recruitment system; Low /High Reputation: limited/numerous applications by post; Most Common & Acceptable Derogations to OTM: EU projects; internal recruitment under transparent evaluation criteria; merit based and transparent cherry picking (low frequency, clear justification required); Advertise posts - Euraxess=represents minimum requirement, other national obligations for posting vacancies apply.

Academic recruitment has become in many countries of strategic importance. It is often linked to forward-looking planning and adapted to these visions or strategies. If an organisation aims to serve the local private sector, or aims to become a leader in a specific research field, or is aiming to be among the leading research organisations; if it can offer permanent positions or only fixed-term contracts – all these aims and framework conditions require the development of different recruitment strategies and hence, open and transparent recruitment processes in order to broaden the pool of suitable candidates.

What seems necessary at institutional level and would enhance the external transparency to a wide extent, would be the development of a recruitment grid or recruitment manual, that could be available for example through the recruitment section in an organisation's website.

Figure 13 provides such a grid where open recruitment is the default principle, but circumstances and job groups are taken into account for deviations. Any organisation should be in the position to reflect its own situation and adapt such a grid. If developed at central level, one could expect that individual deviations would and not be tolerated and decrease. Such a grid is a first step towards a formalised recruitment guide. The latter provides certainty for individual recruitment processes. Very convincing and detailed guides were found from Swansea University. Recruitment and selection of staff is included in a detailed guideline (see http://www.swan.ac.uk/personnel/attraction/forstaff/). Online forms of the guide are equally an option (see for example University of Cardiff, http://www.cardiff.ac.uk/jobs/recruiter-information.html). Other universities may

have recruitment manuals too, but in some cases their access is restricted to internal personnel (e.g. University of Edinburgh). Such a core document or set of documents can benefit tremendously the recruitment process, in particular, if it is organised decentrally. Being accessible by external users may enhance perceptions of limited transparency immensely. We would thus recommend to collect some more examples and spread them for example during relevant EC and possibly MS conferences or dedicated workshops using testimonials.

A general recommendation from the European Commission to the Member States to support or incentivise the institutions towards achieving more external transparency would be appreciated by numerous researchers and may be an important step to foster the attractiveness of the research profession.

Figure 13   Recruitment options at micro-level

Open Transparent and Merit based Recruitment	Recruitment options - when most suitable and acceptable within the OTM framework	PROS	CONS
Open Recruitment is a competitive process that seeks a broad pool of qualified, diverse applicants and normally utilizes a search committee to screen, interview and identify a candidate for hire.	• Strongly advised/compulsory for management, full professors and other key longer term personnel • For full professors and permanent personnel, assuming OTM procedures were followed on entry, promotion on all phases may be granted on the basis of transparent performance based evaluation criteria	• Assures greatest access to available pool of qualified candidates • Allows greatest opportunity for interested parties to compete • Invigorates and brings new skills and perspectives to unit workforce • Provides an opportunity to address underutilization within the classification and/or job group • Recruiting the most qualified candidates is critical to campus succession planning	• Requires allocation of resources for outreach and advertising • Process can take several months
DEROGATIONS to Open Recruitment: The derogations described below can only fall under OTM recruitment when transparent and merit based.			
Internal Recruitment **Internal Recruitment is a** competitive process that normally utilizes a search committee to screen, interview and identify a candidate for hire. Advertising and outreach are limited to the organisation's community.	• Internal-recruitment may be used to fill positions pre-approved for internal-only recruitment • Gives priority to current employees (student, staff or academic) for consideration	• Allows all organisation's employees access to a promotional opportunity • Provides an opportunity to hire most qualified internal applicant • Reduces perceptions of inequity or unfairness that can result from reorganisations or non-recruitments	• Limits pool of applicants to organisation's employees – this impacts the diversity of the pool of applicants • Does not allow other qualified applicants to apply
Non-recruitment (**Limited** Appointment) **Non-Recruitment is a** non-competitive process in which the hiring manager identifies the candidate for hire in lieu of the position	• In special circumstances, Non-Recruitment can be used to fill limited (temporary) and by agreement appointments. It hence excludes cherry picking. Non-Recruitment	• Meets immediate needs • Provides an opportunity for current staff employee to augment per cent	• Does not provide for equal opportunity because pool is limited to those known by the hiring unit • Can result in perceptions of inequity

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Open Transparent and Merit based Recruitment	Recruitment options - when most suitable and acceptable within the OTM framework	PROS	CONS
being posted and advertised.	may be used if the position: – Will not exceed a limited number of hours, – Will not exceed 6 months in duration, and – Has a definite end date, and – The individual does not have a bank of limited appointment hours that would cause the appointment to convert to career status	time	because there is no competitive process • Short-term solution – i.e. if position becomes permanent, a career recruitment is necessary
Temporary Agency **A Temporary Agency** Employee may be used to fill a temporary assignment.	• Used to fill short-term employment needs (EU projects or any other projects requiring team composition at proposal stage, fill-in for absences, etc.). • It is inappropriate to utilize temporary services as a means of avoiding a limited employee's conversion to career status	• Provides an opportunity for off-campus individual to find employment at organisation	• Diversity of pool is not known • Cost of service includes administrative costs which do not go directly to the employee
Transfer Intra-Divisional **Transfer Without** Recruitment **is the** movement of an employee from one position to another, which is in a classification having the same salary range maximum, within the same unit or division. Inter-Divisional Transfer **Without Recruitment is** the movement of an employee from one position to another, which is in a classification having the same salary range maximum, from one division to another.	• Reasons for selecting transfer: – Alternative to layoff – Utilize an employee's skills in a more appropriate position. – Employee has specific skills qualifying them for another position.	• Meets immediate needs • Provides opportunity for staff	• Others may perceive inequity or unfairness in the selection of the individual for transfer, particularly if they feel that they would have been qualified for the position. • May result in another opening to be recruited, if the FTE is not transferred • Does not provide for equal employment opportunity • Not a competitive process
Reorganisation **Reorganisation can be** used to reassign the duties of the vacant position within a department.	• Appropriate when the reorganisation is legitimate because of change in work or funding. A reorganisation may result in the need for Classification Review for affected positions	• May offer internal promotional opportunity to existing qualified staff	• Others may perceive inequity or unfairness in the selection of the individual for assignment of new duties, particularly if they feel that they would have been qualified to assume those duties • Does not provide for equal employment opportunity
Student Employees **Student Employees** are recruited through the Career Centre.		• Diverse applicant pool • Helps students develop work skills and gain experience • Helps students fund their education	• Only available part time (students generally work less than 20 hours per week while school is in session)

(Rows under "Transfer", "Reorganisation" and "Student Employees" are grouped under the side heading "OTHER")

Source: University of California, Santa Cruz, adapted: Technopolis

9. Conclusions

Given that several policy papers already refer to a lack of OTM and its negative effects on the single European labour market for researchers without substantial empirical backing, we aimed to obtain further information to complement the perception-based sources by providing more details as well as calculating costs and monetizing benefits of introducing, strengthening or maintaining OTM processes in the EU-MS.

Using evidence from available sources critically and complementing those with our own analysis, which is based on about 140 interviews of recruitment professionals in university and public research organisations as well as relevant ministerial level interviews, we conclude the following:

- **Perceptions and expectations of OTM, both what it constitutes and what is lacking are not ubiquitously shared among all types of researchers**. There are clear differences along contract types (short-term vs permanent) and researcher stage (starting vs established researcher). Both tend to meet: short-term contracts are typical for starting researchers while permanent positions are assigned to experienced, senior researchers. This duality is most clearly established when it comes to legal requirements within recruitment practices, particularly including the levels of openness and transparency. While most countries have legal requirements concerning the recruitment for permanent positions – in many EU-MS this is linked to a civil servant position – procedures concerning short-term contracts are not clearly regulated at national or regional level but rather dealt with at institution level. While there are organisations that provide information about derogations and thus are transparent in their recruiting policies concerning redeployment or job publishing policies, a larger number of organisations may have procedures, but they may only be transparent internally. As a result much of the researcher's perception about a lack of OTM may be due to a bounded transparency, the result of information asymmetries between employers and candidates.

- The expected overall impact of OTM-related policy action on the single European labour market for researchers will be positive if more transparency is achieved. **Positive effects are more likely in those countries with a low level of OTM practice**. The majority of countries 'lagging behind' in this regard are eastern and southern European MS. The costs for achieving a higher application level of OTM recruitment practices are are absolute terms lower than in other MS. Several of these countries however suffer from the financial crisis and have consequently restricted their recruitments so that the immediate effect when introducing or widening OTM practices over the coming 2-3 years may not be as evident as expected given the low numbers of newly recruited altogether.

  Countries already applying OTM practices to a higher degree are in northern and western Europe. Leading in this respect is the UK, offering larger numbers of new research jobs. The UK being equally among the high cost salary countries has found a way to keep the administrative costs relatively low with a well organised central HR management style.

- In order to widen the implementation of OTM practices to the point that it is the norm for all institutions in all member states, there will need to be a change in mindset for many as regards appropriate recruitment standards and an expansion in the professional HR capacity of institutions. There is no compelling evidence to suggest that a legislative response would be the best strategy. Instead the impact assessment leads to a recommended approach built around positive incentives, showcasing benefits, developing generic toolkits and encouraging peer learning (and peer group pressure). Rather than hard law, we opt instead for a **reinforced and coherent HRS4R strategy** that builds on existing policies, possibly reshaping them to more particular needs (such as R1/R2 researchers on the one hand and R3/R4 researchers on the other hand), extending training opportunities,

providing good practices in greater detail and providing a set of templates and workflows for specific HR actions in the recruitment process.

- In terms of overall **economic, social and environmental impact** the move towards more OTM is a cost factor, to be borne at several levels but predominantly at institutional level. The contribution from national governments and/or the EC would be lower and largely depending on intensities (maintaining/funding Euraxess, fostering the HRS4R strategy, monitoring progress etc.). In terms of benefits for implementing OTM principles more widely, expectations are that it fosters for example gender equality by providing a means for positive actions. Another line of argument expects that by increasing external employment, demand and supply are better matched and performance levels rise. OTM is perceived by the involved recruiters as a benefit as such; however, it seemed difficult to grasp and monetise individual benefits. Using a prior estimate concerning the monetised benefits (in terms of publications, third-party funding and patents), we estimate that an increase of OTM yields a ~15% increase in monetary benefits (i.e., when shifting from least to medium OTM and medium to highly OTM orientation), and a ~32% increase when shifting from least to high OTM orientation. Possibly due to the success of strategic recruitment practices, interviewees were however reluctant to assert a clear link between OTM and (increased) performance levels.

- The reinforced HRS4R strategy could in principle be continued as a partnership; however, launching a monitoring system also introduces accountabilities. A model with clear roles, functions, and possibly also with a different incentive scheme, could be tested. Since the HRS4R process is attracting new institutions and the logo becomes more widely known and the early cohorts begin to talk about the benefits, peer group pressure may also trigger wider uptake. Since the process does allow institutions to determine their own developmental priorities, the individual institutional self-assessment reports are very different and do not necessarily follow all the principles of the Charter and Code in a consistent or systematic way. Requiring the participating institutions to report on current practice on each of the OTM principles would improve the evidence base for the external review more generally, and it would provide more good cases and examples to follow. Last but not least, a better evidence base about OTM would enable policy makers to push for more robust scrutiny.

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Appendix B   Country fiches

Separate document

Appendix C   Cost Benefit Assumptions

C.1. Monetisation of costs: final approach - an alternative based on min max scenarios

The final approach for the monetisation of the costs is summarised in Figure 14. Given insufficient information on cost items regarding the number of staff days by stage of the recruitment process we have decided to rely on scenarios. The scenarios are built based on assumptions. The assumptions however are not arbitrary drawn but are based on the available information as reported by the interviewees. They represent the range of minimum and maximum estimates of time allocated by stage of the recruitment process. Three scenarios are therefore considered, the minimum, maximum and average.

The insufficient information on salaries was easier to solve due to the availability of the MORE II study on the remuneration of researchers. While up to date information is available for researchers of all career stages (R1-R4) no information on administrative and/or human resources staff is included. We therefore relied on external data from Eurostat on 'Labour cost, wages and salaries, direct remuneration' of NACE rev. 2 category 'Office administrative, office support and other business support activities'. This data was compared to the available data provided by interviewees to quality check the match to Eurostat's broader NACE rev.2 category.

The lack of complete information on the salary of person responsible for the task meant that we needed to make assumptions on the category of personnel involved by task. In this case too these assumptions were not drawn arbitrarily but were based on the available information as provided by interviewees.

Apart from the cost of time dedicated to perform the tasks by recruitment stage there are also fixed costs. Such costs may represent a significant expenditure in the case of for example publishing openings in professional websites or reimbursing all applicants for the cost incurred to attend interviews. The questionnaire explicitly included fixed cost related questions for every stage of the recruitment process.

Figure 14   Assumptions per recruitment stage

stage			Assumptions drawn from the interview templates for which information was available								Unit specific information as provided by the interviews
			Time costs min	Time costs max	Time costs avg	unit_	Personnel category	Time allocation personnel category	Fixed costs	Fixed costs values	
stage 00		Standard recruitment processes developed which the recruiting department has to follow							no		auxiliary to stage 01 since more general on the development of recruitment processes
stage 01		Drafting and communicating new procedures/guidelines among your staff	10	60	35	staff days	Administrative HR R3R4	80%:20%	no		contains yes=1; no=0: the logic is that this cost is only allocated to the units that have drafted and communicated new procedures/guidelines;
stage 02	IMPLEMENTATION	Preparing a clear job description per appointment	0.125	0.500	0.313	staff days per appointment	Administrative HR R3R4	30%:70%	no		contains yes=1; no=0 the logic is that this cost is only allocated to units that prepare clear job descriptions;
stage 03		Drafting selection criteria per appointment	0.125	0.500	0.313	staff days per appointment	Administrative HR R3R4	30%:70%	no		contains yes=1; no=0 the logic is that this cost is only allocated to units that draft selection criteria;
stage 04		Translating job description/selection criteria to English (if relevant) per appointment	0.063	0.500	0.281	staff days per appointment	Administrative HR	100%:0%	no		contains yes=1; no=0 the logic is that this cost is only allocated to units that translate job descriptions; there are for example units that directly post job descriptions in English or never publish in English;

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			Assumptions drawn from the interview templates for which information was available							
stage			Time costs min	Time costs max	Time costs avg	unit_	Personnel category	Time allocation personnel category	Fixed costs	Fixed costs value s	Unit specific information as provided by the interviews
stage 05		Posting vacancy on organisation website (open/using on-line tool) per appointment	0.031	0.063	0.047	staff days per appointment	Administrative HR	100%:0%	no		contains yes=1; no=0; the logic is that this cost is only allocated to the units that use the organisation website; note that in this question empty cells are not missing values;
stage 06		Posting vacancy in other online job portals per appointment	0.031	0.063	0.047	staff days per appointment	Administrative HR	100%:0%	yes		contains yes=1; no=0; the logic is that this cost is only allocated to the units that use professional websites; note that in this question empty cells are not missing values; this cost item entails fixed costs on top of time costs;
stage 07		Posting vacancy in print media (local/national/internatio nal) per appointment	0.031	0.063	0.047	staff days per appointment	Administrative HR	100%:0%	yes	€150-€3000	contains yes=1; no=0 the logic is that this cost is only allocated to units that post in print media; this cost item entails fixed cost on top of time costs unless print media are national sources in which case no fixed costs should be added; the Economist we used at TG was 7000;
stage 08		Scan, review and assess applications*	0.031	0.063	0.047	staff days per application	Administrative HR R3R4	30%:70%	no		contains yes=1; no=0; this cost is always present hence by definition all are 1; the important element differentiating the cost is the assessment of applications which is impacted by the use of panels (see notes *);
stage 09		Inclusion of expert from another national institution on selection panel	0.031	0.063	0.047	staff days per appointment	Administrative HR R3R4	70%:30%	yes	€500-€4500	contains yes=1; no=0 the logic is that this cost is only allocated to units which use panels and include either national or foreign experts in their selection panels; these two items cannot be distingquished due to the questionnaire's question which does not provide for that distinction; Fixed costs are typically significant.
		Inclusion of expert from another foreign institution on selection panel	0.031	0.063	0.047						

			Assumptions drawn from the interview templates for which information was available							
stage			Time costs min	Time costs max	Time costs avg	unit_	Personnel category	Time allocation personnel category	Fixed costs	Fixed costs value s	Unit specific information as provided by the interviews
stage 10		Travel and subsistence for applicants	0.031	0.125	0.078	staff days per application	Administrative HR	100%:0%	yes		contains yes=1; no=0 the logic is that this cost is only allocated to units that offer travel and subsistence to applicants; this field is very poor and should be dropped if the quality of the database cannot be recovered; from the limited input collected it seems that it is rare that applicants get reimbursed.
stage 11		Appeals mechanism (changed from appeals proceedings)	0.031	0.500	0.266	staff days per application	Administrative HR	100%:0%	no		contains yes=1; no=0 the logic is that this cost is only allocated to units which have complaint mechanisms in place; the logic is that units providing this service internally will also internalise time costs of their personnel as opposed to external bodies handling this process (ombudsman, formal legal path);
stage 12		Personalised feedback	0.031	0.063	0.047	staff days per application	Administrative HR R3R4	20%:80%	no		contains yes=1; no=0 the logic is that this cost is only allocated to units which provide personalised feedback;

Notes: Personnel categories assumptions=> the allocation of time to the different categories is based on the salary indication of the respective questions=stages

Notes time costs assumptions		Staff days
Time costs estimated in terms of staff days	a quarter of an hour	0.03125
	half an hour	0.0625
	1 hour	0.125
	two hours	0.25
	four hours	0.5

* Scan, review and assess applications=>

stages to which panels apply	Additional time burden from the use of panels per applicant	Time costs estimated in terms of staff days
for R1	if panels are used plus 30 minutes per applicant	0.0625
for R2, R3, R4	if panels are used 4 hours per applicant	0.5

C.2. Monetisation of benefits

Monetising the benefits of a OTM recruitment process is extremely challenging since they are materialised in the form of non-monetisable outcomes, such as improving researchers mobility, improving the level of the research outputs produced by a public institution or guaranteeing a more gender balanced recruitment process.

The benefits of a more OTM recruitment process may hence come from different channels: access to a larger pool of candidates from which to choose the most suitable for the job (including recruiting researchers from abroad) and increases of the probability of achievement (academic performance) and more mixed-gender teams (gender mainstream). In turn, this could increase the ability of the institution to attract larger shares of competitive funding.

All these different channels, then materialise in better research outputs, including an increase in the number of peer reviewed journals, patents, participation in networks and exchange of information with external colleagues. We summarize the main source - the Horta study results, and further indicators to monetise benefits in Figure 15.

Figure 15   Core source + Indicators used to monetise benefits

		Value	Notes
Source	Horta study results	15% less peer reviewed publications 8% less patents	These coefficients were used for two scenarios: Universities/Institutes move from a) lowest OTM to medium OTM and b) from medium OTM to highest OTM. Universities/Institutes all move to highest OTM.
Indicators	Average market value of a publication	~€35	Elsevier average
	Median economic value of a patent	~€ 300, 000	In: http://iprwatchonline.com source: (Gambardella, Harhoff and Verspagen, 2008)
	FP values	EC Financial Contribution in FP7 by unit	E-Corda

Notes: http://www.wipo.int/sme/en/documents/valuing_patents.htm#worth; http://www.oecd

The relation of the later, quantifiable benefits to OTM have not been empirically established. The analysis was based on regression analysis testing with multiple model specifications with OTM as one of the explanatory variables of performance.

The lack of evidence may be explained by the fact that recruitment practices are not captured by the OTM principles - as defined in the TOR and reflected in the OTM taxonomy used in this study. Subsequently, while universities/ research institutes may in fact not be practising OTM, their procedures on paper suggest they do.

Moreover, in our sample we find high performing universities (in the restricted sense of publications, patents and FP7 funding) that classify as the least OTM oriented universities/research institutes. Bearing in mind the high average performance of our sample of universities/research institutes, establishing the link between OTM and monetised benefits could not be attained. Repeating the exercise for a different sample in the future may hence produce different results.

Finally, a further bias may have been introduced by the interviewee due to cultural characteristics and the position held at the time of the interview. For instance, interviewees working as administrative personnel may have a limited view of actual recruitment processes and introduce a positive bias. On the other hand, trained recruiters may be more critical regarding the processes as defined on paper - a result

of their experience and expertise, while academics may introduce positive or negative bias due to experiences limited within their own departments and not on recruitment processes at the institutional level. Another restricting factor are personal judgements, e.g. having a relatively lax or a stricter perception of the frequency of occurrence of OTM procedures versus non-OTM procedures.

Monetizing benefits of OTM procedures for the purpose of this study has been conceptually challenging. In the vast majority of cases, interviewees where reluctant to assert a direct link between OTM and research outputs. This seems to be a too simplified assumption for a much more complex process. Moreover, nobody could cite any study/report that had attempted to make the link. The feedback from interviewees on benefits had been more generic and was described as axiomatic without being able to provide distinctive benefits.

C.3. Monetary Impacts

Figure 16   Monetary Impacts of policy options

Policy Options		Average yearly cost of recruitment Universities/Research Institutes (1) ()			Benefits Universities/ Research institutes (2)	
	Options Principles of OTM	Laggard OTM countries	Medium OTM countries	Leading OTM countries	Least OTM oriented	Medium OTM oriented
P O 0	**Costs OTM no variation** – the only variation between institutes stems from the application or not of OTM principles disregarding the variations in salaries, number of posts, number of applicants	9.345	2.1970	22.828	-	-
P O 1	**Costs OTM all variations** – all variations OTM principles, salaries, number of posts number of applicants	2.347.010	7.742.390	5.760.777	(187 m)	(178 m)
P O 2	**Costs OTM all variations applications -** all variations as in PO1 plus a doubling of applicants by post	0.13% (2.349.977)	0.08% (7.748.276)	0.04% (5.763.039)	-	-
P O 3	**Costs OTM all variations imposed** – all variations as in PO1 plus OTM principles imposed	2.53% (2.406.364)	1.10% (7.827.652)	0.73% (5.803.047)	15.0 % (215 m)	15.2% (205 m)
P O 4					32.1 % (247 m)	

Notes: (1) Absolute values & % change from PO1-baseline grouped by laggard, medium, and leading OTM oriented countries
(2) Absolute values & % change from PO1-baseline
in PO0 we have applied the following salary levels across all universities/research institutes: 2550 average salary academics and 1920 average salary administration; in PO1-PO4 variations differentiating the universities/research institutes from each other are captured in four different levels. The first is the OTM principles implementation, the second the average number of posts

per year, the third the average number of applicants and the fourth the salary levels[33]; Benefits are estimated based on the coefficients of the Horta Study; Level up means that units in the group of least OTM oriented move to medium OTM oriented and units in the group medium OTM oriented move to highly OTM oriented. All OTM means that both least and medium oriented units move to highly OTM oriented.

[33] The average numbers of posts per year and applicants per post do not differentiate between the different career stages (R1-R4). They also do not differentiate by unit and are country averages. The source for the calculation of those averages is the primary data collected from the interviews. Salaries of researchers and administration/HR staff are also calculated on the country level in ppp - € (purchasing power parity) in order to allow for cross-country comparisons.

Appendix D   Interview guidelines

Objectives of the study

The overall objective of the project on open, transparent, and merit-based recruitment is to:

Analyse and assess the current de facto and legal situation with regard to recruitment processes and practices of researchers in public research institutions within all EU27 Member States.

This is broken down into four specific objectives:

1. Provision of a detailed description and comparative assessment of the current situation (legislative and de facto) of recruitment processes and practices of researchers in the public institutions in all EU27-MS;

2. Identify possible legislative approaches at EU level to ensure more open, transparent, and merit-based recruitment systems;

3. Carrying out a detailed cost-benefit analysis (CBA), differentiating between different legislative approaches;

4. Put forward recommendations for legislative / non-legislative action.

The role of the interviews will be to collect additional empirical evidence on recruitment requirements and practices in all EU-MS to contribute to the specific objective 1, 2 and 3 of the study.

The provision of objective 1 should focus on the:

- Legislative framework in place

- Current and/or planned policies/measures at national and/or institutional level

- Current common practices at national and institutional level - de facto situation

- Examples of good practice at national and institutional level

- Factors influencing the degree to which systems are open and transparent

    – University Autonomy (staffing, financial, organisational)

    – Dependence of institutions on competitive external funding

    – Internationalisation policies at institutional level

- Obstacles to open recruitment- estimation of importance of obstacles by how they affect researchers (by career stage, nationality, gender)

    – Legal obstacles

    – Administrative obstacles

    – Cultural obstacles

    – Reasons why institutions do not publish vacancies internationally

    – Reasons why institutions do not provide feedback to applicants

    – Reasons why institutions do not have complaint mechanisms in place

    – Reasons why institutions do not introduce transparent selection criteria

> – Reasons why institutions do not recruit researchers from outside the institution or country

Approach for the interviews

- Per each country, 1-2 interviews (total around 30) should be done at relevant ministry level (i.e. dedicated official responsible for researchers career pathways) and 4-6 (total around 85) within the universities and public research organisations (i.e. HR/recruitment units and academic personnel involved in recruitment processes.). List of institutions for institutional level interviews will be provided per country. The interviewers will need to identify relevant interview partners.

- The interviewers will be provided with the background information for their respective country (excel sheet developed on a basis of available material). Country correspondents should check whether this information is up-to-date and accurate – if not the missing info should be collected during the relevant interviews (this applies particularly to information requested under objective 1 at the national level). In addition, country factsheets and data from the 2012 Researchers' report[34] or the University Autonomy Scorecard 2011 report[35] could also be useful as a background information.

- In addition to that, interviews should provide replies to the set of questions provided below.

- The outcomes of interviews and verification of background information should be provided in a form of a coherent report for which a template will be provided. The structure will be in line with the study questions.

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[34] See http://ec.europa.eu/euraxess/index.cfm/general/researchPolicies

[35] See http://www.eua.be/Libraries/Publications/University_Autonomy_in_Europe_II_-_The_Scorecard.sflb.ashx

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Interview questions

Institutional level

> The idea is to gather information necessary to evaluate the level of "openness" of the recruitment procedure in a given institution (in relation to the basic principles for open recruitment) as well as data on the costs related to the recruitment procedure. It should also serve to identify possible good practices and barriers for open recruitment as well as factors influencing open recruitment at institutional level.

Identification of the interviewee

First name	
Last name	
Function	
email	
Phone number	
Organisation (Full name, address)	

Basic Human Resources info

- Number of researchers employed at the institution by gender. Full time equivalent and/or Head count per career stage. Latest available year.

- Number of foreign (by citizenship) researchers working in the institution (per career stage). Latest available year.

- Number of national (by citizenship) researchers employees who received their PhD from the other institution. (Per career stage)

- Average annual number of open positions (Per career stage)

- Average number of applicants per opening (Per career stage)

- Is there a HR department dealing centrally with the recruitment processes or do the departments/faculties deal with it individually?

Application of the basic principles for open recruitment

- What would you consider basic principles for open, transparent, and merit-based recruitment practices? Are there differences by career step?

- Does the institution subscribe to the Code of conduct for the Recruitment of Researchers? Or other relevant charters, codes at national and/or international level? If yes, since when?

- Are all research vacancies publicly advertised? (Per career stage: R1, R2, R3, R4, All, none) If not, what are the practices? If yes, since when is this practices and what are the means: national/international print media; organisation/professional websites; EURAXESS.

- Has the use of those means led to an increased number of job applicants (in comparison with prior recruitment process in which research vacancies were not publicly advertised?

	Yes/No/Don't know	Average vacancy positions processed prior to the introduction of open recruitment	Average vacancy positions processed prior to the introduction of open recruitment
R1 – PhD			
R2 – Post Doc			
R3 – Senior researcher			
R4 – Full professor			

- Are standard recruitment processes developed per career stage which the recruiting department has to follow? If yes, are they publicly available (e.g., on the website of the organisation)? If yes, since when?

- Are all vacancies published in national language and/or English? If yes, since when? If not, what is the practice? (if possibly differentiate by career stage)

- Are clear job descriptions included in all vacancy publications? Since when? If not, what is the practice? (Per career stage: R1, R2, R3, R4, All, none)

- Are the requirements – and thus the selection criteria published in the vacancy announcement? If yes, since when? If not, why? (Are there differences per career stage)

- Is there a formal internal career path offered within the institution? If yes, since when?

- Are there clear rules for the composition of the selection panels, i.e.: number and role of members, inclusion of experts from other (foreign) institutions, gender balance? If yes, since when and what are the rules? If not, what is common practice? (Are there any differences per career stage?)

- Do the selection panels include experts/peers from other institutions/countries? If yes, since when? If not what is the practice? (Are there any differences per career stage?)

- For which career stage are panels established (R1, R2, R3, R4, All, none)? Is it mandatory? If yes, since when?

- Is the composition of selection panel made public within the institution and/or wider (e.g., website)? If yes, since when? If not, what are the reasons?

- Is there a minimum time period between vacancy publication and the deadline for application? If yes, is that communicated? Since when? If not, what is the practice?

- Is the institution responsible to prove, when necessary, that the recruitment procedure was open, transparent and merit-based? If yes, since when?

- Is feedback offered to applicants when requested? If yes, since when? If not, why?

- Is there a complaint mechanism in place? If yes, since when? If not, why?

- Apart of the abovementioned criteria, would you consider another factor important as good practice in promoting/applying open recruitment?

- If none, or only one or two of the abovementioned criteria is implemented, does the organisation plan to introduce any measure to promote open recruitment processes?

Costs related to recruitment procedures

Pre-implementation costs

- Have you recently drafted procedures/guidelines for a more open recruitment of researchers? If yes, how much time has your organisation invested on drafting and communicating those new procedures/guidelines among you staff?

  - Number of staff-days
  - Average monthly salary of person responsible for the task

Implementation costs

In a typical year, how many resources would your institution allocate to the following tasks?

Stages	Items	Yes/No	Time spent by colleagues to fulfil task/item			Monetary costs spent to fulfil task/item			
			Number of staff-days	Unit (per task, per applicant)	Average net monthly salary of person responsible for the task	Besides time spent, are there any monetary costs associated to this task?	Cost (in €)	Unit (fixed, per applicant, per post)	Frequency (monthly, yearly, other (specify))
Advertising vacancy	Preparing a clear job description								
	Drafting selection criteria								
	Translating job description/selection criteria to English (if relevant)								
	Posting vacancy - on organisation website (open/using on-line tool), -in other online job portals - in print media (local/national/international)								
Collect and assess applications	Scan, review and assess applications							Per applicant	
	Inclusion of expert from another **national** institution on selection panel (Note: probe for search costs, fees, travel and subsistence costs)								
	Inclusion of expert from another **foreign** institution on selection panel (Note: probe search costs, fees, travel and subsistence costs)								
	Travel and subsistence for applicants								
Dissemination results	Communicate results								
	Personalised feedback								
Appeals	Appeals proceedings								

NOTES: Information on salary can be given in ranges or as rough estimations. The interviewer should register this information as complete numbers (e.g. 20,000-30,000 instead of 20k-30k approx.)

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Template for cost of offering economic benefits to attract meriting researchers
Example - Collecting data on additional economic costs offered to meriting researchers

Does your institution offer relocation packages or any other single payments to attract meriting researchers?	Yes/No
If yes, what is the average value of those benefits? (Per career stage)	€
If no, how much will your organisation be willing to offer as a single payment to be able to attract meriting researchers? (Per career stage)	€
Does your institution have a margin to offer higher salaries to meriting researchers or other monetary value benefits?	Yes/No
If yes, how much higher is this in comparison with the average economic benefits offered to other researchers (Per career stage)	%

NOTES: Information on benefits can be given in ranges or as rough estimations. The interviewer should register this information as complete numbers (e.g. 20,000-30,000 instead of 20k-30k approx.)

Benefits related to the open recruitment procedure

- In your opinion, having access to an international pool of experts does benefit (or would benefit) your organisation? If yes, what are (would be) those benefits? (Note: probe for research outputs (such as publications, patents), access to competitive funding)

- In your opinion, does an open recruitment process (as defined by the Code of Conduct) lead to

  - more gender-balanced teams?

  - well connected research teams?

- What type of benefits can be obtained from:

  - more gender-balance teams?

  - well connected research teams?

  (Note: probe for research outputs (such as publications, patents), access to competitive funding)

Factors influencing the degree to which institution's recruitment system is open and transparent

- What is the level of autonomy of the institution in terms of staffing (e.g. responsibility for recruitment, salaries and promotions), financing (e.g. acquiring and allocating funding, determining tuition fees, accumulating surplus), organisation (e.g. setting university structures and statutes, creating contracts, electing decision-making bodies and personnel)? Does the autonomy impact positively/negatively on the openness of recruitment procedure?

- To what extent does the institution depend on external competitive funding? To what extent does it impact the openness of recruitment procedure?

- Are all or some researchers (by career step) civil servants and if yes, does it influence open recruitment? (Do any of the requirements for becoming a civil servant act as a barrier, particularly for foreigners?)

- Is there an internationalisation policy developed within the institution? If yes, how does the open recruitment policy relates to it?

- To what extent do factors such as scientific / academic quality and achievement, equal access for women and men, and the international experience of the

candidate matter in the selection process? Are any of them a prerequisite? Is there a difference by career stage?

Obstacles to open recruitment

- Can you identify any obstacles: legal, administrative, and/or cultural to open recruitment in your organisation?

Research Outputs

Please provide information on the following research outputs:

- Number of peer reviewed publications in 2012 (or latest available year for which this information is available for the university as a whole. Please then indicate the year). If the information is only collected by department regardless of researcher's position, please provide the total for the organisation.

	Number of publications
R1 – PhD	
R2 – Post Doc	
R3 – Senior researcher	
R4 – Full professor	
Total	

- Volume of license agreements from patents (see table below)

- Number of patents granted to the university/research institute. If possible, provide annual data (see table below)

Year	Total number of patents granted at national patent office	Total number of patents granted at European Patent Office	Income from licence agreements (from patents, copyrights etc.)
2009			
2010			
2011			
Total			

- Value of competitive research grants won. Please, disclose funding for research according to funding sources. If not available, rate from 1 to 5 the importance of funding sources for research.

	Absolute figures in 2012 (or latest available data)	Rate (1 Very Important; 2 Important; 3 Moderately important; 4 Of little importance and 5 Unimportant)
Institutional funding by government		
Research grants		
Contracts from industry		
Endowment income, donations (non profit, research aimed)		
Other		

Note: Institutional funding as well as endowments may also contain education funding.

Ministerial/national level

> **The majority of information at national level concerning existence of specific laws on employment, recruitment of researchers, kind of contracts, existence of tenure positions etc. is included in the background materials. Only when the information is missing or seems to be inaccurate this should be included in the interviews. The questions below represent a complete set necessary to fill in all the sections in the report template.**

Identification of the interviewee

Last name	
First name	
Function	
email	
Phone number	
Organisation (Full name, address)	

Legislative framework in place

- Are there any specific legal regulations (soft or hard law), besides the general labour law in the country, concerning the <u>employment</u> of researchers? Please describe them shortly.

- What are the legal regulations at national/regional level (soft or hard law), concerning the <u>recruitment</u> of researchers? If there are regulations, are there any measures designed to promote excellence ("cherry-picking"), retain talents, re-integrate excellent researchers or re-deploy the staff? Any measures to promote fair employment, i.e positive discrimination?

- Are there any laws concerning researchers' careers? (soft or hard law). Is there a possibility of acquiring tenure position foreseen by law? For which career stage? Is there an internal career path foreseen in the institutions?

Current and/or planned policies/measures at national level promoting open recruitment. Examples of good practice at national level.

- Are there strategies (also planned) at national level, in line with the European partnership for Researchers, to promote mobility of researchers across countries and sectors, including through open recruitment in public research institutions and comparable research career structures, to promote attractive employment conditions of researchers?

- Are there integrated policies (current or planned) to ensure that leading academics, researchers and innovators reside and work in Europe and to attract a sufficient number of highly skilled third country nationals to stay in Europe? Are there policies/programmes to attract international researchers to the MS? What are the instruments to do so? Are you aware of any good practice example?

Factors influencing the degree to which systems are open and transparent

- What is the level of autonomy of the universities in terms of staffing (e.g. responsibility for recruitment, salaries and promotions), financing (e.g. acquiring and allocating funding, determining tuition fees, accumulating surplus), organisation (e.g. setting university structures and statutes, creating contracts, electing decision-making bodies and personnel)? Does the autonomy impact positively/negatively on the openness of recruitment procedure?

- To what extent HEI depend on external competitive funding? To what extent does it impact the openness of the recruitment procedure?

- Is there an internationalisation policy developed at national level? If yes, how does the open recruitment policy relate to it?

- Are all researchers (by career stage) civil servants and if yes, does it influence open recruitment? Do any of the requirements for becoming a civil servant act as a barrier, particularly to other EU or non-EU nationals?

- How does the system deal with the tradeoffs between secure internal career paths, which increase the attractiveness of researcher career, and open recruitment principles (if applicable)?

Are there any obstacles to open recruitment of researchers?

- Are there any legal obstacles to OTM recruitment? (i.e. Are there any working restrictions for non-EU nationals (e.g. visa, employment authorisation)?

- Are there any administrative obstacles to OTM recruitment?

- Are there any cultural obstacles to OTM recruitment?

- Are the economic costs of open recruitment perceived as barrier at national level?

Costs of adapting existing or introducing new legislation on more open recruitment for researchers

- What is a marginal cost of working hours dedicated to consultations of new/adapted legislation with the government?

- What would be the cost of putting in place a monitoring system for this legislation? (budget allocated and/or personnel costs)

Benefits of open recruitment perceived at national level

- Do you consider there have been any benefits from the openness of recruitment of researchers at national level?

- Has there been any link between the openness of recruitment processes of researchers and the research outputs at organisation and/or national level? Could you provide any evidence on this?

Appendix E   Organisations interviewed

Figure 17   List of HEIs or public research institutes

Country	Public/Private research organisations
Austria	Austrian Institute of Technology
Austria	Graz University of Technology
Austria	University of Innsbruck
Austria	University of Natural Resources and Life Sciences, Vienna
Austria	University of Vienna
Belgium	IMEC
Belgium	Institute of Tropical Medicine
Belgium	Katholieke Universiteit Leuven
Belgium	Université Catholique de Louvain
Bulgaria	Institute for Nuclear Research and Nuclear Energy, Bulgarian Academy of Sciences
Bulgaria	Institute of General and Inorganic Chemistry Bulgarian Academy of Sciences
Bulgaria	Sofia University St. Kliment Ohridski
Bulgaria	University of Chemical Technology and Metallurgy
Croatia	Institute of Economics Zagreb
Croatia	Institute of Physics
Croatia	University of Osijek
Croatia	University of Split
Croatia	University of Zagreb
Cyprus	The Cyprus University of Technology
Cyprus	UNIV CYPRUS
Czech Republic	Charles University
Czech Republic	ČVUT University
Czech Republic	Fyzikální ústav AV ČR
Czech Republic	Masarykova Univerzita
Czech Republic	Univerzita Palackeho v Olomouci
Denmark	Geological Survey of Denmark and Greenland – GEUS
Denmark	Technical University of Denmark
Denmark	University of Southern Denmark
Estonia	Tallinn Technical University
Estonia	Tallinn University Institute of Ecology
Estonia	University of Tartu
Finland	Aalto University
Finland	Finnish Meteorological Institute
Finland	University of Helsinki
Finland	University of Oulu
Finland	VTT Technical Research Centre of Finland

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Country	Public/Private research organisations
France	Institut National de la Recherche Agronomique (INRA)
Germany	Centre for European Economic Research (ZEW)
Germany	Goethe Universität Frankfurt
Germany	Technische Universität Berlin
Germany	University of Heidelberg
Germany	University of Potsdam
Germany	University of Trier
Greece	Aristotle University of Thessaloniki
Greece	Demokritos national centre for scientific research
Greece	University of Crete
Hungary	Budapest University of Technology
Hungary	Hungarian Academy of Sciences
Ireland	Dublin Institute of Technology (DIT)
Ireland	Tyndall National Institute at National University of Ireland, Cork
Ireland	University College Dublin (UCD)
Ireland	University of Limerick
Italy	INFN--Istituto Nazionale di Fisica Nucleare
Italy	Italian Institute of Technology
Italy	Politecnico di Bari
Italy	San Raffaele Scientific Institute, San Raffaele Hospital
Italy	Università degli Studi di Padova
Italy	Università degli Studi di Roma "La Sapienza"
Italy	University of Camerino
Italy	University of Genoa, via Balbi, 5, 16126 Genoa, Italy
Latvia	Institute for Solid State Physics
Latvia	Riga Technical University
Latvia	University of Latvia
Lithuania	Kaunas University of Technology
Lithuania	Semiconductor Physics Institute under the State Scientific Research Institute Center for Physical Sciences and Technology
Lithuania	Vilnius University
Luxembourg	CEPS/Instead
Luxembourg	Public Research Centre Henri Tudor
Luxembourg	Public Research Centre Sant
Malta	University of Malta
Netherlands	National Institute for Public Health and the environment (RIVM)
Netherlands	Netherlands Organisation for Applied Scientific Research (TNO)
Poland	Adam Mickiewicz University - Poznan
Poland	Jagiellonian University in Cracow
Poland	Nencki Institute of Experimental Biology
Poland	Warsaw University of Technology, Department of Microbioanalytics

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Country	Public/Private research organisations
Portugal	IBMC- Instituto de Biologia Molecular e Celular (Institute for Molecuar and cell biology)
Portugal	Instituto Português do Mar e da Atmosfera (Portuguese Institute of the Sea and Atmosphere)
Portugal	Universidade do Porto
Romania	University of Bucharest
Romania	INFIM - National Institute of Material Physics
Romania	Babes Bolyay University
Romania	Politechnica University
Romania	"Petru Poni" Institute of Macromolecular Chemistry, Iasi
Slovakia	Comenius University
Slovakia	Institute of Electrical Engineering Slovak Academy of Sciences
Slovakia	Institute of Experimental Physics Slovak Academy of Sciences
Slovakia	Univerzita Pavla Jozefa Šafárika
Slovenia	Jozef Stefan Institute
Slovenia	National Institute of Chemistry
Slovenia	University of Ljubljana
Slovenia	University of Maribor
Spain	Ikerbasque – Basque Foundation for Science
Spain	IMDEA Water Institute
Spain	Instituto de Astrofísica de Canarias
Spain	Universidad Complutense de Madrid
Spain	Universitat de Valencia
Sweden	KTH Royal Institute of Technology
Sweden	Lund University
Sweden	Swedish Institute for Communicable Disease Control
Sweden	Umeå University
UK	University of Bristol
UK	University of Cambridge
UK	University of Strathclyde

Figure 18   Ministries or other policy relevant organisations interviewed

Country	Organisation
Austria	Bundesministerium für Wissenschaft und Forschung
Belgium	Ministère de la Communauté française, Direction générale de l'Enseignement non obligatoire et de la Recherche scientifique, Service général de la Réglementation et de la Recherche scientifique
Belgium	Flemish Government – Department of Education
Belgium	Flemish Governments– Department of Economy, Science and Innovation (EWI)
Bulgaria	Ministry of Education, Science and Youth
Croatia	Ministry of Science, Education and Sports
Cyprus	Research promotion foundation
Czech Republic	Ministry of Education, Youth and Sport of the Czech Republic
Czech Republic	Academy of Sciences of the Czech Republic
Denmark	Ministry of Science, Innovation and Higher Education
Estonia	Ministry of Education and Research
Finland	Ministry of Education and Culture
France	French Ministry of Research and Higher Education
Germany	Hochschulrektorenkonferenz (German Rectors' Conference),
Germany	National Contact Point Marie Curie/ EURAXESS
Greece	GSRT and Ministry of Education
Ireland	Irish Universities Association (IUA)
Italy	Ministry of Education, University and Research (MIUR)
Latvia	Ministry of Education and Science
Lithuania	Ministry of Education and Science of the Republic of Lithuania
Luxembourg	Ministry of Higher Education and Research
Luxembourg	Ministry of Higher Education and Research
Malta	Malta Council for Science & Technology
Netherlands	Ministry of Science and Education
Poland	Department of Strategy of the Ministry of Science and Higher Education
Portugal	Ministry of Education and Science
Romania	Ministry of National Education
Slovakia	Slovak Academy of Sciences (SAV)
Slovakia	Ministry of Education
Slovenia	Ministry of Education, Science and Sport
Sweden	Swedish Higher Education Authority