

Letter from Lord Krebs, Chairman of the Science and Technology Committee, to the Rt Hon David Willetts MP, Minister of State for Universities and Science, Department for Business, Innovation and Skills

On 13 July, you gave evidence before the House of Lords Science and Technology Committee. You will recall that the evidence session included a short discussion during which we questioned you about mobility of talent and, in particular, about the following propositions:

- that the UK is becoming a less attractive destination for researchers due to the worsening differential, whether real or perceived, in funding for research between the UK and other destinations;
- that the UK will become increasingly less attractive for researchers if cuts in funding increase this differential further; and
- that funding cuts will affect mobile talent in the UK at the senior level, the UK's ability to attract outstanding graduate students from abroad and the career choices made by young people.

In response, you acknowledged the importance of the issues raised by these propositions and invited the Committee to provide evidence to support them. The evidence could, you suggested, then be considered as part of the current comprehensive spending review process.

On investigation, the Committee has discovered that there is a significant lack of internationally comparable data that records the flow of researcher migration, their career stage, or the reasons for individual movements into and out of different countries. There may also be a time lag between the cause and effect of funding cuts. It is difficult therefore to demonstrate a robust empirical causal link between funding levels in different countries and the ability to attract or retain the best researchers. It is possible however to provide anecdotal evidence, and there are examples of studies that support such a link.¹

Prompted by your invitation, I wrote, on behalf of the Committee, to the Vice-Chancellors of six leading research universities in the United Kingdom: the University of Cambridge, the University of Oxford, University College London, Imperial College London, the University of Manchester and the University of Edinburgh. Recognising that little research has been done to collect relevant quantitative evidence, I asked whether they could provide the following: examples of any difficulties that they had encountered in recent years in recruiting or retaining (a) senior researchers and (b) high-quality postgraduate researchers or post-doctoral students; where known, reasons for individuals' decisions not to accept or continue employment; and their expectation of the effects of reductions in funding on staff

¹ *Knowledge nomads: why science needs migration*, Demos, Natalie Day and Jack Stilgoe (2009); *The Elite Brain Drain*, R Hunter, A Oswald, and B Charlton (June 2009, *The Economic Journal*, 119, F231-F251); *Brain Drain: Migration of Academic Staff to and from the UK*, HEPI, B Bekhradnia and T Sastry (2005); *Talent wars: the international market for academic staff*, Universities UK Policy Briefing, 2007.

recruitment and retention. I am now writing to you, on behalf of the Committee, to set out the principal themes emerging from the evidence we received and to answer your challenge to the Committee with a reciprocal challenge.

Our starting point is self-evident: that, to achieve excellence, academic research teams are drawn from an international pool of talent. Professor Andrew Hamilton FRS, Vice-Chancellor of Oxford University, told us: “The world’s leading universities now operate in a truly global environment, and we expect that our academic staff will be recruited from around the world. ... Turnover of staff and recruitment from outside the UK is a sign of the institution’s strength”. In 2007-08, non-UK nationals made up 23 per cent of academic staff.² The UK is also dependent on international students, with non-UK citizens representing more than 40 per cent of the doctoral population in the UK.³ At present, 40 per cent of Oxford’s academic staff are non-UK nationals. At Imperial College, the nationality of new academic staff (lecturer to professor) joining Imperial College is currently 60.9 per cent from the UK, 26.6 per cent from the EU and 12.5 per cent from non-EU countries; the nationality of research staff (post-doctoral up to senior research staff) is 40 per cent from the UK, 34.7 per cent from the EU and 25.2 per cent from non-EU countries.

In this context, the international flow of talent is fluid and the direction of movement is liable to change according to the relative attractiveness, whether perceived or real, of the research environment in one country compared to another. There is also evidence to show that mobility over a lifetime is highest amongst the “best brains”.⁴

Surveys and studies of research migration show that there are many “push” and “pull” factors affecting the decision to migrate. Some of the key “pull” factors include research funding, access to world-class facilities, scientific excellence and prestige, research culture and higher wages.⁵ As our competitors have recognised the importance of science to economic growth and have increased the proportion of funding for research, the competition for international talent will heighten.

The responses we received from Vice-Chancellors support our concern that there is a significant risk that a worsening differential in funding between the UK and other countries will damage the ability of UK universities to attract and retain high quality researchers, and provide recent examples of the difficulties they have experienced in recruiting staff.

Professor Hamilton of the University of Oxford, said: “we have very real concerns that the brightest and best researchers at all stages of their career could accept offers of study or employment at our international competitor institutions should the national funding environment become more challenging”; and, referring to the current high ranking of UK universities in international league tables, he commented: “such reputations were hard won, but could easily be lost through a reduction in funding”. With regard to retention, Professor Hamilton explained that the concern

²Higher Education in Facts & Figures, Universities UK, 2009.

³ OECD Science, Technology and Industry Scoreboard 2009.

⁴ B Bekhradnia and T Sastry, *op cit*.

⁵ Natalie Day and Jack Stilgoe, *op cit*; Universities UK Policy Briefing, *op cit*; The impact of international mobility on UK academic research, William Solesbury & Associates (2005); B Bekhradnia and T Sastry, *op cit*; and see R Hunter, A Oswald and B Charlton *op cit*.

of the University was that “as the UK’s funding environment for research becomes less generous than that of other countries, an increase in salary alone (even if this can be afforded) will be insufficient to retain the very highest quality individuals. Overall, the appeal of the UK as a place to undertake research will diminish if the funding available is significantly reduced”.

Professor Malcolm Grant, President and Provost of University College London, suggested that these were “deeply worrying times for the research-intensive universities ... The painstaking work of the past two decades could quite quickly be undone were scholars around the world to become apprehensive about the future commitment of the UK government to science and their willingness to support its leading centres within Britain”. Professor Sir Timothy O’Shea, Principal and Vice-Chancellor of the University of Edinburgh, made a similar point: “we fear that world-class academics whom we have fought hard to bring to this country will go where they can be most sure of securing funding for their research”.

Whilst Sir Keith O’Nions FRS, Rector of Imperial College, suggested that it was too early to assess the effects of recent and proposed funding cuts, he noted that the numbers of Imperial College academic staff moving overseas had increased from 8 per cent to 24 per cent of their turnover in the last five years and the number of research staff moving overseas in the last five years had increased from 15.1 per cent to 22.8 per cent.

We were given a number of specific examples demonstrating the challenges which universities are facing in recruiting and retaining high quality researchers. Professor Dame Nancy Rothwell, President and Vice-Chancellor of the University of Manchester, referred to two individuals who withdrew their applications for chairs because the financial packages (including the funding of laboratory space) were unsatisfactory. Professor Grant of UCL also referred to examples where senior researchers were being offered incentives to go overseas with which the UK was unable to compete. We also draw your attention to the *Times Higher Education* of 9 September 2010 in which it is reported that that a leading British neuroscientist, Dr Adrian Owen, is leaving the University of Cambridge because of a multimillion-dollar programme in Canada. Dr Owen is quoted as saying: “ ... where there are countries increasing their funding while not a lot is being invested in science in the UK, it is dangerous because people will move”.

Professor O’Shea of the University of Edinburgh referred to two senior researchers who returned to posts in the United States this year, “citing difficulties in attracting good international postgraduate research talent as a factor in their departure”. He also commented that, despite significant efforts by the University to resource undergraduate and postgraduate students properly, “we do not come close to the resource offered by major US universities or by the Max Planck Institutes in Germany, which are able to offer many more very attractive fully-funded packages for the best and brightest PhD students”.

Professor Hamilton of the University of Oxford also contrasted the UK with Germany: “in stark contrast to the UK’s approach to reducing funding for research, the German government has established a very generous programme to attract the best scientists to German universities.” He gave an example of a senior academic

who had been invited to take up “a generously funded position” in Germany, the loss of whom would weaken Oxford’s work in the area because of the difficulty in attracting a replacement of similar calibre. Professor Hamilton gave a second example: following a recent funding shortfall as a result of the merger of the Council for the Central Laboratory of the Research Councils and the Particle Physics and Astronomy Research Council to form the STFC, the level of support for particle physics and astronomy research has been significantly reduced, as a result of which two internationally leading physicists have decided to return to the United States rather than take up full time posts in Oxford.

Looking further into the future, Professor Hamilton said:

“As post doctoral researchers are unable to obtain appointments in the UK, it is likely that the brightest and best will seek posts overseas, and so the UK could face a ‘lost generation’ of potential researchers.”

Professor Grant of UCL similarly referred to a fear that there might be “a repeat of the experience of the 1980s, and a haemorrhage of the UK’s leading talent”; and Professor O’Shea of the University of Edinburgh suggested that “if the Research Councils respond to substantial cuts in funding by targeting postgraduate studentships, we risk losing the next generation of researchers, who will either go elsewhere to train, or turn their backs on research and academia as careers altogether”.

It is clear that there is a need for a better understanding of the underlying influences affecting talent mobility, and to understand how the UK can most effectively compete in the “global talent war”.⁶ The evidence we have received is a warning against complacency. It highlights the risks to which the UK science base is being exposed as our competitors are able to attract high quality researchers away from the UK to more welcoming research environments abroad. The risks are significant and, in our view, international collaboration in isolation does not answer the challenges they pose. Without a strong UK science research base, the UK will be in no position to make an effective contribution to international collaborative efforts. Collaboration is underpinned by a strong science base. It cannot be a substitute for it.

We acknowledge that the evidence we received is from a limited number of universities. However the six universities selected account for a very significant proportion of research undertaken in the UK and we have no doubt their comments reflect the experience of other world class universities in the UK. Their evidence demonstrates that, in a world where talent is highly mobile, a widening of the funding differential, whether real or perceived, between the UK and our competitors will put at risk the ability of the UK to continue to recruit and retain the very best brains and to maintain the highest standards of research, for which the UK is renowned and from which the UK has been able reap significant commercial benefit.

⁶ Universities UK Policy Briefing, *op cit*.

We look forward to your response to the issues raised in this letter. We invite the Government, in particular, to describe what steps they are taking in order to identify the likely impact of proposed funding cuts on the recruitment and retention of high quality researchers in the UK and what robust mechanisms will be put in place to monitor that impact.

A copy of this letter, along with the letters from the Vice-Chancellors, will be published on the Committee's webpage on the Parliamentary website.

22 September 2010