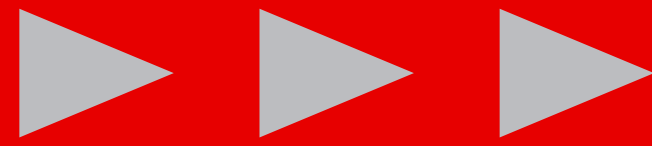


# INTERNATIONAL RECRUITMENT – BALANCING CONTINUITY AND DYNAMISM IN THE FACULTY

– INTERNATIONAL OUTLOOK OF DANISH RESEARCH, PART III



THE THINK TANK

**CEA**

ADVANCING KNOWLEDGE

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# MAIN FINDINGS AND RECOMMENDATIONS

A successful research career is inextricably linked with internationalization. For most academic researchers, engaging in international activities is not an option, but a given. The scientific community is global, and establishing a successful academic career requires collaborating with respected researchers wherever in the world they may be, publishing in internationally recognized scientific journals, and attending key international conferences within the field. For many researchers, moreover, both supranational funding from organizations like the European Union (EU) and national funding bodies in other countries can be attractive sources of research funding.

This report focuses on one aspect of internationalization in university research; namely the recruitment of international researchers. Hiring research talent from abroad is key to stimulating adequate competition for positions in Danish universities, while simultaneously raising requirements to qualify for academic positions in Denmark. While this is recognized across all the Danish universities, DEA's study suggests that the universities are still challenged in their ability to offer internationally competitive conditions of employment for established researchers, to provide clear career prospects for younger, foreign researchers, and to fully reap the benefits from their international recruitment of faculty mem-

bers. These challenges are critical considering that thirty-eight percent of all newly appointed assistant, associate, and full professors at Danish universities between 2011-2013 had foreign citizenship – a percentage which has increased steadily since the period of 2004-2006.

The aim of this report is to discuss how university management can improve and strengthen the recruitment and retention of international researchers within Danish research environments. The discussion will also include the role of Danish research foundations and The Ministry of Higher Education and Science.

This is the third in a series of three reports on internationalization in Danish university research, understood as the total set of activities undertaken to support the international outlook, and ultimately the quality, of research at Danish universities. The reports present the results of a study undertaken by The Think Tank DEA, and are partly funded by the Danish Agency for Science, Technology and Innovation. The first report addressed *International mobility and networks*, whereas the second focused on *International research funding*.

All three reports draw on insights gathered through sixty interviews with researchers, man-

agers on departmental and faculty level, and administrative staff at Danish universities as well as abroad. Interviews were also conducted with managers and board members of Danish public and private research foundations.

A necessary prerequisite for the successful internationalization of Danish universities is having strong research environments already present in Denmark. In other reports, DEA focuses on how to support quality and impact in Danish research in general. In this series of reports, however, focus is given to activities related directly to the internationalization of Danish university research.

### **RECRUITING FOR EXCELLENCE ON THE INTERNATIONAL JOB MARKET**

Recruiting internationally for faculty positions is a matter of recruiting the best candidate for a particular post, whether that be from Danish universities or abroad. Considering the large number of excellent non-Danish research environments that supplement their Danish equivalents, it is difficult to imagine hiring the best researchers without taking foreign academics into consideration.

In the study, respondents also highlight several benefits of hiring talented foreign researchers. Firstly, they open the door to invaluable international research networks. Secondly, the fact that foreign faculty members choose to work for a Danish university in itself generates “branding value” for the university. Thirdly, they can help expose locally hired faculty members to the academic standards and work ethics required to undertake cutting-edge research. And fourthly, they can help tap into potentially significant sources of international research funding.

### **Limited competition for faculty positions**

In spite of the many strong arguments in favor of international recruitment, however, several respondents also reported that university departments still tailor many job postings to local candidates. In fact, current university recruitment patterns raise concerns about whether Danish universities are currently ensuring adequate competition for faculty positions: thirty-eight percent of the 3,628 positions advertised and filled during the two-year period between 2011-2013 at the level of full professor, associate professor or assistant professor had just one qualified applicant. Thus, more than a third of all faculty positions at Danish universities were in reality filled with no competition.

Interview respondents also pointed out a paradox in recruitment activities in many Danish research environments. On the one hand, universities have a strong interest in competitive international hiring procedures, securing the best talent not only from Denmark but globally, ensuring a dynamic faculty team where new hires bring new specialties, new perspectives, and new networks to the research environment. Indeed, most universities require new positions to be advertised internationally and presented so as to attract multiple qualified applications. Furthermore, Danish universities are legally bound – with a few exceptions – to advertise positions as associate professor and full professor internationally.

Yet on the other hand, universities often demonstrate an obvious interest in hiring locally, whether this be positions aimed at Danish researchers or foreign researchers with a history of working in Denmark. According to many respondents, this is because local hires are often more motivated

to help fulfill the institutions' teaching and administrative obligations, and they have the Danish language skills necessary to do so. Local hires also have existing knowledge of the relevant institutional landscape in Denmark, including the research funding bodies, thus facilitating local funding efforts.

The large degree of external funding at Danish universities, other respondents suggested, also limits competition for positions in the academic job market. Sometimes faculty positions are awarded to candidates who have raised funding for their position from external funding sources. In these cases, universities essentially allow public or private research funding bodies to determine which candidates are admitted unto the faculty team. Moreover, such positions are not advertised through open announcements and thus filled on a competitive basis.

Several respondents were of the opinion that too few faculty positions are filled through open calls, and that university departments in some cases hire locally, even when this is not justified by a need for candidates with knowledge of Danish language or institutions.

***The findings from DEA's study suggest there is a need for universities to be more ambitious about hiring internationally through open calls for faculty positions.*** This is not only a matter of complying with requirements from the university or legal obligations from the Ministry, but also a matter of advertising positions internationally in the broadest way. The importance of ensuring sufficient, international competition for jobs cannot be underestimated, due both to the highly international nature of the academic job market, and to the importance of competition

for positions to ensure renewal and quality in the faculty team. Wide, international advertising of job postings should be the norm for open positions in Danish universities, supplemented by more specifically targeted advertisement through personal networks. Nevertheless, respondents gave examples of job postings where attempts were made to limit the circulation of a job advertisement even though there was an earnest desire to find and hire a qualified, international candidate. This is because job postings for academic positions that are circulated widely can attract hundreds of unqualified applicants from all over the world, requiring substantial resources to be spent on formal assessment and reply procedures.

***DEA also recommends that recruiters should be supported in handling the larger amount of applications international advertising may generate, for instance by being able to dismiss unqualified applicants with a standard reply in an initial response round; only qualified applications should proceed to an in-depth assessment by a hiring committee.***

The number of unqualified applicants, several respondents stressed, is often significant, thus delaying the hiring process, and in worst cases causing universities to lose candidates to other universities with good offers and faster employment processes. In a recent example at the University of Copenhagen, assessment committees were given the possibility of providing standard rejections to unqualified applicants, rather than having to motivate rejections to all applicants.

***At the same time, universities will continue in some positions to have a preference for hiring a local candidate, in which case this needs to be properly communicated to potential applicants.*** Interviewees highlighted examples



of disingenuous job advertisements that were seemingly open to all applicants in order to comply with official requirements for job announcements, but were in reality written with a specific candidate in mind.

### **Offering competitive conditions of employment**

According to several respondents, salary plays a significant part in attracting foreign researchers, but for different reasons across academic positions.

Danish PhD positions in particular are interesting for applicants from abroad, because they are salaried positions treating the PhD as an employee as opposed to a student in most other countries. According to respondents, the salary offered for postdoctoral researchers at Danish universities is also good in comparison with the general postdoctoral salaries offered at research institutions in Europe and the US.

However, interviews indicate that many Danish university departments struggle to offer competitive salaries for established researchers such as high-profile associate professors, and even more so for full professors.

Furthermore, additional funding intended for establishing research groups, buying equipment, or accessing research infrastructures, all of which contribute to a good start in a new institution, becomes increasingly important as researchers climb the career ladder. Start-up packages are consequently an essential condition for more established researchers taking up a position at the Danish universities, especially for researchers within the experimental sciences. Yet according to interview respondents, Danish universities have a difficult time providing inter-

nationally competitive start-up packages. When attempting to recruit excellent foreign researchers, in many instances Danish universities depend on external funding from private research foundations for start-up packages, as is the case when funding internationally competitive salaries for excellent researchers.

DEA's study points to some possible ways forward. ***Firstly, an efficient strategy for universities to attract international talent is to target them early on in their academic careers.***

Offering adequate resources that can establish an academic research career in Denmark can be a key factor in attracting such young talents and possibly retaining them as their career evolves.

***Secondly, Danish universities and private research foundations should collaborate on making funding from private research foundations more transparent when filling faculty positions.***

When Danish university departments do manage to hire world-class professors, this is often done with funding from one of the private research foundations in Denmark. While the funding provided by private foundations can thus be a highly valuable asset in universities' recruitment process, it is not entirely unproblematic. According to respondents, the problem is that the recruitment of top researchers and their funding by private foundations often occurs behind closed doors, in negotiations involving only the university, the researcher in question, and the foundation – after the university has decided on the candidate. Rather than serving as a competitive parameter, such funding can serve to decrease openness and transparency in the Danish academic job market, which is vital to ensuring objectivity and productive competition in recruitment processes.

**Thirdly, DEA's study indicates there is a potential for Danish universities to work much more systematically, for example in the university administration, to offer or find employment for spouses in connection with candidates involved in international recruitment processes.** According to respondents, many candidates for a position will be traveling in so-called "dual career" couples, with a partner who is also looking for employment, often in academia. Offering or helping to find suitable employment for accompanying spouses can therefore be an important competitive factor in the global competition for research talent. However, interviews indicate that most Danish research institutions have a very *ad hoc* approach to dealing with dual career couples, with researchers and heads of department making inquiries about open positions within their personal networks if at all.

The Danish welfare society was also highlighted by interview respondents as an attractive feature for foreign researchers taking up an academic position at a Danish university. This is especially true for researchers with small children because of the wide availability of publicly subsidized childcare and education.

Academic studies show that career prospects and research quality are the main drivers of emigration among academic researchers, whereas salary plays a lesser role. This suggests – as several interviews in DEA's study reflected – that Danish universities also have the potential to attract and retain foreign researchers, even high-profiled researches, by providing them with attractive research environments and career prospects.

### **RETAINING TALENTED RESEARCHERS: A MATTER OF CAREER PROSPECTS AND INTEGRATION**

In view of today's high degree of researcher mobility and the global competition for talent, researchers can be difficult to retain. Several respondents therefore suggested that universities embrace the options provided by international hires who stay only briefly in the country rather than viewing short-term hires as a problem. Respondents argued that talented and excellent researchers, who spend shorter periods of time in Denmark, have the potential to subsequently become ambassadors for Danish universities, as well as providing them with access to research networks at research institutions abroad.

At the same time, it is costly for Danish universities if the international faculty member leaves the country again within a few years. Firstly, job mobility is associated with a short-term decrease in research performance due to the costs associated with the researcher adjusting to new settings, such as a new research culture, new institutional policies, and new social networks. Secondly, the university invests substantial resources in finding the right person for the job, to help them – and often their partner or family – settle in their new country of residence, and to integrate them in teaching activities and administrative duties, which in some cases may even require the international hire to learn Danish. While short-term mobility is a condition and may contribute to a more dynamic faculty as well as international networks, Danish universities have an explicit interest in attempting to retain talented foreign researchers and reap the benefits of foreign researchers properly embedded in research environments in Danish universities.

### **Better career management for junior researchers**

As stated above, targeting promising researchers early on in their careers before they make a name for themselves can be a more resource effective recruitment strategy for Danish universities seeking to attract high-profile researchers. In order to attract and retain that talent, Danish universities need to present the young researchers with attractive career prospects. Interviews suggested that this is not always done sufficiently.

***DEA's study highlights a need for research managers and department heads to take a more active role in preparing foreign post-doctoral researchers for what it takes to get a job as an academic in Denmark.*** In short, this means treating them as potential candidates for the positions at the university department. Firstly, Danish universities should consider hiring postdoctoral researchers for longer periods that enable them to publish and teach, which, as the Danish National Research Foundation has previously pointed out, promotes their career opportunities. Secondly, when hiring postdoctoral researchers for positions of periods lasting up to two years, (which is often the norm internationally) providing them with clearer career prospects of more long-term and even permanent positions would be a competitive advantage for Danish universities. This entails managing their career as researchers as well as exposing them to a broader job market beyond academia in Denmark, recognizing that only a minor share of postdoctoral researchers will end up as part of the university faculty. The latter seems an effective strategy for keeping postdoctoral researchers within the universities' network of for instance private companies, should they choose that path. Lastly, the lack of career management

is not reserved for postdoctoral researchers, but extends – according to a previous study – to assistant and even associate professors.

### **Involving the faculty more in decisions on recruitment**

In recent years, the debate on career prospects for junior academics has highlighted the possibilities concerning a Danish model for tenure track positions as a means to offering better conditions for long term research employment at universities in Denmark. The tenure track positions allow for the appointment of six-year assistant professorships with a view to obtaining a permanent position as an associate professor without job advertisement. Today, many Danish universities offer some tenure track positions for researchers.

Although the Danish tenure track model is still new and evolving, DEA's study suggests that it has the potential to support a more internationally competitive job market at the Danish universities, which currently appears to be challenged by the Danish universities' ability to provide junior researchers with clear and attractive career prospects, as well as their willingness to invest in promising junior researchers.

***DEA's study suggests that giving faculty more influence in decisions concerning appointment and promotion is a viable way of addressing a general worry at Danish universities that tenure tracks will automatically lead to tenure promotion, resulting in fewer options of filling positions for excellent senior researchers, and consequently to a less dynamic workforce.*** Several interview respondents suggested involving all faculty members more actively in formal decisions on recruitment

and promotion, as a possible way of ensuring that university departments hire the right profiles who then get to shape the future trajectory of the faculty. At the University of California Berkeley, for example, this formal responsibility is placed upon faculty members by delegating them authority through Berkeley's shared governance model on decisions concerning faculty appointments and promotions. In this way, each faculty member is exposed to pressure to perform by their peers, who have granted them the trust of either a tenure track position or a promotion.

However, if a Danish tenure track system is to address the general worry that tenure tracks will automatically lead to tenure promotion, it also requires that those appointed to tenure track positions are challenged to perform throughout their career. This would entail that postdoctoral researchers as well as non-tenure track assistant professors in temporary positions have the prerequisites to qualify as an associate professor, and consequently expose tenure track faculty to the high standards needed for a promotion. One way to promote such prerequisites would be to ensure that temporary positions for postdoctoral researchers and assistant professors are sufficient enough in length for them to publish and teach, which ultimately promotes their career opportunities in academia.

### **Tapping into the added value of international recruitment requires integration**

Realizing many of the benefits of international recruitment – e.g. access to international collaboration and funding opportunities – requires interaction between foreign hires and Danish faculty. Unfortunately, respondents gave examples of foreign researchers primarily – if not solely – funded by international sources, with little or

no interaction or collaboration with their Danish colleagues. Foreign researchers were not mentored in their efforts to apply for research funding from Danish research funding bodies, nor were their Danish colleagues introduced to new international research networks as well as funding options beyond Denmark. Obviously such isolation, whether self-imposed or forced, prevents cross-fertilization of ideas and networks.

***DEA's study suggests that a critical mass of international researchers is required to ensure more diversity both professionally and socially.*** Respondents emphasized that foreign researchers coming to Denmark in order to boost their career are often both more motivated to succeed and willing to work longer hours. Furthermore, respondents pointed out that there is a tendency among Danish scholars to clearly separate work and leisure time, which can make it difficult for foreign researchers to meet people and have a social circle outside of work.

***One possible way to increase existing faculty members' incentives to interact with new, international colleagues is to give the faculty team greater influence on departmental and faculty management decisions in which researchers are appointed and promoted.*** In addition to the benefits outlined above, some respondents argued that making faculty members more accountable for decisions on appointment and promotion will ultimately also encourage them to take more responsibility for the integration of new members of the faculty.

***Moreover, recruiting for a faculty group with international outlook means adapting English as a professional language*** – or another international language, where English is not the most

obvious choice (for example within area studies). Danish universities should not expect top-researchers to take time out from their research to learn Danish, especially when hiring them for temporary positions. Changing the working language in the department and university from Danish to English allows new international hires to contribute much faster and more directly to administrative duties in the institution. While several university departments in DEA's study with the ambition to having a more international outlook have made English their professional language, the administrative language is still Danish, in which case non-Danish speaking faculty members are not encouraged to apply for management positions. Furthermore, DEA suggests that official communication from the Ministry of Higher Education and Science in Danish should be potentially offered in English as well, not least considering that thirty-eight percent of all newly appointed assistant, associate, and full professors at Danish universities in 2011-2013 had foreign citizenship, as previously mentioned.

***Furthermore, research environments with many non-Danish speaking faculty members could consider options for providing more of their teaching in English, either as entire degree programs or as distinct courses or modules.*** However, this entails addressing a minor – yet significant – challenge highlighted in several of the interviews. Having many foreign researchers among faculty often means that they get to teach the more interesting Master's courses that are close to their research and are subsequently more prestigious career-wise. Meanwhile, teaching basic subjects at Bachelor level in Danish is often left for native Danish and especially junior researchers, who in return feel their career prospects are hampered. While this

problem was dealt with in some cases by having all classes in English, this is not always a choice for some departments that teach basic subjects specifically linked to Danish language, culture and society.

# WHY IS INTERNATIONALIZATION INHERENT TO UNIVERSITY RESEARCH?

Academia and internationalization go hand in hand, as is highlighted by nearly all respondents in DEA's study. Internationalization should not be seen as a goal in itself, but rather as a means to strengthen the quality of research at Danish universities by ensuring access to highly qualified academic talent and international research funding, by reaching critical mass in research areas with small national environments, and by ensuring that agendas and methods in Danish research are state of the art.

For most researchers, pursuing a career in academia necessitates being internationally oriented for several reasons. Firstly, Denmark produces about one percent of global academic research, for which reason the quality of Danish research logically depends on the ability of Danish researchers to tap into global scientific communities.<sup>1</sup> Secondly, bibliometric studies have shown that publications based on international co-authorship are cited more frequently than publications where all authors are affiliated to institutions in one country (Nomaler, Frenken, and Heimeriks 2013). This may indicate that international research collaboration enables higher quality or more original research, or that accomplished researchers (who tend to receive more citations) are more likely to be attractive as international collaboration partners with ac-

cess to quality international academic networks. Regardless of the underlying explanation, the studies underline that internationalization and high impact research are positively associated. Thirdly, for experimental sciences, the necessary access to cutting edge research infrastructure compels both individuals and teams of researchers to travel to highly specialized large scale research facilities and laboratories across the globe. And fourthly, international research mobility is also widely believed to be positively associated with better access to research funding (IDEA Consult 2013).

The nature of scientific research has always been characterized by its international outlook, whether talking about research mobility, research and publication collaboration, or other forms of knowledge sharing (Taylor 2004). What has changed since the 1980s, however, is the intensity and scope of internationalization of research (Huang, Finkelstein, and Rostan 2014; Dewey and Duff 2009).

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1. Danish expenditure on research and development accounts for less than 0.5 percent of the world's total expenditure on research and development, when looking at gross domestic expenditure on research and development (GERD) adjusted for purchasing power parity (UNESCO 2016). Additionally, the Danish share of the total volume of scientific publications world-wide amounts to one percent. (Danish Centre for Studies in Research & Research Policy, Department of Political Science, Aarhus University).

Today, there are also emerging patterns of internationalization becoming increasingly formalized and deeply rooted in the activities of universities (Gornitzka, Gulbrandsen, and Trondal 2003). Firstly, there is a growing national adaption to, and influence of, international institutions such as the European Union and its Lisbon Strategy, as well as a subsequent Europe 2020 strategy for economic growth.<sup>2</sup> Secondly, both Lisbon and Europe 2020 strategies point to an international tendency towards a greater dominance of economic rationales in public support for research. This rationale is particularly prominent in the EU Framework Program for Research and Innovation, which is both a significant source of research funding and a means of emphasizing research as a means to responding to great societal challenges. Thirdly, internationalization seems increasingly formalized by the significance of international research collaboration, which universities ascribe to a successful academic career, and in the continued efforts of Danish universities towards offering academic positions, which are competitive on a global scale.

Studies indicate that individual researchers are behind the majority of the international collaborations among universities (Universities UK 2008), even though there is a lack of insight into the activities and challenges related to international mobility and collaboration by academic researchers (Dewey and Duff 2009). Moreover, little is known about the role of university management in strategically stimulating, supporting, or even directing international activities.

In the following, we discuss how university management can strengthen the recruitment and retention of international researchers within

Danish research environments. The discussion will also include the role of Danish research foundations as well as The Ministry of Higher Education and Science.

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2. See more in (DEA 2016a).



# STRENGTHENING INTERNATIONAL OUTLOOK THROUGH RECRUITMENT

*The single most important thing you can do as Head of Department to strengthen the quality of research through internationalization is to recruit faculty members internationally through broad job advertisements.*

– **Robert Krarup Feidenhans'l**, Head of Department, Professor, Niels Bohr Institute, Faculty of Science, University of Copenhagen

One of the most significant roles of university management in supporting the internationalization of research activities is the recruitment of international research talent. International recruitment is a matter of recruiting for the best applicants by opening up faculty positions to international competition. This increases requirements for qualified applicants and exposes Danish researchers to what it takes to compete with the best research environments.

Recruiting internationally for faculty positions is not synonymous with recruiting foreign researchers. It is a matter of recruiting the best candidate there is, whether that be from Danish universities or abroad. Hardly anyone interviewed for the study can imagine the best candidate for a faculty position without such a candidate having a strong international research network. Being foreign alone is no guarantee of having such a network, just as being a candidate from Den-

mark is no obstacle. However, considering the large number of excellent research environments abroad that supplement those in Denmark, it is nevertheless difficult to imagine hiring the best researchers without taking foreign academics into consideration.

This report focuses on one aspect of internationalization in university research: the recruitment of international researchers. Hiring research talent from abroad is key to stimulating adequate competition for positions in Danish universities, while simultaneously raising the requirements to qualify for academic positions in Denmark. While this is recognized across all the Danish universities, DEA's study suggests that the universities are still challenged in their ability to offer internationally competitive conditions of employment for established researchers, to provide clear career prospects for younger, foreign researchers, and to fully reap the benefits of the international recruitment of faculty members.

These challenges are critical considering that thirty-eight percent of all newly appointed assistant, associate, and full professors at Danish universities during the period of 2011-2013 were foreign nationals<sup>3</sup> (Ministry of Science, Innovation and Higher Education 2014). The equivalent



share was 33 pct. from 2007-2009 and 24 pct. from 2004-2006 (UNI•C 2011; UNI•C 2007). As the two tables below illustrate, the share of researchers with foreign citizenship is highest among newly appointed assistant professors and lowest among full professors. The share of researchers with foreign citizenship is highest within the natural and technical sciences and lowest within humanities and the health sciences (see Table 1 and Table 2).

**Table 1.** Share of appointments for positions as full professor, associate professor, and assistant professor from 2011-2013, where the appointed held foreign citizenship, by university and academic position

	Full Professor		Associate Professor		Assistant Professor		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
University of Copenhagen	44	17%	101	31%	292	43%	<b>437</b>	<b>35%</b>
Aarhus University	21	12%	68	24%	308	44%	<b>397</b>	<b>34%</b>
University of Southern Denmark	33	31%	70	35%	184	47%	<b>287</b>	<b>41%</b>
Roskilde University	5	23%	6	15%	14	22%	<b>25</b>	<b>20%</b>
Aalborg University	29	21%	54	28%	11	38%	<b>194</b>	<b>31%</b>
Technical University of Denmark	27	28%	101	47%	231	58%	<b>359</b>	<b>51%</b>
Copenhagen Business School	25	38%	44	56%	64	59%	<b>133</b>	<b>53%</b>
IT University of Copenhagen	2	50%	13	59%	16	64%	<b>31</b>	<b>61%</b>
<b>Total</b>	<b>186</b>	<b>22%</b>	<b>457</b>	<b>34%</b>	<b>1.220</b>	<b>46%</b>	<b>1.863</b>	<b>38%</b>

Source: Ministry of Science, Innovation and Higher Education 2014

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3. This covers researchers with foreign citizenship, who came from an academic position abroad, as well as researchers with foreign citizenship, who came from an academic position at a Danish university. The level of full professor covers full professor, professor with special obligations, and clinical professor. The level of associate professor covers both associate professor and senior researcher. The level of assistant professor covers assistant professor, researcher, and postdoc.

**Table 2.** Share of appointments for positions as full professor, associate professor, and assistant professor from 2011-2013, where the appointed held foreign citizenship, by academic position and field

	Full Professor		Associate Professor		Assistant Professor		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Humanities	13	18%	53	22%	75	24%	141	21%
Social Sciences	50	23%	102	31%	182	38%	334	32%
Natural Sciences	44	27%	119	43%	599	59%	762	53%
Agricultural and veterinary sciences	8	20%	12	31%	44	37%	64	32%
Health Sciences	38	15%	53	26%	160	35%	251	28%
Technical Sciences	33	31%	118	43%	160	58%	311	47%
<b>Total</b>	<b>186</b>	<b>22%</b>	<b>457</b>	<b>34%</b>	<b>1.220</b>	<b>46%</b>	<b>1.863</b>	<b>38%</b>

Source: Ministry of Science, Innovation and Higher Education 2014

Not all newly appointed researchers with foreign citizenship came to Denmark from a position abroad. Thus, fifty-two percent of the appointed researchers with foreign citizenship came from an academic position in Denmark. There is a significant difference between being a researcher with foreign citizenship having worked in Denmark for a couple of years, and foreign researchers in Denmark with residence permit who have settled down, possibly with family and children in Danish institutions. Especially when discussing the ability of Danish universities to offer internationally competitive conditions of employment for foreign researchers, to provide clear career prospects for younger, foreign researchers, and to fully reap the benefits from their international recruitment of faculty members. Nevertheless, the data reveals nothing about how many years the fifty-two percent of researchers with foreign

citizenship had been in Denmark before being appointed from 2011-2013.

The aim of this report is to discuss how university management can strengthen the recruitment and retention of international researchers by Danish research environments. The discussion will also include the role of Danish research foundations and The Ministry of Higher Education and Science.

Respondents highlight the importance of hiring excellent foreign researchers for several reasons. First of all, they are more likely to bring an invaluable international research network with them, from which colleagues and students at a Danish university can potentially benefit. This is particularly beneficial to Danish research environments with a limited international outlook.

Secondly, when reputable foreign researchers choose to take up a position at a Danish university, this provides brand value for the university and arouses interest from (and exposes the Danish university department to) the international research environment. Thirdly, many interview respondents highlight how excellent international researchers tend to expose faculty members at Danish universities to the standards of work ethic required to undertake cutting-edge research. The fact that faculty members are faced with the reality of having to compete for positions not only with their peers in Denmark but with the entire international community of talented researchers, is setting new standards for the academic community in Denmark. And fourthly, recruiting foreign, excellent researchers from universities abroad is a potentially significant source of international research funding for Danish universities. These researchers have based their academic career on funding from other sources than the national public as well as private research foundations in Denmark, and this experience with attracting research funding from international research funds as well as national research foundations in other countries may provide Danish researchers with a completely different funding network.

However, several respondents highlighted that, to some degree, university departments still tailor job postings to local candidates. Furthermore, current university recruitment patterns raise concerns of whether Danish universities are good enough at attracting talented applicants for faculty positions. Thirty-eight percent of the 3,628 positions advertised and filled between the period of 2011-2013 at the level of full professor, associate professor, or assistant professor had merely one qualified applicant (Ministry of Science, Innovation and Higher Education 2014).

Thus, more than one third of all faculty positions advertised at Danish universities were in reality filled with no competition. Merely thirty-eight of the job postings had four or more qualified applicants.

### **RECRUITING FOR EXCELLENCE ON AN INTERNATIONALLY COMPETITIVE JOB MARKET**

When Danish universities open up faculty positions to international competition in order to find the best researchers, they enter a competition for faculty members with elite universities worldwide, including private research institutions such as Harvard University, which is financially capable of outmatching salaries and financial packages offered at Danish universities.

Foreign researchers, according to interview respondents, generally find Danish welfare society desirable, especially if bringing children with them. Furthermore, most people speak English in Denmark, and visiting and collaborating with top tier universities in countries like Germany, France or England is easy, since they are only hours away by airplane.

The international competition for excellent faculty members, according to interview respondents, challenges the relatively lower salaries and financial start-up-packages offered for more established researchers at Danish universities. Furthermore, interviews suggested that the ambition of Danish universities to advertise openly and internationally for the best candidates is challenged by informalities related to the hiring practices at the universities. For example, an evaluation of career paths for researchers (Danish Agency for Science Technology and Innovation 2011) found that more than half of Danish university researchers report that they work be-

tween thirty-seven and forty-five hours per week; thirty-one percent work between forty-six and fifty-five hours; while twelve percent work more than fifty-six hours per week. Yet, the collective – and formal – agreements on salaries and working conditions are officially based on a thirty-seven-hour work week. As the guidelines from one of the Danish unions for academics explain:

*As a teacher and a researcher at a university or a national sector research institution you have a thirty-seven-hour workweek on average like all other academics employed by the state... Thus, you have to be aware that your average working hours do not exceed thirty-seven hours a week – if you do not also have periods, where working hours are shorter.*

**– DJØF - The Danish Association of Lawyers and Economists 2016**

Many interview respondents highlight how in practice they circumvent the system in order to attract and retain foreign researchers at the universities and compete with foreign universities for the best candidates. This leads to a practice of informalities, where faculty positions might – despite legal requirements and public announcements – not really be open to all, but in fact written with a specific candidate in mind. Or where the actual salary offered is not the one advertised for the position, but instead a salary composed of sponsor agreements with private research foundations, finalized after the university has decided on a candidate. These are examples of practices that enable Danish universities to attract capable international researchers. At the same time, the use of informal salary negotiations based on sponsor agreements after the right candidate has been chosen prevents

Danish universities from truly opening up faculty positions for and benefit from international competition based on the actual salary offered to the candidate, who gets the job.

Furthermore, according to research, career prospects and research quality are the main drivers of emigration among academic researchers, whereas salary plays a minimal role (Franzoni, Scellato, and Stephan 2015). This suggests that Danish universities have the potential to attract and retain foreign researchers – even high-profile researchers – by providing them with attractive research environments and attractive career prospects.

## **ARE THERE LIMITS TO OPEN COMPETITION FOR FACULTY POSITIONS?**

*The internationalization of the academic market has happened, but there are also strong incentives for keeping Danes in the system. Universities play a role in Danish society, where the ability to speak Danish and have knowledge of Danish institutions is crucial. A lot of the administration – in some departments at least – is still in Danish. Furthermore, Danes, who want to live and work in Denmark, are more likely to stay for a longer period of time. In this way they contribute to continuity in the faculty, particularly if there is a high turnover of international faculty members. We have to remember that even though we want hiring processes to be competitive and tied in with the international labor market, we are pursuing two different goals at the same time.*

**– Sune Haugbølle**, Associate Professor, Department of Social Sciences and Business, Roskilde University

In spite of the many strong arguments in favor of international recruitment, several respondents also reported that university departments still tailor many job postings to local candidates. In fact, current university recruitment patterns raise concerns regarding whether Danish universities provide adequate competition for faculty positions: thirty-eight percent of the 3,628 positions advertised and filled during 2011-2013 at the level of full professor, associate professor or assistant professor had just one qualified applicant. Thus, more than a third of all faculty positions at Danish universities were in reality filled with no competition.

Advocating for open calls to be used for faculty positions is compelling in the light of international competition as a means to pursue excellence. But DEA's study emphasizes that, in practice, competition is not always the preferred choice.

### **When the preferred candidate has Danish qualifications**

Interview respondents generally conveyed the idea that Danish universities have a dual need when recruiting for international talent. On the one hand, universities have a strong interest in competitive international hiring procedures, securing the best talent not only from Denmark but worldwide, and ensuring a dynamic faculty team where new hires bring new specialties, new perspectives, and new networks to the research environment. Indeed, most universities require that new positions are advertised internationally and presented so as to attract multiple qualified applications. Furthermore, Danish universities are legally bound<sup>4</sup> to advertise positions as associate professor and full professor internationally (Ministry of Science, Innovation and Higher Education 2012).

On the other hand, universities often also have an interest in hiring locally, whether that be from among Danish researchers or foreign researchers with a history of working in Denmark. According to many respondents, local hires are often more motivated to help fulfill the institutions' teaching and administrative obligations, and they have the Danish language skills necessary to do so. Local hires also have existing knowledge of the relevant institutional landscape in Denmark, which enables them to take on third mission tasks such as collaborating with the surrounding community. They also know the national research funding bodies, which facilitates local funding efforts. Additionally, some respondents point out that researchers with family and social networks in Denmark are likely to stay employed in the research environment for longer than their foreign counterparts; as a result, departments often have an interest in finding some appropriate balance between the number of Danish and international faculty members, to ensure some degree of continuity in activities and norms in the department. Ideally, some respondents explained, university management at departmental as well as center level wants to hire Danish nationals with PhDs or postdoc positions from elite institutions abroad.

A few respondents also argued that recruiting from Danish universities entails less risk in finding researchers accustomed to the research culture in Denmark, where researchers are often expected to take initiative and develop research projects on their own, and where the majority of researchers – disregarding seniority or position

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2. Universities can hire without advertising the position, if a candidate is exceptionally qualified, if external funding for at least half of the position has been provided for the candidate, or if the candidate is hired for a limited period of up to one year (two years for foreign researchers) (Ministry of Science, Innovation and Higher Education 2012).

– are expected to teach Bachelor and Master’s level students. Particularly within the experimental sciences, respondents pointed out, some research traditions abroad have strong principal investigators managing less independent but skilled junior researchers carrying out the research ideas of the principal investigator.

While recruiting from the national pool of researchers is a significant part of recruiting the best candidates, several respondents were of the opinion that too few faculty positions are filled through open calls, and that university departments in some cases hire locally, even when this is not justified by a need for candidates with knowledge of the Danish language or institutions.

According to respondents, it appears to be rather common that positions are created with a specific applicant in mind, for example a talented PhD student or postdoc, or a former faculty member returning from a period abroad. Because of the legal requirement to advertise positions, and often also due to university-specific guidelines for the international circulation of job postings, these vacancies must be made public. However, respondents argued that such positions will often be advertised and circulated as little as possible, and be described in such specific terms that few are expected to apply. Respondents stressed that this is particularly problematic when foreign candidates spend time applying for positions that are in reality more or less reserved for a local candidate. Indeed, even Danish researchers who had been employed at institutions abroad felt that preferences for local hires in some research environments creates uneven odds for Danes looking to return to Denmark as well as for international applicants.

The large degree of external funding at Danish universities,<sup>5</sup> other respondents suggested, also limits competition for positions in the academic job market. Sometimes faculty positions are awarded to candidates who have raised funding for their position from external funding sources. In these cases, universities essentially allow public or private research funding bodies to determine which candidates are admitted unto the faculty team. Moreover, such positions are not advertised through open announcements and thus filled on a competitive basis.

The findings from DEA’s study suggest there is a need for universities to be more ambitious about hiring internationally through open calls for faculty positions. This is not only a matter of complying with requirements from the university or the ministry, but also a matter of advertising positions internationally in the broadest way. The importance of ensuring sufficient, international competition for jobs cannot be underestimated, due both to the highly international nature of the academic job market, and the importance of competition for positions to ensure renewal and quality in the faculty team. Wide, international advertisement of job postings should be the norm for open positions in Danish universities, supplemented by more targeted advertisements through personal networks. Nevertheless, respondents gave examples of job postings where attempts were made to limit the circulation of the job advertisement even though there was an earnest desire to find and hire a qualified, international candidate. The explanation for this is a widespread university policy to assess and

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5. Denmark is the country in the OECD with the second largest share of external funding for university research coming from private funding bodies (Ministry of Higher Education and Science 2015).

respond to all applicants. Job postings for academic positions that are circulated widely can attract hundreds of unqualified applicants from all over the world, requiring substantial resources to be spent on formal assessment and reply procedures – resources which could otherwise have been spent on research activities. In effect, this gives strong incentive to limit the circulation of job postings to existing networks. Several respondents therefore expressed their reluctance to advertise job postings too widely.

DEA also recommends that recruiters should be supported in handling the larger amount of applications this may generate, for example by being allowed to dismiss unqualified applicants with a standard reply in an initial round; only qualified applications should proceed to an in-depth assessment by a hiring committee. The number of unqualified applicants, several respondents stressed, is often significant, thus delaying the hiring process, and in worst cases causing universities to lose applicants to other universities with good offers and faster employment processes. In a recent example at the University of Copenhagen, assessment committees were given the possibility of providing standard rejections to unqualified applicants rather than having to motivate rejections to all applicants.

At the same time, universities will continue in some positions to have a preference for hiring a local candidate, in which case this needs to be properly communicated to potential applicants. Interviewees highlighted examples of disingenuous job advertisements seemingly open in order to comply with official requirements for job announcements, but in reality written with a specific candidate in mind. It discourages international researchers from applying again for a faculty po-

sition at a university, if they already experienced being deselected for a job because of reasons that were not part of the original job posting.

### **MATCHING SALARY AND STARTING PACKAGE BEHIND CLOSED DOORS**

*In the US, and many places in Europe more recently, a top young scholar starting a professorship may get a million dollars or more as a start-up package. Much more including lab preparation. That is standard, not just at top places. To keep up with international standards, Denmark will need to do the same. It is a global market place. I am sure Denmark can compete, but it has to play the game.*

– **Charles M. Marcus**, Villum Kann Rasmussen  
Professor, Niels Bohr Institute, Faculty of Science,  
University of Copenhagen

According to several respondents, salary plays a significant part in attracting foreign researchers, but for different reasons across academic positions.

PhD positions are particularly interesting for young researchers from abroad, because they are salaried positions as opposed to PhD positions in many other countries. According to respondents, the salary offered for postdoctoral researchers at Danish universities is also good relative to postdoctoral salaries in general at research institutions in Europe and the US.

However, interviews indicate that many Danish university departments struggle to offer competitive salaries for established researchers such as associate professors and full professors, particularly the latter. Restrictions on academic salaries



defined by collective bargaining agreements in Denmark make it difficult for the universities to compete with comparable research institutions in other countries, where academics can often negotiate much higher salaries. Some respondents indicated that higher salaries are actually gained from taking on assignments that are not part of research, such as management positions and board memberships. Interviews suggested that when university departments every now and then do manage to hire world-class professors within their field, this is often done with grants from the private research foundations in Denmark.

Furthermore, additional funding for establishing research groups and buying equipment or accessing research infrastructure to get a good start in a new institution becomes increasingly important as researchers climb the career ladder. Start-up packages are consequently an essential condition for more established researchers taking up a position at the Danish universities, especially for researchers within the experimental sciences. According to interview respondents, the Danish universities have a difficult time providing internationally competitive start-up packages. When attempting to recruit excellent foreign researchers, Danish universities many times depend on external funding from private research foundations for start-up packages, as is the case when funding internationally competitive salaries for excellent researchers.

DEA's study points to some possible ways forward. Firstly, although internationally excellent senior researchers are crucial to sustaining the research quality in research environments at Danish universities, an alternative strategy for universities to attract international talent is to target them early on in their academic careers.

Considering the costs of offering competitive salaries and start-up packages for high-profile senior researchers, some interviewees emphasize the importance of hiring some of the best PhDs and postdocs to raise the standards in the department or the research environment. Offering adequate resources to establishing an academic research career can be a key factor in attracting such young talents in order for them to get a good start at a Danish university and possibly retain them as their career develops.

Secondly, Danish universities and private research foundations should collaborate on making funding from private research foundations more transparent when filling faculty positions. While the Danish private research foundations undoubtedly play a significant role in providing solutions to the problem of attracting some of the world's greatest talent – including from Denmark – to the Danish universities, it is not entirely unproblematic. The problem, according to respondents, is that the recruitment of top researchers and the funding of their salary and start-up grant by private foundations often occurs behind closed doors, in negotiations involving only the university, the researcher in question, and the foundation – after the university has decided on the candidate. Respondents stated how universities would contact a private research foundation once they had decided on a top-level candidate, and ask for a sponsorship for a starting package or salary.

The Danish welfare society was also highlighted by interview respondents as an attractive feature for foreign researchers taking up an academic position at a Danish university. This is especially found in cases of researchers with small children due to the wide availability of publicly subsidized childcare and education.



Academic studies show that career prospects and research quality are the main drivers of emigration among academic researchers, whereas salary plays a lesser role. This is based on the GlobSci survey of 47,304 researchers in the four scientific disciplines of biology, chemistry, earth and environmental sciences, and materials science, working or studying in sixteen countries during February-June 2011. The most important three factors in the researchers' decision to work abroad were the opportunity to improve their future career prospects; the outstanding faculty, colleagues, or research team at the foreign institution; and the excellence and prestige of the foreign institution in the researchers' area of research (Franzoni, Scellato, and Stephan 2015). This suggests – as several interviews in DEA's study reflected – that Danish universities also have potential to attract and retain foreign researchers, even high-profiled researches, by providing them with attractive research environments and career prospects.

### **Dual-career challenges**

Many respondents highlight the significant challenge of finding jobs for the spouse or partner accompanying foreign researchers – the so-called dual career challenge. Many candidates for a position will be traveling in so-called “dual career” couples, with a partner who is also looking for employment, often in academia. This challenge – according to respondents – is present in the hiring phase, where foreign researchers are reluctant to accept a job offer unless the university can provide their spouse with a job. But it is also a challenge in the longer term, where a lack of job possibilities for the accompanying spouse is a significant factor in making foreign researchers leave again.

This observation of respondents mirrors the findings in the GlobSci data, where the most important factor in decisions for researchers to return to their country of origin is “personal or family reasons” by far (Franzoni, Scellato, and Stephan 2015).

DEA's study indicates that there is a potential for much more systematic efforts to be made, for example in university administration, to offer or find employment for spouses in connection with international recruitment processes. Interviews indicate that most Danish research institutions have a very *ad hoc* approach to dealing with dual career couples, with researchers and heads of department making inquiries about open positions within their personal networks if at all. Most respondents highlighted the need for accommodating the dual career challenge, which would be a clear comparative advantage in the global competition for research talent. DEA even came across a few examples in the interviews where department heads were willing to pay for the salary of the accompanying spouse – in order to secure them a job – in addition to the costs associated with hiring the foreign researcher.

# RETAINING EXCELLENCE: FROM “WELCOME PACKAGES” TO INTEGRATION

In view of today's high degree of researcher mobility,<sup>6</sup> as well as the global competition for talent, researchers can be difficult to retain. Several respondents therefore suggested that universities embrace the options provided by international hires who stay only briefly in the country rather than seeing short-term hires as a problem. Respondents argued that talented and excellent researchers, who spend shorter periods of time in Denmark, have the potential to subsequently become ambassadors for Danish universities as well as providing them with access to research networks at research institutions abroad.

At the same time, it is costly for Danish universities if the international faculty member leaves the country again within a few years. Firstly, job mobility is associated with a short-term decrease in research performance due to the costs associated with the researcher adjusting to new settings such as a new research culture, new institutional policies, and new social networks (Fernández-Zubieta, Geuna, and Lawson 2015). Secondly, the university invests substantial resources in finding the right person for the job, to help them – and often their partner or family – settle in their new country of residence, and to integrate them in teaching activities and administrative duties, which in some cases may even require the international hire to learn Danish.

While short-term mobility is a condition and may contribute to a more dynamic faculty as well as international networks, Danish universities have an explicit interest in attempting to retain talented foreign researchers and reap some of the potential benefits of foreign researchers properly embedded in Danish universities.

## **BETTER CAREER MANAGEMENT FOR FOREIGN JUNIOR RESEARCHERS**

As stated above, targeting promising researchers early on in their careers, before they make a name for themselves, can be a more resource effective recruitment strategy for Danish universities that seek to attract high-profile researchers. But in order to retain that talent, Danish universities need to present the young researchers with relevant career prospects, which several respondents highlight as a general challenge.

Foreign junior researchers coming to Denmark for temporary positions are in the process of building a CV for their future academic career. They take a chance in coming to Denmark to pursue more permanent positions, in some cases uprooting their entire family. Yet, as interview respondents point out – and as DEA has ad-

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6. See more in the chapter on “Why is internationalization inherent to university research?” page 11.

dressed earlier (DEA 2014a) – junior researchers are both a significant source of research talent and a workforce often treated as casual laborers at the universities, not uncommonly in positions of one year or less. Thus, according to a pilot project from The European Science Foundation tracking 499 doctorate holders, twelve percent had been in positions with financial support for a year or less, while the majority (fifty-two percent) had received support for two years (European Science Foundation 2015). Especially in the experimental sciences, postdocs are crucial to performing experiments, and in the natural sciences across Danish universities, they constitute more than one third of academic staff (UNI•C 2011).

It is a common notion that having a high number of postdoctoral researchers on flexible (i.e. fixed-term) contracts is beneficial to universities, who get to choose the best candidates for faculty positions from a competitive and dynamic job market. However, an interesting observation by The European Science Foundation is that postdoctoral researchers on permanent contracts were more productive than those on temporary contracts. Researchers on permanent contracts were twice as likely to produce patents, nearly three times as likely to have had a significant impact on policy or practice, more likely to have been awarded an academic prize, and nearly twice as likely to have undertaken public engagement activities. Those on permanent contracts were also significantly more satisfied with the scientific environment of their workplace, its organizational culture and career development support (European Science Foundation 2015). The numbers, however, do not reveal whether researchers offered permanent contracts are provided with better employment conditions, because they are generally better qualified, or

whether better employment conditions in fact produces better researchers. While cause and effect cannot be fully distinguished, the European Science Foundation's study nevertheless provides food for thought.

Several interviews indicated that many junior researchers perceive hiring procedures as being unclear at Danish universities, being left with the impression that the universities prefer to hire locally for Danish researchers. As respondents noted, this impression does not work in favor of foreign scholars envisioning a career at a Danish university. Respondents also emphasized the importance of exposing foreign junior researchers to possible academic careers in private companies as an alternative, but – especially for the hard sciences – very common career path.

Previous studies of Danish research institutions have highlighted the lack of career management for junior researchers (The Danish National Research Foundation 2015). Postdoctoral researchers and assistant professors often find that when they ask for clear guidelines on how to improve their chances for careers in academia, most managers reply that requirements for promotion are “the more the better”. In fact, the uncertainty about how to advance in academia even extends to associate professors (Danish Agency for Science Technology and Innovation 2011).

DEA's study highlights a need for research managers and department heads to take a more active role in preparing foreign postdoctoral researchers for what it takes to get a job as an academic in Denmark. In short, this means treating them as candidates for the positions at the university department rather than casual laborers. Firstly, Danish universities should consider hiring

postdoctoral researchers for longer periods that enable them to publish and teach, which, as the Danish National Research Foundation has previously pointed out, promotes their career opportunities in academia. Secondly, when hiring postdoctoral researchers for positions of up to two years is almost the norm internationally, providing them with clearer career prospects of more long-term and even permanent positions would be a competitive advantage for Danish universities. This entails managing their career as researchers as well as exposing them to a broader job market beyond academia in Denmark, recognizing that only a minor share of postdoctoral researchers will end up as part of the university faculty. The latter seems an effective strategy for keeping postdoctoral researchers within for example the universities' network of research intensive private companies, should they choose that path. Lastly, the lack of career management is not reserved for postdoctoral researchers, but extends to assistant and even associate professors.

### **THE DANISH TENURE TRACK SYSTEM: A MODEL IN PROGRESS**

In recent years, the debate on career prospects for junior academics has highlighted the possibilities in a Danish model for tenure track positions as a means to offering better conditions for long term research employment at the Danish universities. Today, many Danish universities offer some tenure track positions for researchers. While it has come a long way, the Danish tenure track model, as well as the general academic job structure at the universities, still face a few significant challenges compared to what some of the best universities abroad have to offer.

The Danish tenure track was made possible in 2013 after revisions to the Employment Order

allowing for the appointment of six-year assistant professorships with a view to a permanent position as an associate professor without job advertisement. The tenure track model was in demand as a means to providing Danish universities with an internationally more competitive and attractive job structure offering transparent requirements for applicants and a higher level of job security and career prospects for junior researchers (The Royal Danish Academy of Sciences and Letters 2014).

While a Danish tenure track model is a key step towards offering competitive positions by international standards, DEA's study suggests that Danish universities are still reluctant to make full use of this opportunity. The model constitutes but a minor share of all the job-postings at the Danish universities, and it lacks the second part of the tenure track from associate professor to full professor compared to the equivalent model at most universities in the US (The Royal Danish Academy of Sciences and Letters 2014).

Additionally, several respondents emphasized that the salaries, starting-packages and working conditions offered in Danish tenure track positions did not match the positions offered at similar universities in other countries, notably in the US.

### **Empowering the faculty – the way forward for a dynamic tenure track system?**

Interview respondents suggested there is a general worry at Danish universities that a further development of a tenure track model will introduce an increasing number of faculty positions locked to tenure tracks. Furthermore, there is a general worry that tenure tracks will automatically lead to tenure promotion, resulting in fewer options of

filling positions for excellent senior researchers, and consequently to a less dynamic workforce. There is a fear of betting on the wrong junior researchers, who will not live up to their expectations of becoming excellent researchers, but nevertheless have a long-term seat among the faculty.

At the same time, several interview respondents also criticized the general custom at Danish universities to postpone offering junior researchers more long-term positions for as long as possible, often offering those positions to academics who have already demonstrated their ability to attract external funding.

The Danish tenure track model presents a possible contrast to this practice by reducing the short-term competition between younger researchers. Instead, the stability of the “track” perspective gives universities a chance to invest more resources in developing the skills and competencies of the research candidate.

DEA’s study generally supports previous findings that career prospects for junior researchers are not necessarily sufficiently attractive to keep the most promising researchers in academia (Danish Agency for Science Technology and Innovation 2011). DEA has previously pointed out that many junior scholars are skeptical towards their career prospects in academia (DEA 2014b). In a national survey of 12,441 university researchers and PhD students, almost half of all assistant professors – generally believed to have managed to get through the eye of the needle in the academic job market – said they were uncertain as to whether they would be able to achieve financial security as well as appropriate positions in their future careers as researchers. Thirteen

percent of all assistant professors thought the job market outside of academia was more attractive in this regard. In addition to this finding, an evaluation of academic career prospects documented a widespread dissatisfaction among university researchers with the career counselling they receive from university managers (Danish Agency for Science Technology and Innovation 2011). The debate at DEA’s conference in 2014 on the Danish research system suggested that the lack of clear career prospects and attractive careers at the Danish universities still prevails (DEA 2014a).

A Danish tenure track model is an instrument used by Danish universities to present junior researchers with attractive career prospects. At the same time, DEA’s interviews, as well as the case story of the University of California Berkeley (see page 31), suggest that giving faculty more influence on decisions surrounding appointment and promotion is a viable way to address the general worry at Danish universities that tenure tracks will automatically lead to tenure promotion, and consequently to a less dynamic workforce.

Several interview respondents asked for involving all faculty members more actively in formal decisions on recruitment and promotion rather than how appointment is currently handled, in which decisions are left for management on departmental and faculty level seeking the advice of a smaller council of faculty members. As one of the respondents remarked: *We are one of the best research groups in the world, and we kind of know who is good or not.* More specifically, a greater involvement of the faculty was pointed out as a possible way of ensuring that university departments hire the right profiles, who get to shape the future trajectory of the faculty.

At the University of California Berkeley, dynamism in the faculty is sought through a combination of a tenure track system and a shared governance model, which actively involves the faculty in decisions on who gets appointed and promoted.

On the one hand, the tenure track system at UC Berkeley encourages junior researchers to pursue academic excellence with a well-defined career path to tenure, a sufficient degree of economic security, and the academic freedom to pursue long-term research questions. Instead of having to compete for the same tenure positions, Berkeley encourages collaboration between faculty members by having no quotas on how many faculty members can be accelerated or otherwise rewarded as part of the tenure track.

On the other hand, tenured as well as tenure-track faculty members are held accountable to a continuous striving for academic excellence by their peers, who take formal responsibility for reviewing and deciding who gets to shape the future of Berkeley's leading research environments. This formal responsibility is placed upon faculty members by delegating them authority through Berkeley's shared governance model on decisions on faculty appointments and promotions. In this way, each faculty member is exposed to a pressure to perform by their peers, who have granted them the trust of either a tenure track position or a promotion. At the same time, involving faculty members in management decisions on appointment and promotion also places a shared sense of responsibility in the research environment, where it is in everyone's interest to enable and encourage their colleagues to develop their full potential as both researchers and teachers for the sake of the general research environment.

Another perspective on addressing the challenge of underperforming scholars with tenure is the possibility of including different professional tracks within the tenure track model. In the case of Berkeley, this option is provided to highly qualified teachers, who tend to give priority to their career as teachers rather than researchers. This is a highly respected track within tenure, which opens up the possibility of a more diverse faculty performing in different aspects of the university.

Of course, Danish universities stand out from Berkeley in many ways, not least in the possibility of researchers at Berkeley taking up positions at other universities in the US if they are unsuccessful in achieving tenure at UC Berkeley. This nurtures a dynamic job market, where the composition of the faculty changes regularly to a degree, which seems unlikely at Danish universities at present times. Besides the fact Denmark has fewer universities and consequently a smaller academic job market, Danish researchers do not seem very likely to take up academic positions at universities abroad, should they be unable to achieve a job at a Danish university, as was pointed out in a previous report from DEA and the Danish Agency for Science, Technology and Innovation, *From quantity to quality in international mobility and networks* (DEA 2016b).

However, if a Danish tenure track system is to address the general worry that tenure tracks will automatically lead to tenure promotion, it also requires that tenure track positions are challenged to perform throughout their career. This would entail that postdoctoral researchers as well as non-tenure track assistant professors in temporary positions have the prerequisites for qualifying for the position as associate professor and consequently expose tenure track faculty to

the high standards needed for a promotion. One way to promote such prerequisites would be to ensure that temporary positions for postdoctoral researchers and assistant professors are of suffi-

cient length for them to publish and teach, which ultimately promotes their career opportunities in academia.

## Retaining excellence: tenure track at University of California, Berkeley

The tenure track system at the University of California, Berkeley is based on a long tradition of shared governance. Unlike at Danish universities, the faculty at Berkeley plays a prominent role in deciding who gets appointed and promoted. This active use of peer review by faculty members is an example of how a world-class university works towards ensuring high quality in research by recruiting and nurturing excellent researchers.

At UC Berkeley, all tenure-track<sup>7</sup> and tenured faculty are empowered through the Academic Senate to determine academic policy, set conditions for admission and the granting of degrees, authorize and supervise courses and curricula, and advise the administration on faculty appointments, promotions and budgets. This delegated authority makes the Academic Senate unique among faculty governments.

Berkeley's long-standing tradition of shared governance helps assure rigor and fairness when reviewing candidates for new research positions or promotion as part of an existing tenure track position. The evaluation of candidates is holistic in the sense that it contains no formulae regarding numbers of publications, h-indices, or journal impact factors. The definition of academic excellence differs across academic fields. According to Fiona

M. Doyle, the Dean of the Graduate Division at Berkeley, involving faculty in management decisions on personnel matters allows for a better understanding of these differences while securing uniformity regarding the standard of excellence. She states:

"Involving the faculty provides the bandwidth to do more scrutiny across different fields. How do you compare the contributions of a professor from physics and of literature? There are calibrated differences across disciplines, which are taken into account when you consult the faculty for advice."

The academic freedom that a life-long tenured position encompasses in itself provides motivation for researchers to continue to strive for academic excellence and climb the career ladder at the academic review every two to four years. "But clearly, a well-defined career path to tenure, combined with the academic freedom it ultimately provides, are necessary but insufficient to assure excellence," Dean Doyle concludes.

UC Berkeley also encourages collaboration among colleagues, as the university has no quotas on how many faculty members can be accelerated or otherwise



7. These are positions for which there is every expectation, and administrative budgetary commitment, that the person will receive a tenure review within seven years that, if passed successfully, provides lifetime employment with the college or university (<https://career.berkeley.edu/PhDs/PhDtransition>).



rewarded. This way, involving faculty members in management decisions on appointment and promotion also places a shared sense of responsibility in the research environment. It is in everyone's interest to enable and encourage colleagues to develop their full potential as both researchers and teachers for the sake of the general research environment. Or at least in the interest of those who voted to appoint the tenure track candidate.

A general concern among critics in the US is that the tenure track system's unproductive tenured faculty can limit opportunities for new faculty and stifle academic innovation and improvement, since the tenure position is for life.<sup>8</sup>

However, tenured and tenure-track faculty are held accountable to continuously strive for academic excellence by their peers, who take responsibility for reviewing and deciding who gets to shape the future of Berkeley's leading research environments. "If you stop developing as an

academic, you get stuck at the very lowest level of the career ladder, which is really an embarrassment. There is a sense of public shaming, which bars many people from not developing at all," Dean Doyle explains.

There are examples of tenured faculty who for some reason stop developing as researchers. What is often done in such cases is to move them into a more active teaching role, where they are not expected to do as much research, says Dean Doyle. "This teaching track is by no means an embarrassment, but a highly-respected position. You have to be a very skilled teacher to obtain it."

Sources: the websites of UC Berkeley and the American Association of University Professors; Presentation by Dean Fiona M. Doyle at the Royal Danish Academy of Sciences and Letters in 2014 as well as a personal interview with Dean Fiona M. Doyle.

## **REAPING THE BENEFITS OF INTERNATIONAL RECRUITMENT: A MATTER OF INTEGRATION**

Recruiting internationally-leading researchers provides Danish universities with international recognition and branding value, attracting attention from students, researchers, and the surrounding society. But, as several interviews pointed out, benefitting from the most important potential effects of hiring for talent is crucially a matter of integrating that talent into the faculty and research at the department.

Almost all interviews point to a range of additional value from hiring top researchers, where they interact with the rest of the faculty. Researchers with international experience from leading research environments bring with them standards for conducting internationally-leading research, strong international networks that may lead to additional international funding for collaborations

with both research institutions and industry, and the possibility of providing both graduate and PhD students with cutting-edge, research-based education and supervision. As was pointed out in DEA's previous report on attracting international research funding (DEA 2016c), several Danish university departments use international recruitment in their strategies for accessing international research funding.

Unfortunately, respondents gave examples of foreign researchers primarily – if not solely – funded by international sources, with little or no interaction or collaboration with their Danish colleagues. Foreign researchers were not mentioned in their efforts to apply for research funding from Danish research funding bodies, nor

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8. (Benjamin 1998)



were their Danish colleagues introduced to new international research networks as well as funding options beyond Denmark. Obviously such isolation, whether self-imposed or forced, prevents the cross-fertilization of ideas and networks.

DEA's study suggests that it requires a critical mass of international researchers to ensure more diversity both professionally as well as socially. Interview respondents emphasized that foreign researchers coming to Denmark in order to boost their career are often more motivated to succeed and often willing to work longer hours. Furthermore, respondents pointed out that there is a tendency among Danish scholars to clearly separate work and leisure time, which makes it hard for foreign researchers to meet people and have a social circle outside of work.

DEA's study also suggests that one possible way to increase existing faculties' incentives to interact with new, international colleagues is to give the faculty team greater influence on departmental and faculty management decisions in which researchers are recruited and promoted. Some respondents argued that making faculty members more accountable for recruitment and appointment decisions will ultimately also encourage them to take more responsibility for the integration of new members of the faculty. In the cases where university departments failed to properly integrate foreign researchers it seemed mostly to be an issue of Danish faculty members having no professional interest in their foreign colleagues. As one respondent emphasized:

*When I was hired for a tenure track position at Duke University in the US, I knew there had been a prior voting between the permanent members of the staff, of which*

*some had wanted me to have the position whereas others voted for a different candidate. But because the deliberations had taken place, I felt the faculty had generally accepted me, and that the members were – in general – interested in making the appointment work.*

– **Lars Arge**, Professor, Department of Computer Science, Science and Technology, Aarhus University

### **A pragmatic approach to language issues**

Many interviews stress that when recruiting non-Danish researchers, they should generally – with some exceptions – be considered someone to make Danish universities more international rather than someone, who should learn Danish. Without question, learning Danish helps integration and possibly also increases chances that foreign researchers end up making a career out of their research stay in Denmark. But as several respondents emphasized, Danish universities should not expect top-researchers to take time from their research to learn Danish, especially when hiring them for temporary positions. Recruiting for a faculty group with international outlook means adopting English as a professional language, or another international language, where English is not the most obvious choice, for instance within area studies.

Most university departments in DEA's study with the ambition to have an international outlook have made English their professional language. It is a pragmatic choice made in a work environment, which is in most regards already directed towards an international scene of academic journals and conferences.

There is, however, room for improvement. Several interviewees argue that the administrative language

is still Danish, in which case non-Danish speaking faculty members are not encouraged to apply for management positions. Furthermore, several interviewees are asking for official communication from the Ministry of Higher Education and Science in English. Not least since thirty-eight percent of all newly appointed assistant, associate, and full professors at Danish universities in 2011-2013 had foreign citizenship (Ministry of Science, Innovation and Higher Education 2014), as previously mentioned.

Furthermore, research environments with many non-Danish speaking faculty members could consider options for providing more of their teaching in English, either as entire degree programs or as distinct courses or modules. This, however, entails addressing a minor – yet significant – challenge highlighted in several of the interviews. Having many foreign researchers among faculty often means that they get to teach the more interesting Master's level courses that are close to their research and subsequently more prestigious career-wise. Meanwhile, teaching basic subjects at Bachelor level in Danish is often left for native Danish and especially junior researchers, who in return feel their career prospects are hampered. While this problem was dealt with in some cases by having all classes in English, this is not always an option for some departments that teach basic subjects specifically linked to Danish language, culture and society. As Horst and Irwin note, Danish universities should not neglect their role in Danish society in a situation where a significant proportion of funding comes directly from taxpayers (Horst and Irwin 2015).



# ABOUT THE STUDY

The study is based on sixty interviews with researchers, managers on departmental and faculty level, and administrative staff at Danish universities as well as abroad. Interviews were also conducted with managers and board members of Danish public and private research foundations. Forty-three were conducted as semi-structured interviews of approximately one hour each. Seventeen were conducted as focus group interviews in Copenhagen and Aarhus.

Researchers and university managers were identified using desk research of their relevant experiences as well as snowball sampling following an initial email request for relevant interview respondents to faculty level managers at all Danish universities. DEA has strived to select researchers and managers reflecting diversity in gender, academic field, and positions from assistant to full professors across the Danish universities. Interviewees have also been selected on the basis of relevant experience with international mobility and network activities, international recruitment, and attracting international funding. Furthermore, DEA has interviewed researchers with both foreign and Danish nationalities.

In addition, the study draws on background interviews and findings from a survey of literature on internationalization of academic research. The

key findings from this study are described in a separate publication.

Interviews were conducted in the period of October 2015 through June 2016. Respondents are listed below by university affiliation and in alphabetic order by given name. Their title is referring to the title they had at the time of the interview. Interviews marked with an asterisk were carried out as focus group interviews.

## **Interview respondents from Copenhagen Business School**

- Alan Irwin, Professor, Department of Organization, Copenhagen Business School
- \*Duncan Wigan, Associate Professor, Department of Business and Politics, Copenhagen Business School
- \*Kristian Miltersen, Professor, Department of Finance, Copenhagen Business School
- Mark Lorenzen, Professor with special responsibilities, Department of Innovation and Organizational Economics, Copenhagen Business School
- Peter Lotz, Head of Department, Vice Dean of PhD Education, Associate Professor, Department of Innovation and Organizational Economics, Copenhagen Business School

### **Interview respondents from Roskilde University**

- Gorm Rye Olsen, Professor, Department of Social Sciences and Business, Roskilde University
- \*Sune Haugbølle, Associate Professor, Department of Social Sciences and Business, Roskilde University

### **Interview respondents from Technical University of Denmark**

- \*Anke Hagen, Professor, Department of Energy Conversion and Storage, Technical University of Denmark
- Idelfonso Tafur Monroy, Professor, Department of Photonics Engineering, Technical University of Denmark
- \*Ivana Konvalinka, Assistant Professor, Department of Applied Mathematics and Computer Science, Technical University of Denmark
- Peter E. Andersen, Senior Researcher, Department of Photonics Engineering, Technical University of Denmark
- Peter Hauge Madsen, Head of Department, Department of Wind Energy, Technical University of Denmark
- Rasmus Larsen, Head of Department, Professor, Department of Applied Mathematics and Computer Science, Technical University of Denmark

### **Interview respondents from University of Copenhagen**

- \*Alicia Lundby, Associate Professor, Proteomics – Center for Protein Research, Faculty of Health and Medical Sciences, University of Copenhagen
- \*Anders Juul, Professor, Department of Growth and Reproduction & EDMaRC, Rigshospitalet, Faculty of Health and

Medical Sciences, University of Copenhagen

- \*Anders Søgaard, Professor with special responsibilities, Department of Computer Science, Faculty of Science, University of Copenhagen
- Ayo Wahlberg, Professor with special responsibilities, Department of Anthropology, Faculty of Social Sciences, University of Copenhagen
- \*Carsten Smith-Hall, Professor, Department of Food and Resource Economics (IFRO), Faculty of Science, University of Copenhagen
- Charles M. Marcus, Villum Kann Rasmussen, Professor, Niels Bohr Institute, Faculty of Science, University of Copenhagen
- Helle Krunke, Director, Professor, Centre for Comparative and European Constitutional Studies, Faculty of Law, University of Copenhagen
- Ian D. Hickson, Director of Center for Chromosome Stability, Professor, The Department of Cellular and Molecular Medicine, Faculty of Health and Medical Sciences, University of Copenhagen
- Kim Brinckmann, Director, Research & Innovation, University of Copenhagen
- Lars Bo Kaspersen, Head of Department, Professor, Department of Political Science, Faculty of Social Sciences, University of Copenhagen
- Morten Pejrup, Associate Dean for Research, Professor, Faculty of Science, University of Copenhagen
- Per Sanggild, Professor, Department of Veterinary Clinical and Animal Sciences, Faculty of Health and Medical Sciences, University of Copenhagen
- Robert Krarup Feidenhans'l, Head of

Department, Professor, Niels Bohr Institute, Faculty of Science, University of Copenhagen

### **Interview respondents from University of Southern Denmark**

- Jesper Wengel, Professor, Department of Physics, Chemistry and Pharmacy, Faculty of Science, University of Southern Denmark
- \*Karen Andersen Ranberg, Associate Professor, Department of Public Health, Faculty of Health Sciences, University of Southern Denmark
- Ole Nørregaard Jensen, Head of Department, Professor, Department of Biochemistry and Molecular Biology, Faculty of Science, University of Southern Denmark
- Susanne Mandrup, Professor, Department of Biochemistry and Molecular Biology, Faculty of Science, University of Southern Denmark
- Åsa Fex Svenningsen, Associate Professor, Department of Molecular Medicine, Faculty of Health Sciences, University of Southern Denmark

### **Interview respondents from Aalborg University**

- Frede Blaabjerg, Professor, Department of Energy Technology, The Faculty of Engineering and Science, Aalborg University
- \*Marco Maschietti, Associate Professor, Department of Chemistry and Bioscience, The Faculty of Engineering and Science, Aalborg University
- Søren Pihlkjær Hjortshøj, Head of Section at Aalborg University Hospital, Head of Department, MD, Department of Clinical Medicine, The Faculty of Medicine, Aalborg University

### **Interview respondents from Aarhus University**

- Anders Frederiksen, Head of Department, Professor, Department of Business Development and Technology, Aarhus BSS, Aarhus University
- \*Armin W. Geertz, Professor, School of Culture and Society – Department of the Study of Religion, Arts, Aarhus University
- Bjarke Paarup, Head of School, Associate Professor, School of Culture and Society, Arts, Aarhus University
- \*Jacob Sherson, Associate Professor, Department of Physics and Astronomy, Science and Technology, Aarhus University
- John Westensee, Vice Director, AU Research Support and External Relations, Aarhus University
- Johnny Laursen, Dean, Arts, Aarhus University
- Jørgen Kjems, Director, Professor, Interdisciplinary Nanoscience Center (iNANO), Science and technology, Aarhus University
- Kristjar Skajaa, Head of Department, Department of Clinical Medicine, Health, Aarhus University
- Lars Arge, Professor, Department of Computer Science, Science and Technology, Aarhus University
- Lars Birkedal, Head of Department, Professor, Department of Computer Science, Science and technology, Aarhus University
- \*Lars Ditlev Mørck Ottosen, Head of section, Associate Professor, Department of Engineering – Biological and Chemical Engineering, Science and Technology, Aarhus University
- \*Martijn Heck, Associate Professor, Department of Engineering – Photonics, Science and Technology, Aarhus University

- \*Niels Peter Revsbech, Professor, Department of Bioscience – Microbiology, Science and Technology, Aarhus University
- Peter Dalsgaard, Associate Professor, School of Communication and Culture – Information Science, Arts, Aarhus University
- Peter Kristensen, Associate Professor, Department of Engineering – Molecular Engineering, Science and Technology, Aarhus University
- \*Rubina Raja, Professor, School of Culture and Society – Archaeology, Arts, Aarhus University

#### **Interview respondents from Danish public and private research foundations**

- Karin Lottrup Petersen, Program Director, MD, Lundbeck Foundation Clinical Research Fellowship Program, Innovation Center Denmark
- Peter Høngaard Andersen, CEO, Innovation Fund Denmark
- Anne-Marie Engel, Director of Research, Lundbeck Foundation
- Birgitte Nauntofte, CEO, Novo Nordisk Foundation
- Peter Munk Christiansen, Chair, The Danish Council for Independent Research
- Liselotte Højgaard, Chair, The Danish National Research Foundation
- Thomas Sinkjær, Director of Science, Villum Fonden

#### **Interview respondents from universities abroad**

- Christine Chang, US grants specialist, Grants Office, Karolinska Institutet
- Eva Björndal, Team Leader, Post-Contract Office, Karolinska Institutet

- Fiona M. Doyle, Dean of the Graduate Division, Professor, University of California, Berkeley
- Ludde Edgren, Head of office, Grants and Innovation Office, University of Gothenburg

#### **List of people interviewed for background**

- Hanne Foss Hansen, Professor, Department of Political Science, Faculty of Social Sciences, University of Copenhagen
- Kaare Aagaard, Senior Researcher, Department of Political Science – Danish Centre for Studies in Research and Research Policy, Aarhus BSS, Aarhus University
- Lise Degn, Assistant Professor, Danish School of Education, Faculty of Arts, Aarhus University
- Lise Thorup-Pedersen, Deputy Director, Rectors Secretariat, Aalborg University
- Mikkel Bülow Skovborg, Innovation Attaché, Innovation Centre Denmark Silicon Valley
- Nina Espegård Hassel, Innovation Attaché, Innovation Centre Denmark Shanghai
- Olaf Svenningsen, Executive Officer, PhD, Southern Denmark Research Support, Faculty of Health Sciences, University of Southern Denmark
- Trine Buhl Monty, Senior Executive Consultant, SCIENCE Faculty Office, Research and Innovation, Faculty of Sciences, University of Copenhagen

# BIBLIOGRAPHY

Benjamin, Ernst. 1998. "Some Implications of Tenure for the Profession and Society | AAUP." *American Association of University Professors*. <https://www.aaup.org/issues/tenure/some-implications-tenure-profession-and-society>.

Danish Agency for Science Technology and Innovation. 2011. *Evaluering af forskerkarriereveje – håndtering af forskeres karrierer på de danske universiteter*. Vol. 3. Forskning: Analyse og Evaluering. Forsknings- og Innovationsstyrelsen.

DEA. 2014a. *Dansk forskning anno 2030 – er vi stadig i verdensklasse?* Kbh.: DEA.

— — —. 2014b. "DEA Notat: Usikre Karriereperspektiver for Unge Universitetsforskere."

— — —. 2016a. *A Brief History of the Internationalization of Danish Research – A Literature Review*. International Outlook of Danish Research. DEA.

— — —. 2016b. *From Quantity to Quality in International Mobility and Networks*. III vols. International Outlook of Danish Research, Part I. DEA.

— — —. 2016c. *International Research Funding*. III vols. International Outlook of Danish Research, Part II. DEA.

Dewey, Patricia, and Stephen Duff. 2009. "Reason before Passion: Faculty Views on Internationalization." in *Higher Education* 58 (4): 491–504. doi:10.1007/s10734-009-9207-z.



DJØF –The Danish Association of Lawyers and Economists. 2016. “Universities and Research – Working Conditions for Teachers and Researchers at Universities and Research Institutions.” February 8. <https://www.djoef.dk/r-aa-dgivning/ans-ae-ttelsesvilk-aa-r/undervisere-og-forskere/universiteter-og-sektorforskningsinstitutioner.aspx?p=1>.

European Science Foundation. 2015. “Career Tracking of Doctorate Holders. Pilot Project Report.” [http://www.esf.org/fileadmin/Public\\_documents/Publications/Career\\_Tracking.pdf](http://www.esf.org/fileadmin/Public_documents/Publications/Career_Tracking.pdf).

Fernández-Zubieta, Ana, Aldo Geuna, and Cornelia Lawson. 2015. “Productivity Pay-Offs from Academic Mobility: Should I Stay or Should I Go?” [http://sites.carloalberto.org/geuna/Publications/Ferna%CC%81ndez-Zubieta%20Geuna%20Lawson\\_Productivity%20pay-offs%20from%20academic%20mobility%20Should%20I%20stay%20or%20should%20I%20go%20\(2016\).pdf](http://sites.carloalberto.org/geuna/Publications/Ferna%CC%81ndez-Zubieta%20Geuna%20Lawson_Productivity%20pay-offs%20from%20academic%20mobility%20Should%20I%20stay%20or%20should%20I%20go%20(2016).pdf).

Franzoni, Chiara, Giuseppe Scellato, and Paula Stephan. 2015. “International Mobility of Research Scientists: Lessons from GlobSci.” In *Global Mobility of Research Scientists The Economics of Who Goes Where and Why*, edited by Aldo Geuna.

Gornitzka, Åse, Magnus Gulbrandsen, and Jarle Trondal, eds. 2003. *Internationalisation of Research and Higher Education: Emerging Patterns of Transformation*. Rapport / Norwegian Institute for Studies in Research and Higher Education, 2003/2. Oslo, Norway: NIFU.

Horst, Maja, and Alan Irwin. 2015. “Succeeding in a European Research Environment: Eleven Lessons from Denmark.” *The SAGE Handbook of Research Management*, 247–58.

Huang, Futao, Martin Finkelstein, and Michele Rostan, eds. 2014. *The Internationalization of the Academy*. Dordrecht: Springer Netherlands. <http://link.springer.com/10.1007/978-94-007-7278-6>.

IDEA Consult. 2013. “MORE2 - Support for Continued Data Collection and Analysis Concerning Mobility Patterns and Career Paths of Researchers. Deliverable 5 – Higher Education Sector Report (Indicator Report).” [http://ec.europa.eu/euraxess/pdf/research\\_policies/more2/Report%20on%20survey%20of%20researchers%20in%20EU%20HEI.pdf](http://ec.europa.eu/euraxess/pdf/research_policies/more2/Report%20on%20survey%20of%20researchers%20in%20EU%20HEI.pdf).

Ministry of Higher Education and Science. 2015. "Forskningsbarometer 2015." *Forskning Og Innovation: Analyse Og Evaluering*. <http://ufm.dk/publikationer/2016/filer/forskningsbarometer-2015.pdf>.

Ministry of Science, Innovation and Higher Education. 2012. *Bekendtgørelse Om Ansættelse Af Videnskabeligt Personale Ved Universiteter*. <https://www.retsinformation.dk/Forms/R0710.aspx?id=140435>.

— — —. 2014. "Forskerrekrutteringen På Universiteterne 2011-2013 Statistiknotat." <http://ufm.dk/forskning-og-innovation/statistik-og-analyser/forskere-ved-universiteterne/forskerrekrutteringen-pa-universiteterne-2011-2013-statistiknotat-2.pdf>.

Nomaler, Önder, Koen Frenken, and Gaston Heimeriks. 2013. "Do More Distant Collaborations Have More Citation Impact?" *Journal of Informetrics* 7 (4): 966–71. doi:10.1016/j.joi.2013.10.001.

Taylor, John. 2004. "Toward a Strategy for Internationalisation: Lessons and Practice from Four Universities." *Journal of Studies in International Education* 8 (2): 149–71. doi:10.1177/1028315303260827.

The Danish National Research Foundation. 2015. "The Post-Doc Challenge." <http://dg.dk/filer/Publikationer/The-Post-doc-Challenge.pdf>.

The Royal Danish Academy of Sciences and Letters. 2014. "Tenure Track – En Dansk Model? Klare Karriereveje I Dansk Forskning." [http://www.royalacademy.dk/~media/RoyalAcademy/Filer/FPU/2014/Forskningspolitisk-Udvalg\\_Hvidbog-2014.pdf?la=da](http://www.royalacademy.dk/~media/RoyalAcademy/Filer/FPU/2014/Forskningspolitisk-Udvalg_Hvidbog-2014.pdf?la=da).

UNESCO. 2016. "Science, Technology and Innovation: Gross Domestic Expenditure on R&D (GERD), GERD as a Percentage of GDP, GERD per Capita and GERD per Researcher." March 9. <http://data.uis.unesco.org/Index.aspx?queryid=74>.

UNI•C. 2007. "Fornyelse I Forskerstaben. Forskerpersonale Og Forskerrekruttering På Danske Universiteter 2004-2006." <http://ufm.dk/forskning-og-innovation/statistik-og-analyser/forskere-ved-universiteterne/fornyelse-i-forskerstaben-forskerpersonale-og-forskerrekruttering-pa-danske-universiteter-2004-2006.pdf>.

— — — . 2011. "En Forskerstab I Vækst. Forskerpersonale Og Forskerrekruttering På Danske Universiteter 2007 – 2009." <http://ufm.dk/forskning-og-innovation/statistik-og-analyser/forskere-ved-universiteterne/en-forskerstab-i-vekst-forskerpersonale-og-forskerrekruttering-pa-danske-universiteter-2007-2009.pdf>.

Universities UK. 2008. "International Research Collaboration: Opportunities for the UK Higher Education Sector." [http://www2.le.ac.uk/departments/gradschool/about/external/publications/international-research-collaboration.pdf/at\\_download/file](http://www2.le.ac.uk/departments/gradschool/about/external/publications/international-research-collaboration.pdf/at_download/file).

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## ABOUT DEA

DEA is an independent, non-profit think tank based in Copenhagen, Denmark.

Our mission is to promote intelligent and effective investments in research, education, and innovation that contribute to higher growth and productivity.

DEA strives to fulfill this mission by providing high-quality research, analyses and policy advice, and by engaging in constructive dialogue with the political system and key public and private stakeholders. DEA also collaborates with relevant public and private companies to ensure that policy development is informed by needs and insight from industry.

## WHAT WE DO

DEA aims to be a credible and impartial source of insight into research, education and innovation policy. To that end, we:

- Undertake state-of-the-art research and analyses both in-house and in collaboration with leading researchers, consultants and policymakers in Denmark and abroad.
- Organize conferences, seminars, and workshops to stimulate informed, constructive debate and networking among key public and private stakeholders.
- Participate in the public debate regarding science, education, and innovation through e.g. blogs, articles and other contributions in the media.
- Undertake selected commissioned research and consultancy projects, provided that such projects are in line with our professional and ethical standards.
- Give invited talks in Denmark and abroad.