ASSESSING THE IMPACT OF THE ROBERTS’ REVIEW ENHANCED STIPENDS AND SALARIES ON POSTGRADUATE AND POSTDOCTORAL POSITIONS

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Annex Summaries

CSLPE have also produced eight annexes which provide more data and analysis on the key sections of this main report:

Annex 1 – *The Study and Methods Used* – details the research methods employed in this study and explains our sample selection. It identifies the existing data we used to strengthen this report’s evidence-base. It also includes copies of the seven interview guides used in the site visits and the three online questionnaires we issued to Research Council-funded supervisors, postdoctoral researchers and postgraduates.

Annex 2 – *Perceptions of Skills Shortages in the Three Research Council Areas* – offers more detail on our respondents’ perceptions of skills shortages that are discussed in Section 2 of this report. It identifies the key disciplines that respondents identified as experiencing serious recruitment and retention difficulties and their understandings of the reasons for these.

Annex 3 – *Postgraduates and Postdoctoral Researchers on Pay* – provides a detailed discussion of postgraduate and postdoctoral researchers perspectives on pay. Building on the issues raised in Section 3 on the importance of pay to career decision-making, it identifies the attitudes current researchers hold in relation to university salaries.

Annex 4 – *Internationalisation* – focuses on the increasing internationalization of UK HEIs and expands upon the discussion in Section 3 on understanding skills shortages. Recent CSLPE studies have gathered much comparative information about the UK’s appeal as a host country for European researchers. This annex brings together some of these findings combined with information gathered in site visits and questionnaires.


Annex 6 - *Awareness of the Scheme* - relates to Section 4 of the report and provides more material on the levels of awareness within institutions of the enhanced salaries and stipends scheme.

Annex 7 – The Attractiveness of Research Careers – focuses on how research careers are seen by current postgraduates and postdoctoral researchers.

Finally Annex 8 – Feeder Routes and Recruitment Pools – explores in more detail the understandings respondents had of feeder routes and recruitment pools within their own disciplines. Two key concerns were identified: (1) the size or quantity; and (2) the quality of such pools and routes.
Executive Summary and Policy Recommendations

INTRODUCTION

In August 2005, the body representing the UK’s Research Councils (RCUK) invited tenders for a study to assess the ‘initial impact’ of the Roberts Review Enhanced Salaries and Stipends on Postdoctoral and Postgraduate positions in key shortage areas. The contract was awarded to CSLPE and worked started in October 2005. The study has focused on implementation across three Research Councils: namely the EPSRC, the BBSRC and the ESRC. The tender document requested a series of institutional site visits involving interviews with grant holders, heads of schools, directors of postgraduate research, human resource managers, research administrators and postdoctoral and doctoral researchers.

DEFINING ‘SHORTAGES’

The Research Councils emphasised the fact that recruitment and retention was increasingly difficult across the board or, at least, in a growing number of areas. The site visits generally indicated similar shortage areas. In many cases, however, specific difficulties arose at a sub-disciplinary level and in relation to specific topics and contexts.

The effects of a declining recruitment pool of ‘home grown’ researchers is mitigated by the continued ability to recruit researchers from abroad. In many fields international researchers now constitute the majority of contract research staff and doctoral candidates.

Both the Research Councils and the respondents were at pains to emphasise the issue of quality. Whilst the volume of applications was a problem in some areas, the key concern was quality and the greater difficulty supervisors and PIs had in locating suitable people and being under pressure to make ‘sub-optimal appointments’.

Although concerns around recruitment were generally expressed at both doctoral and post-doctoral levels, retention problems varied by discipline. The EPSRC and ESRC reported greater problems in retaining doctoral students through to completion in the designated shortage areas.

The most critical problem lies in the transition from doctoral to postdoctoral research and the retention of post-docs. The findings suggest marked variation by field, institution and location in the ability to attract quality applicants. Prestigious institutions generally benefited from reputational capital, but still experienced pockets of difficulty. Some locations are more attractive than others especially to researchers from abroad and dual career couples who prefer to live and work in ‘global cities’.

Whilst shortages in some areas appear to be relatively stable, the findings indicate a high degree of fluidity and change. All three Research Councils identified areas of difficulty in the interstices between disciplines and the quality of basic, transferable skills (particularly in quantitative methods). This raises questions about the efficacy of targeting in an increasingly inter-disciplinary and inter-dependent research environment and the merits of single discipline approaches to the problem. A ‘coordinated approach’ was also seen as essential in order to ‘avoid unproductive comparisons’ between the Councils.’

There was a general concern that the kind of evidence required to guide and justify this form of resource targeting with any precision was lacking. This was particularly clear in the case of quality issues.

UNDERSTANDING THE CAUSES OF ‘SHORTAGES’

Recruitment and retention difficulties arise for different reasons. It is important to understand these in order to ensure an effective policy response. In that context, it is useful to distinguish between two broad groups of ‘causes’. The first, and the one which forms the rationale for selective enhancement, concerns the importance of pay as a dimension shaping the relative attractiveness of academic research careers and is concerned primarily to encourage researchers to progress and remain within the UK academic sector. The second concerns ‘other factors’ shaping supply and the volume and quality of the recruitment pool.
The study confirms the importance of pay as one of the single most important factors shaping attitudes towards academic careers. Low pay and pay differentials encourage many researchers to leave the academic sector or, to a lesser extent, consider moving abroad. In practice, however, researchers consider issues around pay in relation to other factors and their wider career path and prospects. The ability to foresee pay progression in the medium term is as important as immediate pay in career decision-making. The relationship between pay progression and contractual insecurity is a major concern. Career prospects showed marked disciplinary and institutional variation. Many researchers value aspects of academic life and research very highly.

The general increase in Research Council doctoral maintenance awards (to £12,000) is generally considered to be adequate. Pay causes more difficulties at post-doctoral level where researchers may face a drop in real income. Researchers often have two different perspectives on pay; the first relates to adequacy and the second to competitiveness. Whilst pay and security are of critical importance it is not clear that researchers are generally comparing their pay in a direct fashion with the private sector or pay abroad but rather considering whether the pay and security they receive is adequate to achieve an acceptable quality of life. In many cases it is not and this is why many of them consider leaving. In other cases it is clear (particularly where attractive opportunities for researchers in others sectors are high) that a direct comparison is being made with salaries in other sectors.

Growing student debt and increases in undergraduate fees are placing a renewed emphasis on financial rewards.

Whilst pay in the US is generally more attractive, differentials in Europe (particularly following the latest European Union enlargement) and developing countries continue to make the UK an attractive location to researchers from abroad. In addition to losing quality people to other sectors there is growing concern that the UK is failing to generate its own recruitment pools as the volume and quality of ‘home grown’ students making the transition into doctoral and post-doctoral research is perceived to be in decline. It is important to consider whether this decline is relative however to the ability to attract higher quality and often more experienced applicants from abroad due to poor and declining conditions for research and low pay in the sending countries. For many foreign researchers, pay is only one factor (and often not the critical factor) shaping their decision to become mobile.

The conventional wisdom that the ‘home grown’ pool is of declining quality might rather reflect the ability to retain the best researchers for the salaries on offer. The ‘risk’ is that the ability to recruit abroad might have a multiplier effect depressing wage rates in the UK. This situation demands careful monitoring.

The existence of natural progression routes and feeder programmes increases the ability to improve skills training and the quality of students generating effective recruitment pools. Disciplines where such routes are less ‘natural’ (such as in business or veterinary schools for example) have greater problems. In some cases, disciplines are able to compensate for the lack of natural feeder routes through recruitment from proximate disciplines.

The extent to which the doctorate is valued varies enormously across disciplines and sub-disciplines. Where the PhD is accepted and respected in other sectors fewer recruitment and retention problems exist although attrition might take place rapidly following graduation.

Where academic research is taking place in close association with professional or vocational training, it is more difficult to attract professionals into academic research and retain them. The pressure on pay is acute in these situations.

Some of the recruitment difficulties identified by the Research Councils are not directly concerned with relative pay. Rather, they reflect specific strategic objectives to develop new research areas and build capacity. In other cases the Research Councils have identified areas that are more directly concerned with developing specific skills (such as quantitative skills or knowledge transfer, for example). In these situations it is less easy to describe the situation as one of declining capacity in the face of the relative attractiveness of careers in other sectors or abroad.

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1 The study only involved work with people who had decided to remain in the sector.
Levels of awareness (in terms of both eligibility and process) are very low across the board reflecting the lack of an effective high profile communication strategy and reliance upon institutional trickle-down and word-of-mouth. The majority of respondents either did not know of the scheme or did not understand it and have therefore not applied or do not realise that they have benefited from it. This has reduced its impact to date.

The scheme is often confused with the Roberts Review Skills Training Scheme. The fact that other significant developments were taking place in relation to pay at the same time (role analysis and the implementation of the single pay spine) compounded the degree of confusion and ‘irritation’. The reasons for the low level of awareness and understanding of the scheme within institutions are complex.

Awareness: Identifying ‘Change Agents’ within Universities
The Research Councils hoped to inform the research community about these developments through a ‘trickle-down’ approach within institutions by first addressing letters to VCs. This filtering process appears to have failed to reach academic and support staff involved in the recruitment of doctoral and post-doctoral contract researchers. Even where more direct action has been taken (such as letters containing specific information on enhancements directed to designated Research Council award co-ordinators in institutions) the message has failed to reach research supervisors.

One factor concerns the identification of the appropriate ‘agent’ or entry point to facilitate effective information dissemination and policy take-up. The relationship between awareness and policy take-up is less of a problem in the BBSRC area due to its more centralised approach (of applying enhancements to posts rather than requiring applicants to make a case).

In the UK, doctoral candidates retain the status of ‘students’ and as such are generally not dealt with by Human Resources departments (HR) but by research degrees offices and, within schools, through post-graduate tutors. This system is well known and relatively similar across institutions.

Although HR departments hold managerial responsibilities for all categories of University staff, in practice the situation for staff on externally-funded research-only contracts is more complex than that for core HEFCE funded staff (such as lecturers). The key actors in this process are the grant applicant (PI) in association with research administrators or finance officers. Institutional approaches to research support show marked variation. Nevertheless the process typically involves the PI negotiating a grant application with the person responsible for ‘signing it off.’ Research administrators were slightly more likely have heard of the scheme.

Implementation Barriers: The Tension between Grant Application and Post-doctoral Pay
Some research administrators encouraged PIs to cost salaries at a higher level. The continued reluctance of PIs to do so reflects the conflicting pressures they face. On the one hand, winning grants is critical to the successful execution of their own research agenda and to their own career progression (being closely linked to performance criteria and the RAE). It was clear from the site visits that the funding environment is increasingly competitive placing pressure on PIs to demonstrate ‘value-for-money’ in applications. On the other hand, PIs are often acutely aware of the dangers of making ‘sub-optimal’ appointments which often place great pressures on their time and threaten the success of projects. Some are also conscious of the exploitative conditions faced by researchers.

Contract researchers involved in grant applications themselves are concerned to balance their desire/need for salary progression with the risks of ‘costing themselves out of a post.’ The reluctance to cost salaries at a higher level in research applications is a particular problem in relation to unnamed researchers where the convention has been to peg the salary at spinal point 6 (£22,289 at the present time)\(^6\). It is generally perceived as easier to make the case for salary progression for existing staff seeking contractual renewal.

The process of negotiation of employment terms and conditions at least in the context of the length of contracts and levels of pay involves a discussion between research administrators PIs and, where relevant,

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\(^2\) The Research Councils have taken diverse approaches to implementation.
\(^3\) The study took place at a very early stage of implementation (see below).
\(^4\) Institutions have often set up specific groups or structures in HR in response to the research careers initiative and more recently fixed-term regulations. Whilst useful in some respects (in terms of policy development) this approach can effectively marginalise issues from the core activities of HR staff and especially those seconded to schools restricting policy implementation.
\(^5\) The introduction of full economic costing will have a significant but as yet unpredictable impact on these processes.
\(^6\) The scheme recommended appointment at spine point 10 or £26,470.
contract researchers. The interface between this discussion and university HR units is generally very weak. The reasons for this are understandable, to the extent that it is the grant that funds the specific HR context, in a more direct way than the pooled or collective experience of core HEFCE funded staff. However, the resulting relationship between employment function and employment status (and pay) results in the effective marginalisation of contract research staff from central HR processes.

Institutions have often set up specific groups or structures in HR in response to the research careers initiative and more recently fixed-term regulations. Whilst useful in some respects (in terms of policy development) this approach can effectively disconnect these issues from the core activities of HR staff and especially those seconded to departments or schools restricting awareness and policy implementation.

Managing Human Resources ‘On the Ground’
Although interviews with HR personnel indicated very low levels of awareness of the specific scheme and limited, if any, awareness of specific recruitment difficulties within disciplines, they also suggested a high degree of support for or tolerance of the principle of pay enhancements as a mechanism to promote effective recruitment and retention. HR staff were already responding to the implications of the new pay structures and many institutions were actively developing strategies in the area of ‘market pay’. To that extent it concurred with more general cultural and policy shifts.

Research managers (Heads of Schools, Directors of Research and PIs) were struggling to come to terms with and disentangle the plethora of recent policy initiatives in the field of research training, full economic costing, pay and fixed term regulations (amongst other things). This group of actors had concerns about both the principle and practical implications of basing pay differentials on shortages as opposed to merit or skills. The problems associated with employing staff on different salaries to do effectively the same work in proximate situations was most keenly felt by PIs who are the people with the most immediate day-to-day contact with and managerial responsibility for researchers. That said, in some shortage areas (such as economics or engineering, for example) staff were more accepting of the logic of market pay and had been effectively implementing it for some time. In such cases, the scheme is providing funds to support pre-existing practice.

In addition to issues around the principle and practice of market pay, the study identified real concerns that attempting to implement market pay in general and the policy of targeted salary enhancement in particular might have some unintended consequences in terms of the overall volume of positions.

The study showed evidence that the measures were having a structuring effect with institutions and other funding bodies attempting to match Research Council pay where possible (at least to the general stipend level) in order to compete with these awards and also develop a level playing field in their own schools and research groups. Whilst this can be viewed positively in terms of generating overall pressure on academic pay, it may have unintended consequences in terms of pushing some funding bodies out of the market altogether reducing the overall volume of positions. It may also specifically advantage more wealthy institutions and groups.

THE IMPACT OF ENHANCEMENTS ON RECRUITMENT AND RETENTION

Where doctoral and post-doctoral pay has benefited from an enhancement under the scheme there is evidence to suggest that it has made a significant difference at least in rendering a position viable or in shaping the decision of which academic post to take. The findings in response to a question about ‘how much pay would make a difference’ back up this point. In most cases the enhanced stipends and salaries had made a real practical difference but remained inadequate. Those responsible for selection also remarked that it increased the attractiveness of the post and the volume of applicants although there was a general view that this made them more competitive in comparison with other universities and not so much with other sectors.

Where respondents did make direct comparisons with pay in other sectors, such as in economics and business for example, the level of enhancement required to begin to match salaries was considerable (at least double existing levels). In these contexts the enhancement was seen as a ‘drop in the ocean’.

The enhancements facilitated transition (onto PhDs and initial contract research positions) and, as such, could be said to support retention within the wider system. At doctoral level retention to completion was not a

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7 It is important to emphasise that the study did not assess the views of researchers who have left the system because of pay.
serious problem in the BBSRC area but more of a problem in some EPSRC and ESRC fields where numerous and lucrative opportunities exist in other sectors. It is not clear that the enhancement supports retention in these cases.

At contract research level, many PIs are concerned about losing researchers prior to the end of a grant. This causes problems in terms of completing work effectively. Furthermore, many researchers reported working for a period at least between grants without any income at all.\(^8\) Whilst the acceptance of higher salaries, especially of existing and named staff, in new grant applications might help to support retention, this does not solve the problem of mid-post retention and prevent people leaving positions before the end of the contracts. Concerns around the ‘pay ceiling’ (discussed above) limit the ability of this scheme to support retention of more experienced and expensive researchers.

**SOME REFLECTIONS AND POLICY RECOMMENDATIONS**

The three Research Councils involved in the study adopted diverse approaches to the implementation of the scheme. This has supported interesting comparisons in terms of policy (see below). Arguably the level of diversity has compounded the problem of awareness and understanding particularly in areas of inter-disciplinary research. The Research Councils might wish to consider a more coordinated approach in the next phase.

- **A Centralized Approach?**
The BBSRC approach of designating shortage areas centrally and automatically applying standard enhancements to all the posts that fall within those areas, on the face of it, avoids some of the implementation problems (in terms of awareness and the potential ‘risks’ of escalating salary budgets in grant applications). On the other hand, it may lack the subtlety required to target resources efficiently in areas suffering key recruitment and retention difficulties. It is also clear that notwithstanding the clarity of the BBSRC’s approach, appointments in the shortage areas continue to be made at a lower level. Rolling out this policy would also place greater responsibility on the Research Councils in the future to ensure that their approach to pay conforms to the JNCHES guidance on market supplements and equality concerns. This might imply careful attention to the monitoring of shortages on an on-going basis.

The more centralized approach also poses less difficulty in terms of evaluation (as the Research Councils will have better information on the flows of resources).

- **A Decentralized and Responsive Approach?**
Whilst devolving responsibility to institutions to allocate the funds as they see appropriate (through DTAs and encouraging grant applicants to ‘make a case’ for salary enhancements) recognises the importance of local knowledge and context, it increases implementation problems and the risk of targeted funding being used in other ways.

It is apparent from the study that responsive forms of salary and stipend enhancement have evolved in many situations and have existed for some time. The PI or supervisor seeking to recruit a researcher is faced with a complex interplay of situations including financial considerations but also personal circumstances and motivations, institutional factors, networks and the attractiveness of the research area. The ability to attract applicants, encourage them to accept positions and retain researchers requires them to engage with this coincidence of events and the relational quality of pay in that context and often at an individual level.

Arguably this approach concurs with the development of the new flexible approach to pay under the JNCHES framework placing responsibility firmly on the institutions, as employers, to justify their approach to pay and ensure it is transparent and in compliance with equality issues.

To be effective, this more responsive and sensitive approach demands a higher degree of awareness-raising (aimed primarily as research administrators and PIs), clearer guidance, encouragement and monitoring. The EPSRC has recognized this situation and made significant efforts to engage with this process both through its relationship with the referees (many of whom will also be PIs) and guidance to applicants. Unfortunately this advice does not appear to have ‘trickled down’ effectively and reduced the perception of risk amongst PIs and contract researchers.

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\(^8\) PIs also referred to the problems of securing bridging funding in these situations.
Concerns about the potential tension between ‘value-for-money’ criteria and the need to recruit high quality staff continue to shape grant application behaviour.

The research community not only need better information about the scheme itself but specific and concrete assurance, from the Research Councils, that the review process will not disadvantage applicants who submit grant applications involving higher salaries. A devolved, responsive approach also makes evaluation of the effects difficult to assess (see below)

- **A Holistic Approach?**

**Targeting Versus General Increases**

The enhancements in both the BBSRC and the EPSRC could be applied to a large proportion of awards (and perhaps as many as 50% of postdoctoral positions). This raises important questions about the efficacy and justifiability of targeting.

Given the broad and fluid nature of recruitment difficulties and the fact that postdoctoral pay is generally so low across the board (in comparison with academic pay and pay in the public sector as well as beyond) it may be better to further increase pay across the board in line with the general increase in doctoral stipends. This might also reduce some of the unintended consequences of selective enhancement (although arguably not the impact of the structuring effect on other funders).

**Pay Progression and Career Paths**

The site visits emphasized the relational quality of pay in career decision-making and the greater importance attached to pay progression in the medium term than immediate pay. Concerns around pay are intrinsically linked to wider concerns around the lack of a career structure in academic research. This is a complex issue which takes us beyond the remit of the current study but emphasizes the relationship that currently exists between employment function and employment status (and pay). The respondents in this study echoed the findings of other research on the fundamental limitations of the contract research system and its relationship to the wider system of research and higher education funding. The perception of a ‘pay ceiling’ in contract research positions is linked to issues about role and the opportunities that such positions present in terms of staff development. Many contract researchers are heavily involved in the preparation of funding applications but this level of responsibility remains unrecognized as they are unable to act as co-applicants or principal applicants. The ASSET survey data underline this concern and point also to the frustration that the majority of contract researchers are unable to take on supervisory roles in relation to doctoral candidates or mentoring roles in relation to their junior colleagues (or importantly have these roles formally recognised).

The current approach to research funding ties the contract researcher to the current project and the funding body and restricts their ability to engage in other forms of activity that might enable them to develop. This not only lies in the way of more integrated professional development for contract research staff, as academic researchers, restricting their own progression but also limits the transfer of knowledge within universities between more experienced contract research staff and their more junior colleagues.

While some initiatives could be developed at Research Council level to improve the situation (see below) ultimately a more significant review of the funding of research and higher education is required to permit a more flexible balance between ‘core’ HEFCE funding (and lectureships) and external sources of funding (and contract research staff).

The new fixed-term regulations will encourage universities to take greater responsibility for their contract research staff and draw them into the mainstream of university HR provisions. This may allow a situation to develop where research staff can develop a broader role (including supervision and mentoring and, where appropriate, teaching) at least for some of their time with Research Councils perhaps buying a proportion of their time to focus on research projects.

The suggestions demand a significant review of employment policies and research funding in the UK Universities. In the interim, developments in the following areas might be expected to improve the relationship between career structure and pay:

I. Increased flexibility in relation to the length of contracts (receptiveness to longer contracts) or measures to break the connection between contract length and project funding.

II. Move away from the association of contract research positions with early or first career positions and permit pay progression. The research community needs to be convinced of the move away from

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9 The current process of moving staff onto the single pay spine will imply quite significant increases for many researchers so this should be taken into account.

10 The MRC and ESRC do permit this.
‘wage for age’ criteria and the willingness of referees and Research Councils to support applications for higher salaries.

III. Increase the opportunities for contract researchers to become co-applicants and some cases applicants for Research Council funding.

IV. Enable contract research staff to act as doctoral supervisors and mentors.

- Complementary Policies

Not all of the shortage areas identified by the Research Councils can be directly attributed to the existence of pay differentials (the rational for the scheme). Where recruitment and retention difficulties reflect a strategic policy commitment to capacity building in emerging areas it might be more appropriate to consider other approaches including, for example, increasing the volume of and ring-fencing awards. Where concerns are over specific transferable skills it might be less contentious and more effective to use existing polices requiring applicants to make the case on the basis of scarcity of skills rather than differential pay.

The study has identified marked variations in the experience of shortages. Fields with strong feeder routes either within their own discipline or in proximate disciplines experience less difficulty in recruiting doctoral and postdoctoral researchers. Various initiatives taken to improve recruitment pools at institutional appear to have been successful.

The report has emphasized the importance of seeing pay in terms of adequacy as much as competitiveness. When asked about pay, many doctoral and postdoctoral researchers referred immediately to the costs of living rather than salaries in others sectors. Housing costs and increasing debt were major concerns in this respect and might indicate the value of complementary approaches in the field of housing.11

- The Evidence Base

Tracking the Careers of Research-Council Funded Researchers

To the extent that the research community accepts the logic of market-pay, it is clear that any decisions about targeting need to be based on sound evidence particularly in relation to the ‘quality’ issue. If the policy of selective targeting is to be continued and accepted by the research community it needs to stand on a sound and explicit evidence-base and be amenable to effective evaluation. This is not the case at the present time.

Although measures are in place to ensure wider financial accountability for the funding that HEIs obtain, Research Councils are currently unable to track the impact of their funding on human resources capacity. To the extent that the Research Councils are concerned with the specific impact of their funding on the human capital dimensions of their initiatives (as the enhanced pay policy suggests) improvements need to be made in their ability to identify and track the body of researchers they fund. Both so they can monitor the effectiveness of the specific policy (have the enhancements been passed on etc) and as a general management information tool.

LIMITATIONS OF THE CURRENT STUDY

The research on which this report is based is limited for a number of reasons. Firstly, it was conducted at a very early stage in the implementation of the policy. Levels of awareness and the embedding of the policy might be expected to increase over time. On the other hand, an early study at this phase might support effective policy reflection and ‘fine-tuning’ before the policy is rolled-out to other Research Councils.

As the tender required us to focus site visits on the shortage areas defined by the Research Councils’ we were unable to assess whether academics working in other areas, technically falling outside defined shortage areas, were experiencing similar kinds of problems. The site visits were also focused on institutions receiving a large share of Research Council funding. It might be expected that other, less research intense, institutions and particularly those with less reputational capital or in more remote locations are experiencing greater recruitment and retention difficulties.

The interviews and survey engaged with researchers who had taken the decision to undertake doctoral and postdoctoral research. As such, the study has not begun to gauge the perspective of their peers who decided not to continue in academic research.

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11 Edinburgh, Oxford and Cambridge have just announced major schemes in the development of low cost housing.
The research team is acutely aware that this study has focused on ‘traditional’ Research Council-funded (full-time) studentships. Almost a quarter of UK doctorates are registered on a part-time basis (the proportion is far higher in areas such as business). Relatively little is known about their situation and career plans.
Section 1: Introduction to the Study and the Report

1.1 INTRODUCTION

In August 2005, THE Research Councils UK (RCUK) invited tenders for a study to assess the initial impact of the Roberts Review enhanced salaries and stipends on postdoctoral and postgraduate positions in key shortage areas. The four-month contract was awarded to the Centre for the Study of Law and Policy in Europe (CSLPE) at the University of Leeds and work started in October. The study has focused on enhanced salaries and stipend implementation across three Research Councils: the Engineering and Physical Sciences Research Council (EPSRC); the Biotechnology and Biological Sciences Research Council (BBSRC); and the Economic and Social Research Council (ESRC). The research involved institutional site visits involving interviews with grant holders, heads of schools, directors of postgraduate research, human resource managers, research administrators and postdoctoral and doctoral researchers. Eleven site visits took place resulting in a total of 81 interviews. Three online questionnaires for researchers receiving Research Council funding were also conducted, as well as analysis of institutional human resource strategies and a number of key informant interviews.

1.2 POLICY CONTEXT: ROBERTS’ REVIEW RECOMMENDATIONS ON SALARIES AND STIPENDS

Science and technology form a key part of the Government’s policy on enterprise and productivity. The strategy on Science and Technology places “innovation at the heart of productivity growth and social gain” (HM Treasury, DTI & DfES, 2002, p. 3). Concern that the supply and quality of human resources in science and engineering could impede plans to develop research and innovation led the Chancellor of the Exchequer along with ministers from the DTI and DFES to ask Sir Gareth Roberts to undertake a review of the supply of science and engineering skills in the UK.

The Roberts Review - SET for Success: The Supply of People with Science, Technology, Engineering and Mathematics Skills (2002) - focused on the supply of science and engineering skills. In 2002, Roberts Review Recommendations were accepted as part of the Government’s science strategy. Additional funding was allocated to the science budget for measures to support the recruitment and retention of researchers.

The Roberts Review identified key concerns around both the volume and quality of doctoral candidates; stipend levels were seen as an important element of the attractiveness of PhD study (2002, p. 122). Roberts found that despite recent increases, PhD stipends have fallen in real terms and low stipends sent “a signal to prospective students that undertaking a PhD is likely to result in a rather spartan existence” (p.118). The growth in student debt acted as a further “deterrent” to postgraduate study (p.119). The Review concluded that “any noticeable improvement in PhD quality will certainly require an uplift in stipends” although the level of stipend required to attract the best quality applicants would vary according to the “particular market conditions” of the institution and depend on such factors as living costs and graduate salary expectations within the field (p.124). The Review recommended both an increase in the level of Research Council stipends across the board and support for further augmentation in the level of stipends in areas experiencing recruitment difficulties. The Spending Review allowed for a general increase in minimum stipends to £12,000 by 2005/6 with additional funding in areas suffering recruitment difficulty.

The Roberts Review was also concerned with the recruitment and retention of postdoctoral researchers and contract research staff (CRS). Two key concerns were that uncompetitive salaries would act both as a disincentive to apply for university positions and also serve to depress the salaries offered to science, engineering and technology postgraduates in other sectors, thus affecting the attractiveness of research careers more generally. Roberts found that although “the overall attractiveness of CRS jobs depends on a wide range of factors, including conditions of work, availability of training and work satisfaction, salary levels are an important factor in attracting sufficient numbers of able graduates to CRS posts” (p.155). As with...
stipends, contract research salaries were found to be “increasingly uncompetitive" when compared to graduate starting salaries and overall increases were recommended in the level of Research Council salaries and specific augmentation where necessary to respond to market demand. The Spending Review increased Research Council funding to support an increase in average postdoctoral salaries by £4000 by 2005/6 and allowed for additional resources to support salary variation to reflect labour market pressures (p.114).

The Research Councils were asked to implement these recommendations. A series of letters posted on the RCUK website can be used to track developments in the implementation of the policies (RCUK, 2004). The letters suggest that shortage areas are identified centrally with individual Research Councils given some flexibility in its specific approach. For enhanced postdoctoral salaries a case would have to be made within grant applications for the enhanced funding.

In July 2003 a letter was sent to Vice-Chancellors and Principals and circulated to Graduate Deans and other Research Council contacts. The letter\textsuperscript{17} stated that additional funds were available from 2004 to allow councils to offer a stipend above the minimum in areas where they are experiencing particular recruitment difficulties and that funds were also available to pay higher salaries for postdoctoral researchers on Research Council grants in shortage areas. A further letter was sent out in Jan 2004 stating that the Research Councils were already providing a minimum salary of £20,000 for research assistants on grants and that additional funds have been made available to enhance postdoctoral salaries in areas of high market demand.\textsuperscript{18} It placed the onus was on grant applicants to make a case for the extra funding and suggested that institutions research market demand to support cases made for enhanced salaries. Employing institutions were also encouraged to highlight to principal applicants (PIs) the importance of seeking salaries above RA1A pt 6 (currently £22,289) for postdoctoral appointments in areas of recruitment and retention difficulty. Finally, it was noted that the Research Councils would determine the areas of science with particular recruitment difficulties where targeted postdoctoral salary increases would apply. Each Research Council would then inform their communities separately. In March 2004 a further letter informed institutions that the Councils would not be adopting a common strategy in relation to enhanced PhD stipends and that funding had been allocated differentially across Councils to match the Office of Science and Technology’s assessment of differences between disciplines in recruitment and retention of PhD students.\textsuperscript{19} The Research Councils are at various stages in implementing the policy.

\textsuperscript{17}Entitled ‘Implementation of the Roberts Report on the Supply of Scientists and Engineers in the UK’.
\textsuperscript{18}Entitled ‘Targeted Support for Postdoctoral Research Assistants on Grants (“Roberts” Funding)’
\textsuperscript{19}Entitled ‘Update on Implementation of Measures in Science Budget 2003/04 to 2005/06.’
Section 2: The ‘Shortage’ Areas

2.1 INTRODUCTION

Phase 2 of the Roberts recommendations provided for the payment of enhanced stipends and salaries for doctoral candidates and postdoctoral researchers working on Research Council grants in ‘shortage areas’. This section of the report considers the identification of ‘shortage areas’ by the respective Research Councils and the extent to which this definition is understood and supported by the respondents in the study. The ultimate success of the enhanced pay strategy rests on the ability to define effectively and with a degree of precision, stability and consensus appropriate ‘shortage areas.’ The RCUK implementation strategy required individual Research Councils to provide information on recruitment and retention difficulties in their areas.

2.2 SHORTAGES: THE BBSRC AREAS

The BBSRC was concerned at the lack of concrete data on recruitment issues with ‘very few departments able to provide information about numbers of applications’. Recognising the importance (both empirically and politically) of taking an evidence-based approach, it launched a questionnaire survey as the basis for its submission.

2.2.1 Doctoral Recruitment

The BBSRC report widespread difficulties in the recruitment of PhD students, but not with retention. It also placed great emphasis on the issue of quality as opposed to the volume of applications. On the basis of this information, it identified the following areas:

1. Physical, mathematical and engineering sciences' interface with biological sciences
2. Animal disease research
3. Whole organism physiology
4. Stem cell research

2.2.2 Postdoctoral Recruitment

Similar areas were defined in relation to postdoctoral recruitment although “respondents were at pains to point out that recruiting good postdoctoral researchers was difficult in all areas”. The survey found evidence both of declining volume and declining quality of applicants. Unfilled vacancies is a poor indicator in this respect as evidence suggested an increase in sub-optimal appointments both in terms of the skills and aptitudes of applicants. The following areas were identified:

1. Physical, mathematical and engineering sciences' interface with biological sciences
2. Animal disease research
3. Whole organism physiology
4. Functional genomics
5. Plant science

2.2.3 Evidence of BBRSC Shortages

Respondents in the site visits had diverse views about the existence and nature of skills shortages. Although concerns did exist in some areas, it was generally felt that recruitment of doctoral researchers and their retention to completion was not a major problem. The bigger concern was the transition to postdoctoral research. Many good doctoral candidates leave the sector at this point:

“I don’t believe there is a massive difficulty” [HoS(1), BBSRC, b]

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20 Annex 2 summarizes perceptions of shortages in the 3 Research Council areas.
21 The BBSRC funds 719 new Phds students per annum. PhD registrations in the identified shortage areas make up about a quarter of existing studentships and include all types of BBSRC studentship.
22 The level of unfilled studentships in this area was significantly higher than the rest (14% compared to 6%).
23 In some cases applicants were described as less ‘self-propelled’ requiring greater investment from PIs.
24 Although this was raised in EPSRC and ESRC areas where the doctorate was less valued in other sectors (see below).
“I would say we get quite good quality PhDs – there is an issue about how much they get paid and the hardship they suffer when they are students – but I don’t think per se there is a problem in quality” [HoS, BBSRC, c]

“I think recruitment is less easy in some specialist areas. [Bio-informatics for instance?] No, this is totally different if you’re recruiting PhD students you are training them so it’s really easy to recruit bio-informaticians because they all want to be trained but then when they’ve got their training they’re unlikely to do a post-doc there, they’re likely to go and have a job in industry” [PG Research, BBSRC, d]

Having said that, there were some concerns about declining quality:

“We don’t have problems getting candidates come forward – it’s getting good quality candidates. I can usually fill a position but I’ve stopped now just filling positions. If I can’t get a good enough candidate I won’t fill it now… I regularly get applications from people with 2.2s who I can’t take” [PI, BBSRC, c]

“It’s all very well having home applicants – but if they are [poor quality] then you are wasting your time. Once bitten twice shy, I’ve had one bad experience and I’m not going to take the best of a bad lot again” [PI, BBSRC, a]

Where specific areas of difficulty were identified they generally mapped onto the BBSRC defined areas quite closely and included: stem cell research; bio-informatics; animal physiology; quantitative genetics; molecular biology; plant sciences; and proteomics.

Some respondents reported little difficulty in recruiting and even some recent improvements:

“I wasn’t even aware there were skills shortages in this field, I don’t know if there are” [PDRS, BBSRC, d]

Many respondents were not aware of the specific approach taken by the BBSRC to the identification of shortage areas. In the case cited below the doctoral candidate was not aware that he was in a shortage area and in receipt of an enhancement:

“[Q: Did you know that stem cell research was deemed a shortage area?] I did not know that, in the sense of being 100% sure. I knew the PhD might be linked to that, but I was not 100% sure that stem cell was a shortage area” [PhD, BBSRC, b]

The final respondent is unsure about the definition of shortages and raises interesting questions about the level of specificity:

“I don’t know really - I’m trying to think what the skills shortages are. Some of them seem quite precise to me, stem cells I think is one of the defined ones, and others seem a little bit vague” [HoS, BBSRC, d]

Some respondents expressed concern at the level of flux in recruitment and retention making it difficult to identify stable shortage areas:

“I think it’s difficult to give you a general answer, certainly my impression is recruiting to research jobs - leaving aside the studentships - goes up and down” [HoS(2), BBSRC, b]

### 2.3 SHORTAGES: THE ESRC AREAS

The ESRC was also concerned about the lack of detailed evidence of its recruitment and retention difficulties to support the policy of targeted enhancements. In the past few years it has commissioned a number of detailed studies designed to improve its overall understanding of this situation. The following areas were identified in its submission to the OST:

#### 2.3.1 Doctoral Level

1. Research using quantitative methods (including demography and social statistics)

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25 The scheme is not yet fully operational in the ESRC area and currently applies only to CASE awards.
26 See for example Mills et.al. (2006), Machin and Oswald (1999) and Bell (2004).
2. Collaborative / knowledge transfer activities
3. Economics
4. Management and Business Studies

2.3.2 Postdoctoral Level
1. Economics
2. Management and Business Studies
3. Education
4. Area Studies (expertise in areas outside the EU)
5. Advanced quantitative work including social statistics and demography

2.3.3 Evidence of ESRC Shortage Areas
The ESRC-commissioned review of the social sciences (Mills, et al, 2006) supports the identification of the three “subject areas” listed above (economics, management and business studies and education) although it also lists law among the areas with recruitment problems.\(^{28}\) The review also places considerable emphasis on the quality issue arguing that relatively few unfilled vacancies exist and where they do these are typically at senior level.\(^{29}\)

The ESRC’s submission identifies “delayed starts” and post-award retention as key indicators at postdoctoral level with implications for the quality of research outputs (a point echoed by the BBSRC).

The site visits revealed a marked consensus about the some of the areas facing skills shortages. These included: management, economics, accountancy; and advanced quantitative methods. However, not one respondent from across the ESRC sites identified area-based studies, education or knowledge-transfer activities as fields experiencing skills shortages.

“There is a huge deficit of people with good quantitative skills in the social sciences” [PI, ESRC, c]

“The big problem is economics…of course there are obvious areas within economics, particularly to do with social statistics, and also econometrics, which overlap with well-known other areas of skills shortages within the social sciences. Basically, anything that involves hard number crunching, we know there’s a problem” [PG Research, ESRC, c]

Economics, in particular, has a long tradition of being perceived as an area which has continually experienced skills shortages despite a number of initiatives from the ESRC and institutions to improve the situation.\(^{30}\)

“Economics is the worst…and in management and business we’ve got similar problems” [PG Research, ESRC, a]

Some respondents were unaware of the ESRC’s approach to the definition of shortage areas:

“I believe that ESRC has identified some areas but I don’t know which areas those are” [HoS, ESRC, a]

In those areas identified as experiencing skills shortages, the field was limited both in terms of volume and quality:

“We have significant trouble in significant areas – the classic ones are accountancy and marketing – accounting being a very small pool, very small numbers applying even at doctoral level and we have a real problem recruiting academics as well. In those areas it’s few numbers and not great quality” [HoS, ESRC, a]

\(^{27}\) The ESRC also makes the point that the two designated subject areas (at post-doc level) namely education and management are the two biggest units of assessment within the RAE. The site visits conducted as part of this study did not include education as we were specifically asked to cover LSE which receives a large proportion of the stipends for economics and the pilot focused on a business school.

\(^{28}\) The category ‘law’, as in other disciplines masks enormous variation in recruitment with some subjects (such as business law, for example) experiencing far greater problems than say European law which continues to attract high quality applicants (many from abroad).

\(^{29}\) We have reservations about the value of unfilled vacancies as an indicator as most posts are eventually filled; length of time taken to fill posts and the quality of post-holders is the critical issue.

\(^{30}\) Including market pay (see below).
At postgraduate level in business and economics, there was real concern over the declining numbers of UK students applying to do PhDs. However, non-UK nationals were still willing to undertake PhDs in these areas:

“The situation is pretty dire in terms of getting UK students to come here…international students, we get those sufficient – we don’t need to do a great deal in terms of publicity, they are knocking at the door to do PhDs. The problem is we don’t get UK students wanting to do PhDs in sufficient numbers, and I guess you need to say of sufficient quality” [PG Research, ESRC, a]

“The big problem [in doctoral recruitment] is economics. The problems in government, anthropology and sociology are not shortages of PhD candidates, but shortage of PhD candidates with funding and the problem in economics is there’s a shortage of PhD candidates, especially domestic PhD candidates” [PG Research, ESRC, c]

Postdoctoral recruitment is a major problem in the shortage areas but institutions were able to recruit people from abroad.

“We get a good list of applicants, but most of our appointments in the past 8 years have been non-UK citizens. So what's manifestly clear is that the UK base of economists must be in decline because we're not getting applicants from UK citizens” [HoS, ESRC, c]

### 2.4 SHORTAGES: THE EPSRC AREAS

The EPSRC reported greater difficulty in pin-pointing specific areas of skills shortage. Although subject variations exist, the EPSRC suggests that it:

“…is inescapable that there is a broad problem across the whole of the EPSRC remit. The specific message on recruitment is clear that there are insufficient quality recruits with the appropriate skills available for either industry or the universities”

It goes on to argue that “the issues affecting engineering and the physical sciences are so widespread that it is not possible to ‘ring-fence’ the problem” (EPSRC Submission to OST, p. 20). Having said that, it did identify areas of acute need as requested by the OST:

#### 2.4.1 Doctoral Level
1. Engineering and technology generally
2. Chemical engineering and civil engineering specifically
3. IT and computer science
4. Statistics and operational research

#### 2.4.2 Postdoctoral Level
1. Whole of engineering and physical sciences
2. E-science, basic technology and life-sciences interface (bio-informatics and chemo-informatics)
3. Engineering and Technology generally
4. Chemical, electronic and civil engineering specifically
5. IT and Computer Science
6. Statistics and operational research
7. Analytical chemistry

#### 2.4.3 Evidence of EPSRC Shortage Areas

The interviews conducted with researchers in the EPSRC field generally support the EPSRC’s assessment of the situation. Many identified widespread problems:

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31 The EPSRC respondent talked of serious problems in the late 1990s with engineering only filling 85% of its allocated studentships.
“I know it’s difficult in engineering and it’s difficult in the life sciences and physical sciences” [PG Research, EPSRC, d]

Although the EPSRC did not advertise the areas it selected to the research community, there was a surprising resonance between those areas and the fields identified by respondents. The following areas were identified by respondents: analytical chemistry; organic chemistry; electronic engineering; image processing; ophthalmology; computer science; e-science; geometrics; atomic physics; and laser physics.

Respondents suggested that skills shortages were volatile and could change quite rapidly over time:

“One year it might be that we haven’t got quite so many wanting to do colloids and next year we might be inundated. One year analytical chemistry might be a little more difficult but last year we were inundated and we could have filled those places many times over in analytical chemistry so it varies and it also varies within the school” [PG Research, EPSRC, a]

“I mean certainly it has been very variable. It appears to me to have been worse a couple of years ago when we were trying to recruit people then for these kinds of research positions. It seems to me to be slightly less of a problem now but it is still difficult” [PI, EPSRC, b]

Experiences of recruiting doctoral candidates varied widely. In some cases it was not seen as a major problem:

“I don’t think we do have any problems, I think the number of applications that we have for postgraduates is probably more than we can handle and post-docs as well, I think we’ve got pretty much a good supply of very good post-docs” [HoS, EPSRC, a]

The following respondent said that the problem was more one of finding funding than finding acceptable candidates:

“I get the impression we don’t have too much difficulty in attracting students but finding funding can be difficult” [Res Admin, EPSRC, d]

Quality featured highly again in perceptions of shortages:

“I got the impression from Ophthalmology that they were struggling to find candidates of sufficient quality to award a PhD studentship to” [Res Admin, EPSRC, d]

Greater problems were experienced at postdoctoral level but these were often ‘solved’ or ‘masked’ through international recruitment (see Section 3).

2.5 INSTITUTIONAL DIFFERENCES

The Research Council’s submissions do not identify any institutional variation. Recent work conducted as part of a study for HEFCE indicated significant institutional differences in terms of the ability to attract and retain high quality early career researchers with less prestigious or more geographically peripheral institutions facing more serious issues.

It is important to remind the reader that the RCUK tender required us to focus on those institutions that received a large proportion of Research Council funds. In practice, this meant the more prestigious research-intense institutions.

“I think people genuinely come here because of the reputation of the university and because of the facilities that are available particularly in the science and engineering disciplines. The lab facilities are so important to researchers and seem to be more important than the pay but that also depends on the level you’re recruiting at” [HR, EPSRC, b]

32 In some cases this reflected the existence of effective feeder routes (see section 3).
33 See Adams, et al., (2005) and the 4 background reports produced by CSLPE at: www.law.leeds.ac.uk/cslpe
34 The issue of geographical peripherality was quite marked with some highly prestigious institutions reporting serious problems in recruiting. Not only does it make it more difficult to attract UK nationals but makes it a particular problem in terms of international recruitment with foreign researchers and dual science couples drawn to global cities and ‘escalator regions’ (Ackers, 2005; Ackers and Gill, 2005).
"I think partly it’s the name – Oxford, Cambridge and Imperial and within [X] we are quite a high profile big lab" [HoS, BBSRC, c]

The advantages of reputation were raised in discussions with the EPSRC. Commenting on the limited take-up of salary enhancements in Cambridge they suggested that, ‘they have no recruitment or retention problems because they are Cambridge’.

The site visits also suggested that postgraduate recruitment issues was less of a concern for the leading research institutions:

“I think the top 10 have less difficulty in attracting good quality students than other institutions lower down the rankings” [PG Research(2), EPSRC, d]

“I wouldn’t say any of our schools are particularly struggling. I mean we have the occasional vacancy which is hard to fill but generally we do manage to fill them because we’ve got a growing reputation for being a good research university” [PG Research, EPSRC, d]

The effect of location is quite complex. Even highly prestigious institutions experienced recruitment problems in some cases reflecting the importance of internal competition for researchers and the specific context (see below).

In addition to the institutions reputation there was evidence to suggest that research ‘stars’ acted as a magnet to early career researchers:35

“I think there are issues about getting high quality research staff and it is a bit dependant on individuals so the charismatic, world-famous, research leader might get more applications than a less famous member of staff regardless of the merit of the piece of work he’s done or the job opportunity that was offered to the individual postdoctoral researcher. Many of my colleagues, me included, get regular applications for postdoctoral positions when we don’t have any to offer” [HoS(1), EPSRC, a]

SECTION 2 SUMMARY: DEFINING SHORTAGES

- **A General Recruitment Problem or Subject Specificity?**
  All three Research Councils emphasised the fact that recruitment was increasingly difficult across the board or, at least, in a growing number of areas. Research Councils varied in the level of specificity. The EPSRC identifies both recruitment and retention difficulties across all its disciplines. The BBSRC presents a similar scenario of general recruitment and retention problems primarily at postdoctoral level but designated particular areas of concern as shortage areas. The ESRC took a different approach identifying more acute concerns in certain areas. Economics emerges as a major concern as does education (at postdoctoral level) but for quite different reasons.

The site visits generally indicated similar shortage areas. However, respondents were less clear that it was possible to identify with any precision, specific shortage areas. Many respondents were not aware of specific recruitment difficulties and, on that basis, were resistant to the idea of targeted enhancements.

- **The Issue of Quality**
  Both the Research Councils and the respondents were at pains to emphasise the issue of quality. Whilst the volume of applications was a problem in some areas, the key concern was quality and the greater difficulty supervisors and PIs had in locating suitable people and being under pressure to make ‘sub-optimal appointments’.

- **Variation by Level: Doctoral or Post-doctoral Differences**
  Although concerns were generally expressed at both levels, the nature of shortages varied by discipline. In the EPSRC both levels suffered recruitment and retention problems. The BBSRC identified problems with recruitment at both levels but placed less emphasis on its ability to retain doctoral candidates. The EPSRC and ESRC reported greater problems in retaining doctoral students through to completion.

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35 This emerged as a powerful factor shaping the location decisions of Marie Curie fellows (Van de Sande, Ackers and Gill, 2005).
There is a general consensus that the most critical problem at the present time lies in the transition from doctoral to postdoctoral research and the retention of postdoctoral researchers. Experiences in this respect varied between fields.

- **A Fluid or Stable Target?**
  Whilst shortages in some areas have a strong tradition and appear to be relatively stable (engineering for example), a higher degree of flux exists in other areas (for example, in IT) reflecting general labour market conditions. Where Research Councils have identified areas of strategic investment or emerging fields as ‘shortages’ they recognise that these may be subject to change. The site visits also emphasised the level of fluidity and change. The situation may not only reflect ‘external’ labour market forces, however, but also more specific and strategic decisions to build critical mass in some fields through specific initiatives and funding opportunities in the research agenda.

- **The Issue of Interdisciplinarity**
  All three Research Councils identified areas of difficulty in the interstices between disciplines and in the development of inter-disciplinary research. The EPSRC argued that the skills base of their researchers underpins research in many other areas (and not only the natural sciences). The BBSRC identified similar shortages in areas covered by the EPSRC, the NERC and the MRC and the ESRC referred to the ‘overlap’ in relation to the EPSRC (presumably quantitative methods) and the AHRC (area studies).

  In some cases these reflected funding priorities and policy goals and, in others, serious concerns about the quality of basic, transferable skills (particularly in quantitative methods). This raises questions about the efficacy of targeting in an increasingly inter-disciplinary and inter-dependent research environment and the merits of single discipline approaches to the problem. A ‘coordinated approach’ was also seen as essential in order to ‘avoid unproductive comparisons’ between the Councils.’

- **Institutional Differences**
  The Research Council submissions to the OST do not identify significant institutional variation in relation to skills shortages although it was clear from our discussions with the Research Councils that they were aware of this issue. The site visits, however, suggested marked institutional and locational variation in the ability to attract quality applicants. Prestigious institutions generally benefited from their reputation, but still experienced pockets of difficulty in recruitment.

- **The Evidence Base**
  Whilst there was a general consensus across Research Councils that serious recruitment and retention problems exist both at doctoral and postdoctoral level, there was a concern that the kind of evidence required to guide and justify this form of resource targeting with any precision was lacking. This was particularly clear in the case of quality issues and in trying to understand trends in the area of applications.

  Some respondents were concerned about the evidence upon which decisions are being made both by the Research Council’s and in the Roberts Review:

  “I couldn’t actually see the logical link or the evidence when Gareth came out with this list of shortage subjects - I wasn’t clear on the evidence on which they’d identified those particular areas as being shortages” [PG Research, EPSRC, d]

  To the extent that the research community accepts the logic of market-pay, it is clear that any decisions about targeting need to be based on sound evidence. The ESRC representative made the following point:

  “Across the social sciences it’s difficult they do recognise that the ESRC needs to be strategic that we have a finite number of studentships. We are trying to create an evidence base on which to base these decisions so it’s not just finger in the air. I think there will still be an issue but we are quite confident that the decisions we are making are based on what’s happening in the disciplines” [ESRC Key Informant]

Section 2 has identified the lack of evidence available to Research Councils to support effective targeting and particularly in relation to the ‘quality’ issue. If the policy of selective targeting is to be continued and accepted by the research community it needs to stand on a sound and explicit evidence-base and be amenable to effective evaluation. This is not the case at the present time.

The next section considers the factors shaping these apparent shortages. Whilst there is not scope in this report to consider in a more detailed fashion the factors shaping academic recruitment, it is important to understand the reasoning behind shortages in order to consider the appropriateness and potential of
different policy responses: enhanced stipends may only work in certain circumstances and may exacerbate problems in other areas.
Section 3: Understanding the Causes of the ‘Shortages’

3.1 INTRODUCTION

This section of the report will not attempt to provide a comprehensive analysis of the causes of skills shortages but rather to identify issues about causation which we believe might shape the effectiveness of the specific policy of selective enhancement.\(^{36}\) The study has focused mainly on the issue of supply and the recruitment ‘pool’ in higher education. It is also important to remember the changing nature of demand and the impact of progressive expansion within higher education and demographic trends on the demand for staff.\(^{37}\)

The section opens with a discussion about the relative importance of pay before considering its relationship with other factors affecting career decision-making and the ability to recruit and retain researchers.

Echoing the points raised in Section 2, it is important - from a policy perspective - to distinguish between two separate elements of ‘causation’. The first, and the one on which the policy of selective enhancement is based, concerns the effective drying-up of traditional recruitment pools as a result of competition with other employment sectors (sometimes referred to as internal and external brain drain). In this context, the *declining relative attractiveness of academic careers* (and pay) are key factors.\(^{38}\)

The second is somewhat different (and may respond to different policy measures). It concerns the desire to *build capacity* in response to areas of growth and increasing demand (perhaps exacerbating competition for labour with other sectors – such as stem cell research for example) or areas where growth is seen as desirable from a strategic perspective (such as animal disease or knowledge transfer).

Understanding the causes of skills shortages then requires that we consider two related questions:

1. How can we restrict the flow of high quality people leaving?
2. How do you augment and shape the recruitment pool so there is more capacity in general to cope with losses and to support the development of new areas of research and skills?

3.2 THE RELATIVE IMPORTANCE OF PAY\(^{39}\)

The Roberts Review identifies a whole range of factors affecting the supply and retention of scientists and, in response, a platform of measures. Phase 1 of the Roberts’ Actions included a general increase in minimum PhD stipends and support for doctoral and postdoctoral training. Phase 2 then added the development of the Academic Fellowship scheme and, finally, the proposal for targeted stipends and postdoctoral salaries.

The recommendation arising from the *Investing in Innovation* report explains the rationale for targeted enhancements as follows:

“Further increases should be available to solve recruitment and retention problems in disciplines where there are shortages due to high market demand” (2002, para 5.4).

A letter from the Office of Science and Technology to the Research Councils refers more specifically to the directing of funds to “reflect labour market pressures”.

The EPSRC interpreted this policy in a quite straightforward way as a measure to deal directly with the competition the sector was facing from other employers so as “to make the posts more attractive financially to solve recruitment and retention difficulties where there are shortages of the right high calibre of people with the requisite skills and research experience because of high market demand for them elsewhere”.\(^{40}\)

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\(^{36}\) A considerable amount of work on this has been undertaken in more recent years (cf Note. 27, Ackers and Gill (2005) Metcalf et al. (2004); Mills et al. (2005) also Roberts Review itself (Roberts, 2002).

\(^{37}\) These issues are not developed in this report. For more information see Ackers and Gill (2005) and Mills (2005).

\(^{38}\) For a deeper discussion of these issues, please see Annex 3 and Annex 7.

\(^{39}\) We have used the term pay here to include both salaries and stipends. Annex 3 focuses on the issue of academic pay providing details of pay scales and indications of pay in practice in the UK.

\(^{40}\) See page 4 of the EPSRC submission.
Perhaps reflecting the EPSRC’s specific context, its submission is couched mainly in financial terms identifying “attractive salaries” as the “key problem” shaping career decisions. At PhD level it argues that higher recruitment salaries exist outside of HE in engineering and the physical sciences than in other discipline areas and, as a result, “PhD stipends have become increasingly uncompetitive and many available positions are unfilled or filled by non-UK residents who may not remain in the UK after graduation” (p. 17). In addition to the losses abroad, a high proportion of those who do undertake EPSRC-funded doctorates are employed by industry directly after graduation. Although “statistical evidence was hard to come” by, the EPSRC’s “dipstick tests” revealed that “industry was picking up the very good and very bright postgrads”. Furthermore, the lure of higher salaries, according to an earlier EPRSC survey showed that starting salaries attracted students away from PhD places that had already been accepted. The report also talks of severe recruitment problems in industry in chemical, electronic and civil engineering and a high demand for graduates in statistics and operational research especially in the financial, IT and pharmaceuticals sectors reflecting the highly transferable quality of skills in these areas.

Pay differentials feature significantly in the field of business and economics too restricting doctoral recruitment with perhaps even greater differentials existing between higher education and the private sector than in engineering and physical sciences. The ESRC identifies economics, “more than any other within the ESRC’s remit where alternative salaries available to high flyers are significantly higher than those available within higher education. Salaries in the city and the financial services sector, even for those newly qualified with a masters degree, are often in excess of £30k on appointment and can rise quickly thereafter.” Machin and Oswald’s report (1999) on ESRC studentship demand concludes that few British people want to be academic economists and that low relative pay is probably the main explanation. Similar problems exist in the field of management and business where many undergraduate and Masters students have a strong professional orientation. The ESRC rightly acknowledges that “many of the brightest will choose to do an MBA and opt for a professional route outside of academia.”

The BBSRC submission similarly places an emphasis on pay differentials - “we have long argued that stipends were too low and were pleased with the significant increases in overall stipend”. The problem is manifest both at PhD level with “smaller numbers of top students staying on to do a PhD and...increasingly choosing non-research careers”. It is also manifest at postdoctoral level with fewer applications and “losses in post to better paid and more secure jobs with other funders or industry, or non-research jobs”. One of the site visit respondents made a similar point:

“I suppose one area that immediately comes to mind is bio-informatics where you’re competing with a very strong healthy industrial source outside so certainly our own trainees in bio-informatics have all left and got jobs outside the university including some of the very good ones who might have hoped to stay in university research” [PG Research, BBSRC, d]

Whilst industry and the private sector remain key attractions across disciplines, recent years have witnessed an increase in salary differentials within the public sector. The ESRC, in particular, noted the impact of “increasingly competitive salaries within the public sector” making specific comparison with recent salary increases in school teaching. Mills and colleagues (2006) identify a similar problem, suggesting that “increased competition from organisations elsewhere in the public sector is joining the private sector in affecting recruitment problems” (p. 67). For the ESRC, these losses in the form of internal brain drain or inter-sectoral moves constitute a greater concern than losses out of the UK.

In addition to the concerns about losses to others sectors, the Research Councils also referred to the existence of competition between different funding bodies. They were keen to develop a common approach to pay in order to restrict competition between the Research Councils themselves but were also aware of the relative attraction of other funding schemes. The BBSRC specifically referred to the impact of “competition from other PhD funding bodies (the MRC and Wellcome) and employers resulting in a loss of staff at application stage and in post to better paid and more secure jobs with other funders or industry, or non-research jobs”. These ”distortions” also cause problems for research managers and PIs as individuals

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41 Conducted as part of its on-going monitoring activities.
42 The ESRC submission also points to the effects of this on the quality of research grant applications (as indicated by relatively lower success rates).
43 Quoted from BBSRC submission to OST, p.3.
44 This is a more recent phenomenon in the UK but is also manifest in the area of medical research where NHS salaries (and ability to top earnings up with consultancies) now out-compete salaries in research.
45 Annex 3 provides details of comparative levels of pay at PhD and post-doctoral level.
often apply for more than one position and then decide which one to take-up. The site visits revealed many examples of losing selected candidates at this stage.\(^{46}\)

The reference to "labour market pressures" in the OST’s letter to Research Councils raises certain questions about the relevant comparator or reference group and the concept of "labour market". Academic labour markets are global and researchers are often making decisions not only about whether to remain in or leave the academic sector but also whether or not to move abroad in search of better pay and conditions.

### 3.3 INTERNATIONALISATION AND ITS RELATIONSHIP WITH PAY\(^{47}\)

The site visit confirmed the trend identified in other research (Ackers and Gill 2005, Metcalf, et al., 2005) of an increasing reliance, within UK academic labour markets, on applicants from abroad. The debates around internationalisation of academic labour markets are highly complex and sensitive. Whilst there is insufficient scope in this report to discuss the issue in any depth it is necessary to consider the relevance of internationalisation to the debates about pay and the policy of enhancing pay in shortage areas.

#### 3.3.1 Increasing International Recruitment

The Roberts’ Review acknowledged that the UK was to a certain extent experiencing a ‘brain drain’ and that there are “undoubtedly a number of examples of top UK scientists and engineers being tempted to work abroad by better pay and conditions, particularly UK academics tempted by larger salaries overseas” (Roberts, 2002, p.185). On balance, Roberts argued, this was compensated for by the number of incoming scientists and engineers so that the UK was in a position of ‘brain gain’. International staff (particularly from the EU) form an ever increasing proportion of the UK’s academic labour force. In some fields they now constitute the majority of contract research staff. Whilst pay in the US is generally more attractive, differentials in Europe (particularly following European Union enlargement) and developing countries continue to make the UK an attractive location to researchers from abroad (Metcalf, et al., 2005).

Significant attention was paid, in the site visits, to the progressive internationalisation of UK academic labour markets and the extent to which shortfalls are avoided through the ability to recruit from abroad particularly at postdoctoral level. The EPSRC’s submission to the OST noted the increasing reliance of industry in the UK on foreign recruits. The BBSRC also refer to the ‘decreasing proportion of UK applicants’ for positions.

> “Well PhD students, no there’s not a shortage, however of my group typically the majority of research students would come from countries other than the UK” [PI, EPSRC, d]

> “Certainly British student numbers have declined dramatically; when I first came here in 1976 we would have taken on something like 14 or 15 British students in our area here and now we’re down to 2 or 3” [PG Research, EPSRC, c]

> “I had 100+ application for 2 recent jobs, 3 from the UK (the UK ones were very poor e.g. no PhD or PhD in random area), the rest from India, China etc. We spend days doing interviews on the phone” [PI, EPSRC, Questionnaire]

Less fashionable areas are more reliant on foreign nationals:

> “It depends very much on the area you know, if you are in a fashionable area, but in an area like mine which is crystallography which is not that fashionable as it used to be if I put an advert out for a post-doc I get no applicants from Britain, none whatsoever, and that’s been going for years like that” [PG Research, EPSRC, c]

> “Most graduate students in my field leave; they either go back to their home country and do whatever or the British students go into banking…The majority of people in my field don’t [stay on] and it also raises problems then if you get a grant for a post-doc it’s been years since I’ve been able to get a British person to take a job like that no matter what the pay is. My last one was Russian and I’ve had a succession of post-docs from different countries; it’s been years since I’ve had a post-doc from Britain” [PG Research, EPSRC, c]

\(^{46}\) Details of comparative pay are contained in Annex 3 Pay.

\(^{47}\) This important issue is explored in more detail in Annex 4.

\(^{48}\) There was some concern that the increase in international applications is making the recruitment process more complicated; blanket applications were being received and judging suitability and quality of applicants was becoming increasingly complex.
This suggests that to some extent overseas recruitment is making up for a lack of interest, or indeed skills, in the UK itself.  

3.3.2 Declining Volume and Quality of the Domestic Recruitment Pool
In addition to losing quality people to other sectors there is some concern that the UK is failing to generate its own recruitment pools as the volume and quality of ‘home grown’ undergraduates and masters students coming through the system is in some areas perceived to be in decline.

3.3.3 The Relative Attractiveness of Pay in the UK
It is important to consider whether this perceived decline is relative however to the continued or increasing ability to attract higher quality applicants from abroad (which can sometimes be due to poor and declining conditions for research in the sending countries).

The following table provides a quick impression of stipend differentials in some of the sending regions. Although these are not weighted to take into account the cost of living our research suggests that very marked differences exist increasing the attractiveness of the UK to researchers from new Member States and accession countries:

Table 1: Typical PhD Scholarship Levels in the MOBEX Case Study Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Typical Scholarship per month</th>
<th>€ per month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>250 leva</td>
<td>€127.00 per month</td>
</tr>
<tr>
<td>UK</td>
<td>£1000 sterling</td>
<td>€1481.00 per month</td>
</tr>
<tr>
<td>Germany</td>
<td>€975.00</td>
<td>€975.00 per month</td>
</tr>
<tr>
<td>Poland</td>
<td>2000 PLN</td>
<td>€500 per month</td>
</tr>
</tbody>
</table>

In this context, the conventional wisdom that the UK pool is of declining quality might rather reflect the ability to retain the best UK researchers (for the salaries on offer). The ‘risk’ is that the ability to recruit abroad might have a multiplier effect depressing wage rates in the UK and eventually pushing out an increasing proportion of UK applicants. Put simply, it might not be that UK applicants are declining in quality per se, but that the pool of UK applicants prepared to accept the risks of an insecure and poorly paid research career is declining.

Foreign researchers, at least at an early stage in their career may be less sensitive to pay than UK nationals for a number of reasons. The incentives to come to the UK to ‘boost their CV’ through accessing UK centres of excellence, improve their English or simply to get a position at all might outweigh their immediate concerns about pay (although this will impact in the long term for those who decide to settle and form families here):

“For me coming from the Central European bloc it is definitely much more attractive offer than back at home but again I’m prepared to live over a cheap supermarket and I don’t find buying discounted stuff in an evening from the shop repulsive to do. So I can live half price and I enjoy what I do so it might be unfair comparison towards people who want to have normal lives in a western context. I do understand the concerns of English born people who find the career not rewarding enough or not permanent enough as you are changing your job every 2 to 3 years” [PDRS, from MOBEX2 project]

3.3.4 The Impact of Outward Mobility
Academics have been mobile for many years. Recent concerns focus on two related trends. Firstly, the impact of globalisation on academic labour markets in general resulting in greater levels of circulation and mobility. In the context of recruitment problems in economics, the Association to Advance Collegiate Schools of Business (AACSB) report refers to a ‘global doctoral faculty shortage in business’ (2003, p. 1). An earlier report on management education makes a similar point that “the market for faculty is international and schools worldwide are drawing on the same pool of doctorally qualified staff” (AACSB, 2002, p. 1). The second issue concerns the unilateral quality of flows and the relative attractiveness of the US.  

49 The online questionnaires distributed to Research Council supervisors and principal investigators found that 17% of supervisors (from 206) reported difficulties in filling a Research Council funded doctoral position in the last two years. When asked “Have you recently experienced any difficulties in recruiting suitable research assistants to work on Research Council funded projects?” 35% of the 235 Principal investigators who responded answered yes.

50 Our MOBEX study has found some incidence of over-qualification or de-skilling where highly experienced scientists from Bulgaria and Poland occupying more junior post-doc positions in the UK.

51 When people talk about this in the interviews they usually refer to standard of living more generally rather than pay specifically. UK housing costs are always an issue.
The issue of ‘brain drain’ to the States in particular is high on the popular agenda. Some respondents referred to this in the site visits but it did not emerge as a critical issue. In terms of ‘losses’ the key focus was on inter-sectoral mobility.

Where the issue of outward flows did emerge respondents made reference to the marked salary differential that exist between the UK and the US\(^{52}\). This raises the question of the extent to which market pay should encompass levels of pay in the receiving countries (as well as pay in other employment sectors in the UK). There has not been scope in this study to assess US style pay in any detail but in those cases where reference has been made to it, it appears that the differentials are enormous. One respondent in business school, for example, referred to doctoral stipends of up to $100,000 in some prestigious business schools.

When considering out-flows most research generally fails to consider the out-flows of foreign nationals apart from the issue of return. It is often considered to be politically incorrect to even refer to the problems of retention of foreign scientists especially when they are from less developed regions. However, the level of reliance upon foreign staff in UK HEI demands that serious attention is paid to the issue of retention and the progression of international staff.\(^{53}\)

To what extent then does the increasing reliance on international labour to fill UK posts present a high degree of ‘risk’? On the issue of return, Mills and colleagues (2006) challenge Metcalfe’s (2005) study - which suggests that most foreign researchers plan to return home - arguing that nationality is not the key variable here but rather the relationship between nationality and contractual status. Foreign nationals, they suggest, are just as likely to seek an internal move within the UK but ultimately leave the UK when they lose hope of securing a permanent position: “non-UK nationals are 50% more likely to be on fixed-term contracts rather than permanent contracts” reflecting the increasing predominance of international staff in the younger age groups and research-only contracts within certain disciplines. This underlines the critical importance of not seeing pay in isolation but rather as a relational factor within the wider career structure and in particular the issue of contractual security (Ackers and Oliver, 2005).

Our own work both on UK academic labour markets and also on international migration and brain drain would generally support Mills et al’s conclusions. Many foreign researchers do not intend to or do not in practice return home.\(^{54}\) However, once someone has taken the significant decision to migrate and leave their home country they may become more footloose at least during the early career stage before life-course issues restrict on-going mobility. In that sense they are often more able to ‘shop around’ global markets. One postdoctorate interviewed in the site visits made the point quite clearly:

“There is another issue – not only attracting people to the UK but also keeping people here because with those salaries – especially for someone who is not British – for example it is the same for me if I stay here or go to the US or Australia as in every case I am away from [home] so it is the same for me staying here or going to the States” [PDRS, ESRC, a]

It may well be that where a researcher is from, and where they have access to, shapes their ongoing mobility, as claimed in a study by the National Institute of Economic and Social Research:

“Academics from other EU (and EEA) countries, Australia, New Zealand and the US are more likely to leave UK HE than UK (and other foreign) academics. Our results support the hypothesis that these staff enter academic employment in the UK after completing a higher degree in the UK, but ultimately intend to return to their home country. If this is the case, such staff will only represent a short-term solution for lower-level jobs in UK higher education unless they can be persuaded to remain in the UK” (Stevens, 2005, p. 31-32)

3.3.5 Home Grown?

Whilst our respondents, in this and previous research, have generally valued mobility, there is some serious concern about the relative decline in the number of ‘home grown’ researchers moving into academic posts. It

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\(^{52}\) Metcalf, et al 2005 found that in comparing ‘real’ salaries in terms of purchasing power UK academic salaries came out better than Denmark, Canada, Japan, Sweden, Australia and New Zealand and were only second to those offered in the US. This does mask wider variance however.

\(^{53}\) One respondent in our MOBEX study spoke of the ‘glass ceiling’ in the UK blocking the promotion of foreign researchers. Further research is required in this area.

\(^{54}\) Return is often not that easy in any event and depends on many factors (cf Ackers, 2005; Gill, 2005). The career paths of international researchers based in UK would benefit from further enquiry.
is perhaps important to say that many academics are cautious about commenting on this area for fear of appearing to behave in a discriminatory fashion.

“It’s OK to say ‘yes, attract them from the EU and elsewhere’ but there are issues about the ability to do that and the composition of the faculty – if everyone was from overseas, OK, that’s very international but it’s like saying we can do without the manufacturing industry in the UK. Surely we need to be able to renew this important area from within our own resources – it’s a key issue … that we are not renewing the profession and replacing ourselves. It would be foolish to rely totally on people from overseas – it will feed through in terms of research performance, many return home. It’s complex and we have got to be careful and it takes us into an area where people think you are saying home people are better” [PG Research, EPSRC, a]

In the context of research in the ESRC domain, Machin and Oswald’s report the feelings of some economists who argued that “an understanding of the culture of Britain is important for our teaching; this is why we need British lecturers in the economics department” (1999, p. 5) Mills and colleagues (2006) make a similar point in relation to the subtleties of language and cultural capital required in some areas of social science research.

3.3.6 The Costs of Doing a Doctorate in the UK
According to Mills and colleagues (2006, p. 80), “the long term health of the social science depends on the retention of the best of our PhDs, whatever their country of origin”. Their study gives little attention to the problems of attracting students to the UK to pursue doctoral research. The site visits (and our parallel research on scientific mobility) highlights the problems of being able to allocate Research Council funding to non-national students. Many of our respondents in the MOBEX study talk of doing their PhDs in Germany (where there are currently no fees) or the States (where fees are often waived for quality candidates). At present in the UK, fees for international (non-EU) students are very high and for EU nationals relatively high (especially if we consider the new Member States and candidate countries). More importantly for this study, Research Council rules prohibit the allocation of full maintenance scholarships to non-UK nationals. In some cases, departments do allocate scholarships to EU nationals and ‘top-up’ the fees element with a departmental payment or casual teaching.

Recruitment at postdoctoral level is less problematic and some respondents were well geared up to support this:

“We don’t seem to have a lot of trouble with recruitment in any area and we do get quite a lot of because my team deals specifically with work permits as well so I know we do a lot getting work permits for research staff as well I’d say. Recruitment’s not really a big issue that I’m aware of” [HR, EPSRC, d]

On the other hand, many respondents referred to the problems of assessing the quality and recognising the equivalence of non-UK and especially non-EU qualifications:

“We generally look further a field for post-docs and there it’s been quite difficult and quite often we got lots of applications from China or India or other places that we may not be very familiar with and we’re not familiar with the qualifications that they have or the institutions where they got those qualifications so it is difficult to make a judgement about their quality and so that has been a problem” [PI, EPSRC, b]

So far the discussion has focused on the factors shaping the attitudes of young researchers as they effectively ‘shop around’ in search of a desirable career. It has focused on losses from the sector and the importance of pay in these processes. The study has drawn attention not only to these losses but to the ability of the sector itself to increase the volume and quality of the recruitment pool.

55 In March 2005 the European Court of Justice ruled in the ‘Bidar’ case that financial assistance to students falls under Article 12 EC and therefore should be subject to the non-discrimination principle between UK and other EU nationals. The judgment effectively means that EU students may now apply for maintenance support in the country they are studying in as well as finance towards tuition fees. EU students no longer need to be settled in the UK in order to be eligible for financial support. It is not necessary to have the ‘Right of Abode’ or ‘Indefinite Leave to Remain’ in the UK. Time spent residing in the UK either wholly or mainly for the purpose of receiving full time education will no longer be excluded. Therefore if a student has been studying or working in the UK for three years prior to commencing their course they may now be eligible for maintenance.

56 Some EU doctoral researchers are able to secure Research Council funding through project related studentships.
3.4 FEEDER PROGRAMMES AND RECRUITMENT CHANNELS

One factor shaping the ability to recruit quality applicants at both doctoral and postdoctoral level is the existence of feeder or natural progression routes. A difference in the ability to tap into these is a key factor shaping institutional and disciplinary contexts.

Where career paths are generally more linear and established (such as in many core areas of the natural sciences where strong undergraduate and masters programmes provide an important potential talent pool) the natural progression from undergraduate through Masters programmes and onto PhDs is less problematic. In the case of human resource management, for example, (a sub-field of business) respondents talked of the advantage of being able to draw on the Masters programmes of a handful of UK institutions which provided natural feeder routes into their doctoral programmes. Similarly, in the BBSRC area, some PIs talked of being able to recruit directly from their own undergraduate programmes, ‘talent spotting’ and nurturing the best to stay on in research:

“I think at PhD level we have quite a honed way of doing it. We basically go to the schools within [the university] and advertise there and get high quality home grown candidates out of there - we do a mail shot to the bio-chemists, the university do a scheme which allows an undergraduate in their middle year to spend the summer doing her research project and that is a good recruitment pool and then we use find-a-phd.com. With the internet it’s a lot easier. The last few years we have had pretty good candidates to choose from, much better than before” [HoS, BBSRC, c]

The existence of sound and effective feeder routes also appeared to obviate shortages at doctoral level in some EPSRC areas:

“We’re not so bad on postgraduates - we’ve been working very hard to grow our postgraduate school and we’ve managed to do that and we get some people from our undergraduate degrees who have done well and carry on and we get some people who got masters degrees as well” [HoS, EPSRC, b]

“For PhDs that I currently have they were all people who had done degrees here previously in the immediate past so they either came off our MSc in computing or our BSc in computing science programme so in that respect it was fairly easy to recruit them because you just take the best of what is available locally even though some of those PhD positions may have been advertised we still chose the local ones rather than the ones we knew little about” [PI, EPSRC, b]

This preference for recruiting ‘local’ people or people who they knew about through networks and colleagues was quite pronounced and seemed a preferred approach to recruitment of those researchers based in the UK.

The problem of indirect or inadequate feeder routes is most pronounced in those subject areas where there is a strong professional orientation (such as business schools or veterinary schools, for example). The difficulty in such situations arises not only from the lure of higher salaries in the professional domain but also from the primarily vocational orientation of the undergraduates and the skewing of selection processes at undergraduate level to attract precisely those students who may have less intrinsic interest in the science or research aspect of the programme. In such cases, respondents reported specific measures to tap into feeder routes in related fields and to develop summer schools to augment recruitment pools.

One supervisor interviewed referred to specific action she had taken to become involved in undergraduate teaching (in another discipline) as a means of identifying and encouraging or ‘grooming’ young people to consider postgraduate research. It is interesting to note, however, that she specifically said that she did not encourage them to stay on after their PhD as the career track was so unpredictable and undesirable.

The development of feeder programmes is also a method of dealing with the problem of inadequate quality. All of the Research Councils pointed to the problem of a perceived decline in the quality and in some cases, volume, of UK undergraduates. The reasons for this remain unclear. Is this because they have been attracted elsewhere by higher salaries or does it reflect the weaknesses in the UK education system, subject

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57 See Annex 8 for a more in-depth discussion of this issue.
58 Of course this might result in some ‘poaching’ from institutions to the benefit of more prestigious institutions. It has been suggested in this context that some of the new universities act as feeder routes into established business schools perhaps to the detriment of the source institutions.
59 The importance of networks to recruitment is discussed in Van de Sande et al. (2005).
60 This is certainly true of law undergraduates.
choices post-16 or the poor quality of education? 61 One respondent attributed the cause of the declining quantitative skills base to secondary education in the UK:

“My kind of personal starting point is that it’s got nothing to do with university education at all, but with the chronically low level of education in the British school system. Certainly, the 18 year old students we get here are pretty able. The average 18 year old that’s doing social science at [HEI X] is very literate yet he’s not terribly numerate. So there’s something going on further back as it were in the production cycle” [PG Research, ESRC, c]

If it is the former then it falls squarely within the remit of ‘market pressures’; if it reflects training issues then arguably it falls outside of this policy and should be dealt with through other measures. 62

3.4.1 Professional Masters Programmes as Feeder Routes

A report on the crisis in recruitment in US business schools refers to the importance of developing ‘dedicated recruitment channels’ (AACSB, 2003). The ability to develop and draw on such channels varies considerably within the ESRC field. A particular problem exists in the field of business where many students will chose to move onto an MBA (or professional masters) programme. This is not seen as a relevant or appropriate route to a doctorate. The new 1+3 model of doctoral training can perhaps be seen as such a mechanism designed to improve skills training and capture students at Masters level and see them through their doctorate. In recognition of the importance of feeder routes, the EPSRC have reserved ‘a small proportion’ of the Roberts’ funds to “maintain stipend parity for MRes students who intend to progress to a PhD”. 63

3.4.2 The Ability to Recruit from ‘Proximal’ Disciplines

Reliance upon designated Masters programmes and feeder routes is less of a concern when institutions are able to recruit from other perhaps related disciplines. The AACSB report identifies the importance of attracting doctoral candidates in the business sector from "disciplines that are theoretically or methodologically proximal" (2003, p. 3). The ability to benefit from this form of recruitment into doctorates depends on the field and the transferability of skills. Respondents in business schools were able to recruit high quality students from the other areas of social science (such as sociology or psychology for example) although they suggested that this might imply some additional initial training.

Respondents in the area of animal disease research which faces similar ‘losses’ to the professions, also reported being able to recruit high quality students from related disciplines (such as bio-chemistry) although competition for these students was high.

3.4.3 The Impact of Student Debt

There was some evidence to suggest that the growing incidence of student debt might impact on feeder routes. This situation is likely to be exacerbated by the growth in undergraduate and Masters fees but the consequences of this are yet to be seen. A recent report by Langlans (2005) identifies "concerns that the £3000 tuition fee might put people off higher education". Although the focus here is on undergraduate recruitment it is clear from our interviews that carrying forward debt might deter students from pursuing further study.

The impact of student debt might also vary across disciplines. The EPSRC submission specifically refers to the potential impact of accumulating ‘undergraduate debt in engineering which it estimates to be 20% higher than the average and substantially higher than the arts’ presumably reflecting the length of programmes.

The BBSRC referred to the lack of evidence, at the present time, on the impact of student debt on progression onto doctoral programmes and also raised the issue of the potential impact of current policies designed to widen participation at undergraduate level. The relationship between greater diversity in the undergraduate student population and subsequent career decision-making merits further consideration as traditional presumptions about family support and the ability to defer gratification may no longer hold true. The doctoral researcher in the following case could not rely on financial support from her family and said that she could not have undertaken a doctorate unless the stipend had been enhanced:

“My stipend has gone up to about 12k from the BBSRC and £3 from [industrial sponsor]. It is very good and to be honest there is no way I would be able to do a PhD unless there was that kind of money. I

61 The BBSRC identified a specific problem in the relative decline in the popularity of Maths A’ level as a factor here.
62 Such as the Roberts Training measures and post-Bologna reforms at under-graduate and Masters level.
63 The ability to identify those with an intention to progress remains to be seen. The ESRC respondent suggested that the 1+3 had not been a total success with quite a few economists (10%) in particular leaving after the masters stage reflecting the strength of the labour market in this field.
used to work in a lab beforehand as an RA – my debts from my degree and getting used to the money I had from working, I just wouldn’t be able to do it” [PhD, BBSRC, a]

The following PI made a similar point:

“Yes we do find it difficult to obtain applications from high quality UK PhD students and the reason for that’s fairly obvious - if you’re a bright young graduate with a first class degree and a big overdraft the last thing you want to do is be a student for 3 more years in a city with a high cost of living” [HoS, EPSRC, d]

A further factor potentially exacerbating the situation is the potential extension of master’s programmes to two years (following the Bologna process) prolonging the overall pre-qualification period and implying even more debt.

3.5 REPUTATIONAL INCENTIVES: MAKING PhDs COUNT?

One important factor shaping attitudes towards progression into doctoral research (but not necessarily alleviating concerns at postdoctoral level) is the degree to which the doctorate is recognised and specifically rewarded in career paths. This problem is generally recognised in the context of moves out of HE (in business and industry) but perhaps not fully recognised as a problem within higher education itself where marked disciplinary diversity exists in terms of the value attached to a doctorate and its relationship to progression (UK Grad Programme, 2004; Ackers, 2005b).

In most of the areas covered by the BBSRC, the PhD is generally highly valued in both industry and HE and indeed required for progression. This increases the incentives to commence a doctorate and also to see it through to completion (so there is less attrition). The situation in the domain covered by the ESRC is more diverse. According to the ESRC, employers in the private sector (mainly businesses) are generally less aware of the value of a doctorate and where it is valued, the time spent in undertaking the PhD is less likely to be reflected in earnings. This is linked to some extent to the relative prestige attached to the MBA. Some respondents went further than this suggesting that businesses might actually prefer applicants not to have a PhD deeming such people over-qualified or perhaps inappropriately qualified. This situation leads to higher levels of attrition both immediately following the offer of a scholarship and during the doctorate.

The following two quotes reveal the nuance of this situation, however, depending on a persons specific career ambitions:

“We do say that if you go into certain areas in business, it’s actually detrimental to have a PhD, you’re seen as overqualified...Clearly there are some areas such as management consulting. It’s appreciated or if you go into a large technically-focused firm such as petrochemicals or pharmaceuticals it will be appreciated but outside of that it seems to me that in business they won’t necessarily see the PhD as a good qualification to have” [PG Research, ESRC, a]

“My successful PhD students today have, all without exceptions, been mature people in their 30s and 40s, every one of them…2 were management consultants [Q: What’s the benefit of the PhD for them?] I think in both cases they benefited from the title, it gives them legitimacy when they’re on the consultant circuits” [PI, ESRC, a]

Similar concerns were expressed in the EPSRC field where respondents emphasized the importance of persuading would-be doctoral candidates of the broader value of a PhD:

“What we have been trying to do is to make it clear or clarify to everybody that the PhD is a route to lots of things not just to an academic career” [PG Research, EPSRC, d]

“Having a PhD is not to be seen as a route purely into a research career in that particular field; people need to understand that a PhD is a qualification that could lead to all sorts of things and not just research. It’s a valuable higher qualification that could qualify you for management business as well as research, really all sorts of things” [HR, EPSRC, d]

64 The AACSB Report (2003) reports a similar situation in the US and argues that increased recognition of the doctorate by private companies would increase incentives to undertake doctoral research.
3.6 RECRUITING IN VOCATIONAL AREAS

Seeking to recruit at either doctoral or postdoctoral level from outside of the university sector - and particularly where a premium is attached to specific professional skills and experience - increases the pressure on pay. The ESRC’s demographic review of the social sciences (Mills, et al., 2006) draws attention to this problem in the area of education (and to a lesser extent, business). According to their research, "this recruitment trend might also be threatened by increasing disparities in salaries and working conditions between universities and non-academic employers" (p.79)

The situation in education is quite specific reflecting the relationship between research and practice. The ESRC identifies an important target group (for doctoral recruitment) as the ‘early/mid-career practitioner rather than the newly qualified undergraduate’. The situation will be less marked in more traditional and especially natural science disciplines where the linear career path remains the norm but evidence suggests that this situation is changing quite rapidly. Recruitment of mid-career professionals has a longer tradition in disciplines such as business and law where a large proportion of doctoral candidates are professional entrants or people ‘returning’ following a career break (Metcalf, 2005). Although the issue was not specifically raised in the BBSRC submission, similar situations can be found in relation to the BBSRC area of animal disease research and research in veterinary schools (and presumably also in relation to medical research).

Encouraging this group of relatively well paid professional entrants to leave well paid and often more secure positions to take up doctoral research and temporary postdoctoral positions would place considerable pressure on the system and is unlikely to be solved by relatively small increases in pay (other mechanisms might need to be found):

“I have been involved in the Research Councils for years and chaired committees, for example, the problem is you get strategy boards talking about skills shortages, like in animal health, but what do they actually mean by that? Does it mean vets or technicians or scientists who are prepared to research diseases? I find it hard to come to a sensible conclusion about that: you cannot say there is a shortage of vets, for example, there are new schools opening and a lot of vets coming from Spain, for example. But, vets prepared to go into research careers? That is a skills shortage. That is not going to be solved by a few quid in the Roberts Review - that is only going to be solved by restructuring the entire HE profile to keep careers for scientists. That’s the point – there needs to be a career path for research scientists” [HoS, BBSRC, a]

The specific issues facing women returning after a career break cannot be explored here. It is, however, clear that this group holds enormous under-utilised potential for the sector.

3.7 THE RELATIONAL QUALITY OF PAY IN CAREER PLANNING

It is absolutely clear that pay is one of the most important single issues shaping career decision-making. What is also clear, however, is that the determining effect of pay must be seen in its relationship to other factors (as the quote above implies). The BBSRC notes that "the recruitment of postdoctoral researchers is difficult in all areas largely as a result of uncompetitive pay and poor career prospects". The BBSRC respondent made a similar point suggesting that “salary must be understood in the context of research careers and career structures more generally”.

Whilst pay at any point in time is important particularly in the context of quality of life and working out whether a position is actually viable (or, put another way, can they afford to live on that salary in that place and at that point in their life-course). The following response to a question about the importance of pay to their decision is typical. In this case the woman was awarded a BBSRC enhancement but she could not receive it until the university had agreed to promote her to the next scale point:

“Well to a certain extent as [this] is an expensive place to live. So if I lived somewhere cheaper it would bother me less- houses here are very expensive plus we have to support two households – my

65 Many of the developing areas of health care related disciplines will face similar issues - see Ackers (2005b).
66 See Annex 8 for more on this issue.
68 There is not scope in this report to go into detail. It is important to note, however, that there is no such ting as a single ‘career path’ in academic world. Marked disciplinary and institutional differences exist in relation to the qualifications required and length of time it takes to secure a lectureship (see Ackers, 2005b).
husband [who is also a scientist] lives in Oxford. I want this promotion because it would be nice because the accommodation is too expensive – I have to share and I would like to have my own place” [PDRS, BBSRC, a]

The majority of doctoral and postdoctoral researchers look at pay in the wider context of their career progression and the foresee-ability of achieving an acceptable level of financial and employment security in the medium to long term:

“[Q: How important do you think pay is to the retention of contract researchers? Once you’ve got them here have you won the battle?] You may have won the battle for a short spell of time but of course over time people will want to maintain salary levels which of course maintain pace with inflation but also which keep pace with their increasing domestic commitments as they get married and buy houses and have families so, yes, it is important that we keep that under review on an annual basis” [PI, EPSRC, b]

“It’s not just starting salary – its higher levels because – my mate here has been doing genetics and wants to stay in science and do a post-doc and some of the positions start at 19 but the top is 23 – there is not much room for progression” [PhD, BBSRC, a]

So, if we are considering pay in isolation we need at least to consider pay structures and the prospect of pay progression.

“It’s been a problem for a number of years in electronic engineering and some other areas within the school of engineering just because starting salaries for new graduates are so high and if you’re coming in with a PhD stipend of 12k or so you have to have the sort of student who has got an eye on the middle ground if you like who can sort of see beyond the salary levels for the next three years and who wants to get involved in PhD level research” [Res Admin, EPSRC, b]

“We’re very much conscious that all our researchers could be snapped up by other research institutes at the drop of a hat, so we have to make sure that the salaries are appropriate, that their expectations of progression are appropriate and that this is a good working environment for them to be in. So it’s not simply a question of paying them, it’s a question of giving them the confidence to recognize that if they pull their weight, they can expect a track of promotion and enhancement of salary in the normal course of events. If we don’t give people an expectation of reward, it doesn’t have to be immediate reward, but an expectation of progression over time, then we lose them” [HoS, ESRC, c]

The inability to envisage acceptable pay progression in the near future is seen as a major problem and one which may, unfortunately, be exacerbated by enhanced doctoral stipends.69

The career decision-making process, at least in the context of research career, cannot be understood in simple cost-benefit terms. The CSLPE team have been involved in a number of large studies in recent years all of which focus on research careers and have spoken to hundreds of scientists across Europe about their career planning. What continues to surprise us is the level of commitment to research and academic research in particular.70 The interviews with researchers in the course of the site visits provided further evidence of this. One interesting example of this can be seen in the way some doctoral researchers responded to the question about the level of stipends and the relationship they saw between remuneration and research time. Increasing the level of stipend meant that some researchers were able to focus on their research without the pressure to undertake additional paid work. In several other cases researchers said it made a significant difference because they could effectively save the additional income until their stipend came to an end and have an additional six months - free of other responsibilities and out of the lab - to focus on writing-up:71

“The Research Councils don’t consider that most people don’t finish in 3 years so you need money to save up to cover you for at least 6 months afterwards so you don’t ending up trying to work and write up at the same time or you go home where you don’t have the same facilities to write, etc” [PhD, BBSRC, b]

69 Where the real value of doctoral stipends exceeds predicted pay at post-doctoral level this can generate adverse consequences – this issue is discussed in Section 4.
70 See for example, Ackers, 2005; Van de Sande, Ackers and Gill, 2005. In some respects this level of commitment to research poses problems for people you are not able to commit as much time to work as others (Ackers, 2005c).
71 The ability to focus 100% on their research emerged as a key factor in the decision to apply for a Marie Curie Fellowship and is discussed in Annex 4.
Asked whether a longer award might be a better solution to what is a common problem she replied:

“Well what I’d like is 3 years in the lab and 6 months writing up but outside the lab so you would still be expected to be finished in 3 years and not expected to be in the lab” [PhD, BBSRC, b]

Another student made an almost identical point:

“[Q: Has the extra £2k made a significant difference to you?] Obviously yes – to me it gives me something to fall back on if I run over and at the end of 3 years haven’t finished writing up – so that is very useful because obviously then you have to pay student fees as well” [PhD(2), BBSRC, a]

3.7.1 Postdoctoral Pay in Contract Research Positions: Pricing Yourself Out of a Job?

Although some of the PhD graduates that remain in the HE sector will be fortunate enough to move directly onto a lectureship or, better still, one of the RCUK postdoctoral fellowships (with a permanent post guaranteed at the end of it), a growing proportion of them will secure some form of temporary, contract research position. Indeed, this is the group specifically targeted for the Roberts’ salary enhancements. One of the specific pay-related problems facing this group and shaping the attractiveness of these positions is the limited scope for pay progression. Despite marked changes in academic labour markets over the past decade this area of employment is still characterised as ‘post-doc’ or ‘early career’ despite the fact that many contract researchers remain ‘trapped’ in this type of employment for many years. What contract research positions have in common is their reliance upon external funding and applications for such funding are highly competitive. The grant application process, the general approach of funding bodies and concerns around the costs of research and a fear of failing to satisfy ‘value for money’ criteria effectively places a ceiling on postdoctoral salaries.

These fears, not so much about the starting salaries, but the ability to move up the salary scale without ‘pricing yourself out of the market’ are a major concern to the postdoctorates we interviewed. The situation is compounded by the hierarchical relationship between the grant-holder or applicant and the postdoctorate. For the grant holder, securing external funding is critical to their ability to undertake research and also to their career progression. The current funding system in the UK - with some exceptions in the ESRC - does not permit staff on fixed-term contracts to apply for funding in their own right leaving them highly dependent on their PIs. Although the postdoctorates in the designated shortage areas should achieve a higher starting salary of around £24,000, this does not detract from the general concerns about salary inflation and its impact on grant applications.

“[Q: In your situation on £28k on a post-doc do you think you will be able to cost yourself into grants in future?] Maybe not – they could get a younger person – it’s so much cheaper to get a 2nd time post-doc I don’t see myself getting another grant unless it is a really big project where they need someone with experience to run it. It was already difficult on this grant but it was technically quite demanding and required a lot of experience so it couldn’t have been done by someone who had just got their PhD and we had a lot of preliminary results showing we could do this – you’d have to make a strong case” [PDRS, BBSRC, a]

These concerns about the limited prospects for salary progression for people on research-only contracts reflect much wider concerns around the nature of academic labour markets and the relationship between research-only positions and lectureships which cannot be developed in this report. It is, however, important to highlight the relationship between pay and contractual status. It is clear from our research that concerns around contractual security and the prevalence of many very short-term contracts, are as significant if not more significant than concerns over pay per se. Mills and colleagues (2006, p. 71) identify “the structural division between temporary and permanent staff” as, “a key determinant of career mobility within academia”. This view is echoed by the key informant from the BBSRC who questioned why “in major institutions 97% of biology researchers are on fixed term contracts” and goes on to suggests that “the FTC model is outmoded…researchers should be awarded rolling contracts”. According to this respondent, the BBSRC would be happy for researchers to get longer contracts, “it’s institutions that are the impediment”.

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72 These issues are explored in some depth in Ackers and Oliver, 2005. A copy of this paper which refers to some of the site visit material is contained in Annex 5.
73 For details of levels of pay in this group see Annex 2.
74 The ESRC has recently launched a specific scheme targeted at early career researchers. This scheme was referred to by some of our respondents who welcomed the ability to apply in an individual capacity.
75 These issues are discussed in more detail in Section 4.
76 The RCUK Fellowship scheme was designed in response to some of these concerns.
In addition to these concerns around the nature of contract research positions and the inability to plan ahead and anticipate a more secure future, the ESRC and many of the interviewees more generally to the declining attractiveness of UK academic life, identifying the Research Assessment Exercise and its impact on workload as a major concern.\textsuperscript{77}

“Most of our people say that academic careers are unattractive; the pay is bad and the workload is heavy. Of the people who have worked for me, I have only one of my PhD students who has become an academic out of 20 or 30” [PI, EPSRC, d]

Following the Concordat and the Research Careers Initiative it was acknowledged that little had changed to the every day experiences of researchers, further action was considered necessary particularly in the areas of contractual security and career paths (RCI, 2003, p. 2). On the basis of our research findings it is unclear that the issue of pay needs to be considered as part of a much wider issue about pay structures and their relationship to career paths in the UK.

3.8 ‘EMERGING’ RESEARCH AREAS

Section 3 opened with a restatement of the rationale underpinning the approach to selective pay. This rationale is tightly focused on the impact of alternative and, in particular, better paid employment opportunities outside of HE. The identification of some of the ‘shortage areas’ outlined in Section 2 presents a somewhat broader approach, however. The ESRC’s approach is perhaps the most revealing in this respect although echoes are evident across all three Research Councils. Three of the areas listed (quantitative methods, collaborative/knowledge transfer activities and area-based studies) are not related to discrete subjects areas (and a declining feeder pool) as such but rather reflect strategic objectives.

It could be argued that concerns to stimulate recruitment in areas strategically defined by the Research Councils is a different kind of problem than losses due to market forces (and higher pay elsewhere). The ESRC’s concern to support knowledge transfer activities is a case in point reflecting valid concerns around improving the effectiveness or impact of research and promoting interdisciplinarity. The reference to area studies and the specific need for expertise in regions outside of Europe can also be justified on the basis of what the ESRC refers to as its “evidence for policy agenda”.

The BBSRC and EPSRC similarly identify areas which they wish to support recruitment in, not necessarily because these are areas of particularly buoyant salaries or opportunities in other sectors but rather because they are ‘emerging’ areas of research of strategic importance to the Research Councils. The BBSRC’s rationale for selecting areas 2, 3 and 4 (animal disease research, whole organism physiology and stem cell research) reflects broader concerns to bolster recruitment in response to its strategic plan and to increase responsiveness to emerging areas of research and build capacity. The EPSRC also refers to its decision “not to direct [the funds] to specific areas of research, because areas are emerging all the time so we made a statement that this applies across the discipline”.

The point here is not to question the selection of priority areas but rather whether such diverse objectives demand more subtle and diverse approaches. More specifically, is increasing stipends and pay in these areas the most effective and acceptable method of increasing the volume of activity? Respondents in the site visits expressed concern at some forms of policy-driven recruitment and the consequences this might have for core subjects.

Others worried about particular subjects not being identified as official skills shortage areas resulting in a skewing of funding away from important subjects that should be protected:

“Well for us [molecular biology] is essential because that’s basically what we do. I would argue that it is actually fundamental and it would be a tragedy if we can’t get enough people in that area because that’s the area that real advances are made in” [HoS, BBSRC, d]

In addition to skewing funding, some respondents were concerned that the policy might simply channel the same pool of potential applicants in different directions (rather than increasing the overall pool). The respondent asked whether increasing stipends in particular areas will “skew the students research in that direction, which may not be a bad outcome as far as the ESRC is concerned because they’re trying to

\textsuperscript{77} For a discussion of working hours in science careers and the impact on career progression see Ackers, 2005c.

35
produce people in those particular areas, but you may not be playing to the students’ strengths” [Res Admin, ESRC, b] 78

3.8.1 Quantitative Skills and ‘Quality’ Issues
All of the Research Councils and many respondents refer to the problem of ‘quality’. In practice this concept conflates a range of quite different issues and typically defies definition. At one level, the term ‘quality’ is used to refer to a general decline in standards or excellence as the ‘best’ undergraduates and postgraduates leave the sector. In the Research Council submissions this might equate (very broadly) to the fall in the number of people with first class degrees. 79 In other respects, Research Councils and respondents refer to more general ‘aptitudes’ - whether people can hit the ground running or whether they demand higher post-appointment mentoring and investment. In yet another respect the language of quality is used to identify more specific skills shortages and, in particular, quantitative or statistical skills. The Research Councils share a common concern around the need to improve the pool of potential entrants with good quality quantitative skills.

“Quantitative genetics…anything quantitative is difficult to recruit for in biological sciences…Yes so quantitative, stem cells and plant sciences stand out as particular areas of difficulty” [HoS(2), BBSRC, b]

The evidence given by the ESRC for the focus on ‘quantitative social science’ expresses the concern in a more inter-disciplinary and generic fashion identifying the difficulties departments of ‘economics, statistics, sociology and other relevant disciplines have in recruiting staff with quantitative skills.’ Indeed, the respondent from the ESRC talked even more broadly of building capacity in areas such as quantitative geography and smaller practice-base disciplines such as town and country planning suggesting a very cross-disciplinary endeavour.

Where the ‘problem’ can be defined in terms of specific skills shortages (such as quantitative skills) rather than losses specifically due to salary differentials one might question whether targeted enhanced remuneration is the most efficient, transparent and acceptable approach. 80

SECTION 3 SUMMARY: UNDERSTANDING THE CAUSES OF SHORTAGES

Recruitment and retention difficulties arise for different reasons. It is important to understand the factors shaping recruitment difficulties in order to ensure a sensitive and effective policy response. In that context, it is useful to distinguish between two broad groups of ‘causes’. The first, and the one which forms the rationale for selective enhancement, concerns the relative attractiveness of research careers and is concerned primarily to encourage researchers to progress and remain within the UK academic sector. The second concerns ‘other factors’ shaping supply and the volume and quality of the recruitment pool.

1. The Attractiveness of Research Careers and the Importance of Pay
The study confirms the importance of pay as one of the single most important factors shaping attitudes towards careers in the academic sector. Pay differentials encourage many researchers to leave the academic sector or, to a lesser extent, consider moving abroad. In practice, however, researchers consider issues around pay in relation to other factors and their wider career path and prospects. The interviews provided evidence that the ability to foresee pay progression (and its predictability) in the medium term was of greater significance for early career researchers than immediate pay in career decision-making. Career paths and prospects showed marked disciplinary and institutional variation. Many researchers value aspects of academic life and research very highly. The level of flexibility and autonomy is particularly valued.

• Contractual Security and Pay
The relationship between pay and contractual insecurity is a major concern; many if not the majority of contract researchers face many years on a series of short and unpredictable contracts with little hope of achieving a more secure position (and beginning to achieve pay progression). This is often of greater concern than pay as such.

78 These issues are returned to in Section 4.
79 Although this in itself is a problematic indicator (cf Ackers, 2003 for a discussion of disciplinary differences).
80 The Roberts Review Training money should have an impact here. The ESRC has developed a range of other approaches including the ring-fencing of awards for quantitative work and building centres of excellence or ‘hubs’ in some of the shortage areas in order to enhance capacity and build a community.
**The Value of Stipends**

The general increase in Research Council doctoral maintenance awards (to £12,000) is generally considered to be adequate.\(^8\) The tax free nature of the UK stipend and the additional financial perks (in terms of local taxes and travel/childcare subsidies etc.) associated with student status means that such a stipend broadly equates to a salary of around £20,000. The ability to manage on this income depends on personal circumstances and location.

This figure is not usually enough to attract professionals to return to the sector from existing employment although this depends on their personal circumstances. Doctoral candidates who have followed the ‘traditional route’ are generally more acceptant of this level of pay. In cases where people were re-entering HE to undertake a full time doctorate they often had taken a career break beforehand or had financial backing from family.

**Postdoctoral Pay**

Pay is a more serious issue at postdoctoral level where PhD students may face a drop in real income. Researchers often have two different perspectives on pay; the first relates to adequacy and the second to competitiveness. Whilst pay and security are of critical importance it is not clear that researchers are generally comparing their pay in a direct fashion with the private sector or pay abroad but rather considering whether the pay and security they receive is adequate to achieve an *acceptable quality of life*. In many cases it is not; they cannot afford to buy reasonable quality accommodation and to support their families. This is why many of them leave and not because their colleagues in companies earn double their salaries. In other cases it is clear that a direct comparison is being made with salaries in other sectors (especially by supervisors).

**Internationalisation and Pay**

International staff (particularly from the EU) form an ever increasing proportion of the UK’s academic labour force. In many fields they now constitute the majority of contract research staff. Whilst pay in the US is generally more attractive, differentials in Europe (particularly following the last European Union enlargement) and developing countries continue to make the UK an attractive location to researchers from abroad.

**Declining Volume and Quality of the Domestic Recruitment Pool**

In addition to losing quality people to other sectors there is some concern that the UK is failing to generate its own recruitment pools as the volume and quality of ‘home grown’ undergraduates and masters students coming through the system is perceived to be in decline.

It is important to consider whether this perceived decline is relative however to the continued or increasing ability to attract higher quality applicants from abroad (which can sometimes be due to poor and declining conditions for research in the sending countries). If that is the case, the conventional wisdom that the UK pool is of declining quality might rather reflect the ability to retain the best UK researchers (for the salaries on offer). The ‘risk’ is that the ability to recruit abroad might have a multiplier effect depressing wage rates in the UK and eventually pushing out an increasing proportion of UK applicants. Put simply, it might not be that UK applicants are declining in quality per se, but that the pool of UK applicants prepared to accept the risks of an insecure and poorly paid research career is declining.

Foreign researchers, at least at an early stage in their career may be less sensitive to pay than UK nationals for a number of reasons. The incentives to come to the UK to ‘boost their CV’ through accessing UK centres of excellence, improve their English or simply to get a position at all might outweigh their immediate concerns about pay (although this will impact in the long term for those who decide to settle and form families here). This situation demands careful monitoring as it is, in effect, a form of reverse discrimination.

2. **Other Factors Affecting the Recruitment and Retention of Postgraduate and Postdoctoral Researchers**

**The Importance of Feeder Routes**

The existence of natural progression routes and feeder programmes increases the ability to improve skills training and the quality of students generating effective recruitment pools. Disciplines where such routes are less ‘natural’ (such as in business or veterinary schools for example) have greater problems. In some cases, disciplines are able to compensate for the lack of natural feeder routes through recruitment from proximate disciplines.

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\(^8\) The study only involved work with people who had decided to remain in the sector – see Section 5 for a discussion of the limitations of this study.
The Effect of Debt
Growing student debt and increases in undergraduate fees may place a renewed emphasis on financial rewards. Pressures to prolong ‘pre-qualification’ training through the introduction of compulsory two years Masters programmes can be predicted to exacerbate the situation. The commitment to widening participation and promoting equality of opportunity might also present problems as high quality students are forced to exit in order to provide for themselves financially.

The Valuation of the Doctorate
The extent to which the doctorate is valued varies enormously across disciplines and sub-disciplines. Where the PhD is accepted and respected in other sectors fewer recruitment and retention problems exist although attrition might take place rapidly following graduation.

Recruiting in Vocational Areas
Where academic research is taking place in close association with vocational training such is in business schools or in medical or veterinary schools, it is more difficult to recruit and retain doctoral and postdoctoral researchers. In such situations it is also more difficult to attract professionals back into academic research. The pressure on pay is more acute in these situations.

Where it is seen as advantageous or necessary to attract qualified professionals back into HE, significant increases would be required, even at doctoral level, to entice people to leave highly paid positions.

Building Capacity and Responding to Policy
Some of the recruitment difficulties identified by the Research Councils are not directly concerned with market pay. Rather, they reflect specific strategic objectives to develop new research areas and build capacity. In these situations it is less easy to describe the situation as one of declining capacity in the face of the relative attractiveness of careers in other sectors or abroad. In other cases the Research Councils have identified areas that are more directly concerned with building specific skills (such as quantitative skills or knowledge transfer, for example).
Section 4: Implementing Enhanced Pay

4.1 TARGETTING FUNDS ON THE DESIGNATED SHORTAGE AREAS

Section 2 described the process by which the Research Councils identified the shortage areas as requested by the OST. A very strong message coming out of the Research Councils concerns the more general problems they are facing across their areas. Although the EPSRC and the BBSRC did designate areas, this was very much in the context of widespread recruitment and retention difficulties. The ESRC approach was more focused with very distinct problems evident in some fields and in relation to certain skills.

Notwithstanding these reservations about the validity of designating with any specificity the fields facing difficulties, the next step for the Research Councils was to decide how to link the funds available to these areas:

Table 1: Summarising the Research Councils’ Approaches

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<thead>
<tr>
<th></th>
<th>BBSRC</th>
<th>ESRC</th>
<th>EPSRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced Doctoral Stipends</td>
<td>Available through quota system in shortage areas since 2004</td>
<td>Available to CASE and ODPM studentships from 2004. Extra £3k available in economics and advanced quantitative methods from 2006/07.</td>
<td>Available through Doctoral Training Account – letter sent to DTA coordinators – since 2004</td>
</tr>
<tr>
<td>Enhanced Postdoctoral Salaries</td>
<td>Available – BBSRC mostly identified eligible cases when grants proposals were awarded</td>
<td>Enhancements of £4k applied to the postdoctoral fellowship scheme in economics - 2005.</td>
<td>Available – PIs had to make a case in the proposal for a higher position</td>
</tr>
<tr>
<td>Level of enhanced salary</td>
<td>BBSRC – have capped at salary point 10</td>
<td>Left to discretion of PIs</td>
<td>Left to PIs’ discretion to make a case</td>
</tr>
<tr>
<td>Existing and new awards</td>
<td>Both</td>
<td>New awards</td>
<td>Only new awards</td>
</tr>
</tbody>
</table>

4.1.1 BBSRC Implementation

The BBSRC explained its approach as follows: “highlighted areas would be included in the call for proposals and enhanced stipends allocated to appropriate projects”. In the quota allocation exercise, quotas of ‘enhanced stipend’ awards would be made to appropriate departments. A letter from the BBSRC in January 2004 suggests that a stipend enhancement of £2000 would be made available to a “proportion” of BBSRC students whose projects fall into the designated shortage areas. The budget was as follows:

<table>
<thead>
<tr>
<th>BBSRC Budget for Enhanced Stipends:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Year 03-04</td>
<td>0.179M</td>
</tr>
<tr>
<td>Year 04-05</td>
<td>0.716M</td>
</tr>
<tr>
<td>Year 05-06</td>
<td>0.716M</td>
</tr>
</tbody>
</table>

With regard to the enhanced stipends, 106 enhancements per annum were allocated to departments in connection with their quota allocations of studentships; a further 88 enhancements were made to studentships which were awarded to particular projects (‘committee studentships’). For quota awards, funds were made available to departments to create a suitable studentship research project in a priority area and then recruit a suitable student (using the enhancement). The higher degree of departmental autonomy in such cases implies a greater ‘risk’ that the funds might be used in different ways (such as increasing the length of a scholarship for example).

At postdoctoral level, the BBSRC decided to supplement both new and existing grants. In the case of new awards, it decided to ‘empower each of the research committees which make research grant allocations to award higher pay spine points on new grants in designated areas from a certain date, to a cash limit pre-

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82 BBSRC submission to OST, p. 3.
designated by BBSRC, and alter application forms and supporting guidance accordingly. For existing grants, it supplemented those grants falling within the designated areas. The budget was as follows:

<table>
<thead>
<tr>
<th>BBSRC Budget for Enhanced Salaries:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 03-04</td>
<td>0.43M</td>
</tr>
<tr>
<td>Year 04-05</td>
<td>1.67M</td>
</tr>
<tr>
<td>Year 05-06</td>
<td>4.3M</td>
</tr>
</tbody>
</table>

Despite the reference to cash limits, the BBSRC's calculation of the potential number of enhanced salaries (based on an estimated fall in the unit costs of appointments post-fEC83) has lead to a projection that around 50% of all BBSRC funded contract research positions could receive an enhancement. The possibility of adding enhancements to half of all postdoctoral positions has lead the BBSRC (and the research community) to question the justification for targeting:

"You've really got to a stage where that's more posts than priority areas in a way. It's at the stage where the case for enhancing one post and not another is becoming increasingly difficult. If you had a small pot then you could increasingly focus it on posts in narrowly defined areas – that's fine – if you have to allocate 50% as priority areas you can't really do it and it's going to cause increasingly difficult decisions about why we have enhanced that one and not that one. My feeling is perhaps we need to bite the bullet and pull back from this approach and just think about whether all post-doc salaries should be enhanced" [BBSRC Key Informant]

One alternative was to pay a higher minimum figure rather than selectively enhancing one in every two grants:

"Maybe we could enhance every post by half as much maybe that would do more to enhance our recruitment of the best people and it may be less disruptive than having a selective enhancement" [BBSRC Key Informant]

4.1.2 EPSRC Implementation

The EPSRC's approach differed in a number of key respects. The EPSRC made a conscious decision not to allocate the funding directly to the designated shortage areas but to place the onus on institutions to 'make the case'. It decided not to advertise the shortage areas for the following reasons:

"Although in our bid to the OST...we specified the areas of skills shortages, we do not recommend that HEIs should be informed of these. The areas we identified are largely based on anecdotal evidence rather than on hard fact, and cannot in any case be claimed to be comprehensive. They are to be considered as exemplars. By revealing these areas to the HEIs, they may create an expectation among HEIs that could perturb market forces in these areas, unnecessarily raise expectations in HEIs and among PDRAs and cause problems in other areas of skill shortages that are not highlighted" [EPSRC, Key Informant]

Furthermore, the EPSRC "consider it is not possible to target the 'Roberts' money precisely at areas of particular skill shortages and, in any case, these may change with time" (p. 9). As the EPSRC key informant explained "we consciously chose not to direct it to specific areas of research, because areas are emerging all the time so we made a statement that this applies across the discipline – this was a conscious decision" [EPSRC Key Informant].

Rather than applying the enhancements directly to salaries and stipends in the shortage areas it preferred to devolve greater autonomy to institutions on the grounds that they were "closer to the problem" and also that they were the employers. The EPSRC argued that, it is the "primary responsibility of the HEIs to implement the scheme. HEIs should consider how to implement the Roberts Review recommendation when justifying requests for PDRA salaries in future grant applications submitted to EPSRC. Such a reminder will be communicated to the HEIs".

Because of the problems in identifying skills shortages at postdoctoral level with any precision they proposed "adding the funds to the programme budgets without specifically ring-fencing them for PDRA salaries". In practice, they allocated 50% of the Roberts money to core e-science, basic technology, ICT, LSI and mathematics programmes and the remaining 50% to "all other programme areas".

83 Due to the different approach to cost recovery each enhancement would cost around £5,300 per annum. A £4.3M annual budget would fund 270 new enhancements per year, or a pool of 810 RAs with enhanced salaries at any one time.
The EPSRC felt that “the areas were more clearly defined at postgraduate level...but we don’t know the detail and if they would stay as such, for instance IT could change in a year so we decided to give the HEIs flexibility in how to use it” [EPSRC Key Informant]. EPSRC had already moved to the doctoral training account (DTA) approach:

“We didn’t add it to the basic amount but put it on top and gave them a specific steer saying this has been added specifically to enhance stipends in areas of problems so they were told where the money had come from but not that they had to put money into those areas. The universities are closer to the real problems...The principle of the DTA is to give universities maximum flexibility – they could give longer PhDs, higher stipends...this extra money was put in to encourage them to do something with stipend levels but some of them may have decided to split it up... create larger student numbers – but that was not what it was intended for”

In practice, the EPSRC allocated 1000 stipends in its shortage areas (44% of the total) for which it provided a £1,500 enhancement through the DTA scheme. Unlike the BBSRC, the EPSRC made the decision not to apply enhancements to existing grants and stipends but only to new awards.

4.1.3 ESRC Implementation

The ESRC have been introducing enhancements in waves. Doctoral enhancements have been applied to CASE stipends and on a joint scheme with the ODPM since 2004 (an enhancement of £2k). For CASE, ESRC communicated this development to all outlets recognised for ESRC CASE awards. In 2004, 70 CASE awards received the £2K enhancement and a further 85 were awarded to the 2005 cohort. The premium was applied to the CASE scheme because there had been difficulties attracting students to CASE and because this scheme addressed priority areas in terms of their concern with knowledge transfer, user engagement, and interdisciplinarity.

In 2006, 500 of the total ESRC studentships have been allocated on a quota basis to recognised outlets. This includes studentships in the following areas: economics (66), management and business studies (52) and advanced quantitative methods (40). A further 100 studentships will be available through open competition and may also fall in the categories above. Stipend enhancements of £3,000 per annum will be available in economics and advanced quantitative methods from 2006/07. The enhancement will be available to new students from 2006 only.

The ESRC will soon be writing to all applicants to the 2005 ESRC Recognition Exercise informing them whether they have been successful in obtaining recognition and also whether they have been allocated quota awards for 2006/07 and 20007/08. The letter will inform outlets in receipt of economics and AQM quotas that they can advertise their studentships at £3K above the standard £12,000 award.

The ESRC strategy towards raising awareness of the enhancements scheme also includes informing professional bodies like CHUDE (Conference of Heads of Departments in Economics) to communicate the Economics strategy. The strategy will also be made known to the research community through an article in the ESRC Social Sciences newsletter in March 2006 and on the ESRC website.

Recent evidence collected by the ESRC highlights that Management and Business Studies, like other practice-based disciplines, are notable for alternative career pathways and therefore the ESRC is developing separate initiatives to augment recruitment and retention in this area. Additionally, the ESRC offers a number of enhanced stipends under joint schemes with government departments including the Department for Transport and the Welsh Assembly Government.

Enhancements to postdoctoral salaries were implemented in January 2004 – a letter from RCUK was sent to Vice Chancellors. Enhanced salaries are based on cases being made in grant applications. In addition, ESRC introduced enhancements on its Postdoctoral Fellowship scheme in 2005. From 2005, postdoctoral fellows in economics have been able to apply for a salary level of up to £4K above the standard.

The potential tension between increasing the costs of a position and increasing the volume of positions is discussed in Section 4c.

CASE stipends also have a further contribution from the industrial partner.

The projected costs for enhancements for quota students are £318K (106X3) pa for the 2005 cohort - quotas only - (and the same for the 2006 cohort). If these are awarded to students with 1+3 awards (for Masters with research training followed by PhD) then this would equate to total expenditure in the region of £1272 K for the 2005 cohort enhancements and the same for the 2006 cohort.

http://www.rcuk.ac.uk/documents/rcsletterjan04.pdf

In 2005 ESRC received 470 applications for Postdoctoral Fellowships of which 110 were awarded.
4.1.4 Institutional Flexibility: Does the Funding Reach the Target Population?
Identifying the optimum means of allocating funding to designated areas involves considerations not only about how much of the funding to target but also the mechanism and the balance between institutional flexibility and control. This is a particular issue at doctoral level where the growing use of doctoral training accounts (DTAs) both permits greater institutional autonomy and makes it more difficult to monitor outcomes.

The DTA approach was generally welcomed by institutions as offering greater flexibility and devolving decisions about how much was appropriate or necessary to award to potential doctoral researchers. Of course the corollary was that not all institutions used the money to specifically increase stipends in the shortage areas and by the agreed amount:

“I think we are the best judges of students’ quality so I would like there to be a significant amount of devolution within the scheme” [Res Admin, ESRC, b]

“We’ve pooled resources so really what we do is we award the departments that are bringing the funds in with a number of studentships or half studentships. But the main strategy is all funds are committed up front. We actually make them all up into full studentships according to [university] stipend fees and other funding” [Res Admin, EPSRC, d]

“[Q:What do you think has happened - do you think the volume has increased but they have just kept it at the 12k?] In my experience it’s a bit of a mixed bag around the country. Some people have taken the spirit of things and are paying more, others just don’t. Some people think it’s very unfair that one student should get more than another and everyone should be paid the same, whereas we are trying to create a market. I had a conversation last year with somebody at [HEI X] who we had given a chunk of money to help stats students and he wanted to use the money to fund more students, we said ‘no its pay higher levels’ the response was ‘we don’t need to’, we said ‘you could do’ and the response was ‘don’t want to’” [ESRC, Key Informant]

The degree of implementation of the enhanced stipends policy at postdoctoral level remains unclear. Figures provided by the BBSRC suggest that, where information was available, great variation existed with 24 postdoctorates appointed below spine point 10 (£26,470); 7 appointed at that level and 6 appointed at a higher level. Many institutions are continuing to offer posts at around £20,000 when they could award higher salaries.

4.2 TRACKING THE CAREERS OF RESEARCH COUNCIL-FUNDED RESEARCHERS
To the extent that the research community accepts the logic of market-pay, it is clear that any decisions about targeting need to be based on sound evidence particularly in relation to the quality issue. If the policy of selective targeting is to be continued and accepted by the research community it needs to stand on a sound and explicit evidence-base and be amenable to effective evaluation. This is not the case at the present time. Although measures are in place to ensure wider financial accountability for the funding that HEIs obtain, Research Councils are currently unable to track the impact of their funding on human resources capacity:

“We don’t have much reliable information on whether the post has been enhanced or not because we only look at the detailed financial information at the end of the grant - but we’ve got no way really of distilling out those cases” [EPSRC Key Informant]

“We have minimal information, we don’t even know who our post-docs are. It’s a post we’ve given funding to the University to employ somebody but they aren’t required to tell us who that person is. To be honest we have no idea” [BBSRC Key Informant]

“They applied for a pot of money they might not recruit and pay that – they might apply at a higher level but decide to appoint two. We never capture who they employ…We couldn’t set a minimum or maximum as we are not the employer. That’s just the point we don’t know what is enhanced. We recognised that from day one it will be immeasurable in that sense” [ESRC Key Informant]

One key factor shaping implementation lies in the levels of awareness of the scheme and its method of operation.

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89 The majority of positions (80) did not record the salary level.
90 Annex 3 provides further detail.
4.3 AWARENESS OF THE SCHEME

In general the scheme was not widely known about or understood within the research community. It was clear that a high degree of confusion existed about how the scheme worked which limited exposure to and the effectiveness of the approach. Information about the scheme failed to ‘trickle down’ in an effective way from the Research Councils to institutions and within institutions (including the Research Councils themselves). In some cases, PIs and supervisors did not know that they could apply for enhancements and therefore missed out on the opportunity. In others, they were awarded enhancements without knowing that this was the case which on occasion meant that they were unable to advertise the position at a higher level. In these cases although the researcher was fortunate to receive the higher stipend or salary they did not understand why they had received it and the PI had not always been in a position to use the higher salary to full effect to attract a stronger field of applicants (perhaps advertising the post at the lower rate).

On one level it might be argued that the recipient does not need to know that their salary has been specifically enhanced and why (so long as it has). However, one might also argue that the policy of enhancement could promulgate a positive message to the research community that the Research Councils are serious about supporting research careers.

Table 2: Awareness of the Scheme by Supervisors and PIs in Questionnaire

<table>
<thead>
<tr>
<th>Supervisors aware</th>
<th>Principal Investigators aware</th>
</tr>
</thead>
<tbody>
<tr>
<td>for enhanced stipends</td>
<td>for enhanced salaries for contract researchers</td>
</tr>
<tr>
<td>Yes</td>
<td>35%</td>
</tr>
<tr>
<td>No</td>
<td>65%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>8%</td>
</tr>
<tr>
<td>Total</td>
<td>99%</td>
</tr>
<tr>
<td>Total</td>
<td>272</td>
</tr>
</tbody>
</table>

The Research Councils had taken various steps to increase awareness and understanding of the scheme encouraging institutions to ensure that advertising material for the positions refers to the enhancement. Letters had also gone out to institutions but it is not clear that this information filtered down to the appropriate level with many administrators and human resource respondents failing to understand the scheme (if they knew about it at all). Quite often the first the PI would know about the scheme was when the positions for which they had applied was enhanced and they were told to ‘go away and use that funding to recruit somebody using the enhanced funding’. In practice, very little active marketing of the scheme has taken place perhaps to avoid the kinds of tensions that differential pay generates (see below).

The Research Councils were acutely aware of the low visibility of the scheme. As one respondent put it “we won’t know really how effective the enhanced salaries have been. A PI may have been given say an enhanced salary but the PI may not have been aware of the initiative or may have got confused or been told by their personnel office you have to employ at salary grade 6 so there might be a variety of reasons why these enhancements haven’t been taken up”. These scenarios were echoed in the site visits:

“I think its Case – not CASE – it’s a strategic research grant so its an extra £2k on the BBSRC standard. [Q: Do you know if it’s linked to the Roberts money?] To be honest I don’t. I think it might be” [PhD, BBSRC, a]

The issue was followed up with her supervisor:

“[Q: I suspect X has an enhanced stipend?] We did wonder about that! I got no paper work about money or anything from the BBSRC – you just get an announcement saying you got a student – nothing about their salary to me – I know nothing about what my students are paid. It would have been useful to know to be honest as I could have advertised that and it would have probably made a big difference [to recruiting – she had a very limited field to appoint from]. My post-doc might be on an enhancement too – I don’t know” [PI, BBSRC, a]

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91 Annex 6 provides further detail of levels and sources of awareness of the scheme.
4.4 IMPLEMENTATION BARRIERS: THE TENSION BETWEEN GRANT APPLICATIONS AND POSTDOCTORAL PAY

The effective implementation of the scheme at postdoctoral level is conditional upon the response of grant holders or PIs. Many PIs were not aware of the scheme at all or the approach to targeting. One particular concern, linked to awareness, lies in the potential tensions PIs face between achieving ‘cost effective’ funding proposals on the one hand and their need for highly skilled researchers to actually undertake the work on the other. This tension lies at the core of concerns about postdoctoral pay and represents a genuine ‘risk’ both to PIs and postdoctorates concerned to secure their next position and not ‘price themselves out of a job’.

The OST form required Research Councils to explain how they planned to “ensure that the research grant assessment process is enabled to reflect the need for enhanced stipends”. The EPSRC was acutely aware of this problem:

“We have to remember that cost effectiveness is one of the criteria we use at peer review – it’s not the top one – I think HEIs often see it as higher up the agenda…in many ways it’s how the referees respond to it…it’s a long term culture”

The EPSRC submission refers to the “common perception that higher staff costs will be viewed unfavourably by peer review. Tackling this perception is a key target and given the generic nature of the issue a cross-council campaign to change application behaviour is necessary”. Concerns around the costs of research have meant that institutions have tended to request:

“…starting salaries based on spine point 6 (£22,289) irrespective of whether this is realistic to attract and retain RAs in shortage areas…HEIs should be reminded that the EPSRC has received additional baseline resources to implement this and a key message needs to be communicated to the HEIs that the EPRSC will accept the case for supporting PDRA starting salaries higher than spine point 6 if reasoned justification is given in terms of evidence of key skills shortages leading to recruitment or retention difficulties”

In response to this continued concern, the EPSRC focused attention on the peer review process and “took steps to brief referees as part of normal peer review business to recognise the need to support higher PDRA salaries on grants, particularly in areas of skills shortages, and to carefully examine and be sympathetic towards cases justifying higher salary costs” (para 10). It also recognised the importance of providing guidance to its staff “on accepting PDRA starting salaries above spine point 6 where reasonable justification has been provided” (para 11)

Despite the level of attention paid to this issue by the EPSRC, the site visits suggest that this message has not yet filtered down effectively. Whilst some research administrators were aware of the policy they often found it hard in practice to convince PIs that they could increase salary costs in an application without jeopardising its success. In general, PIs felt that it was easier to argue for pay progression for a named researcher (but only to a certain point): the most serious concern was with applications involving unnamed researchers.

According to the following research administrator many PIs remain reluctant to cost higher salaries into grant applications:

“The mentality of PIs applying to Research Councils is that it’s an unnamed post so we’re only going to ask for the minimum level so spine point 6 level and they don’t consider themselves, you know, can they employ somebody at that level in this area? So what tends to happen is that the award comes in and we interview and find out that it is a problem and we just appoint at a higher level on the scale and cut the duration of the contract. So there’s no prior thought given to ‘is this a shortage area’ and it is difficult to find that out in the short timescale of putting an application together. It is something I do say to PIs, you know, will you be able to appoint at that level? And they say they need to keep the costs down” [Res Admin, BBSRC, b]

Other PIs expressed concern about the extent to which higher salaries will increase the difficulty in securing awards. The introduction of full economic costing would, they felt, exacerbate this problem in the future:
“Now we decided to spend our money in a different way and spend more on people and I think that’s right because I think that gives a better result, but actually the corollary of that is it’s harder to get money” [PI, EPSRC, d]

“We’ve been told, for example, that the success rate for a particular scheme we’ve just had a grant application shortlisted for, but whilst in the last round they funded 7 out of a shortlisted 11 proposals, we’ve now been told that because of full economic costing they’ll only fund 4 or 5 out of 11 shortlisted proposals, so the success rate has gone down by 50% because of the full economic costing which is what you’d expect” [PI, EPSRC, d].

This last example sums up the views of many respondents. Although the pre-qualification period is prolonged in this case (reflecting the specific situation in vocational areas) his comments identify critical issues facing many disciplines:

“Yes we can get both in but the vets who do PhDs they do 5 to 6 years to become a vet, they then go out to practice because that’s why they come to vet school in the first place – its vocational. Most students come here because they want to be vets so most go into practice for another 2 or 3 years so now you’d have say 9 years and you’re at least 27 – on the fastest track – then, if your really good you need to do a residency to get your professional diploma and that's another 3 years, so you are now 30 years old. And I come along and say “why don’t you do a PhD” and you say “well I’m 30, I’ve got years of student debt, I want to have a family and a life and you’re asking me to do another 3 years” and then on the fastest possible route they come out of their PhD at 33 and they are unemployable because of the wage for age thing in the pay scales. So if I get grant from the BBSRC or MRC and don’t have a named person they will give me a spine point 6 post which is for a 26 year old and therefore they are 7 more points up the scale to pay a 33 year old so they are off the top of the scale and they are unemployable then at that age. It’s astonishing to me that the Research Councils cannot see that” [HoS, BBSRC, a]

4.5 PRE-EXISTING PRACTICE

It is important to note that the policy of enhanced pay is not entirely new. In some cases funding bodies such as the Wellcome Trust have operated a pay enhancement policy for many years. Within the Research Councils various approaches to pay enhancement have evolved in a more responsive way to deal with recruitment and retention difficulties.  

At doctoral level, the policy of pooling funding through mechanisms such as doctoral training accounts has provided institutions with a degree of flexibility. In some cases this has been used to top-up offers in order to attract the best candidates. Institutions participating in the BBSRC’s pilot Training Account Scheme, for example, were permitted “flexibility to supplement stipends and some have done so”. A small and very specific ESRC scheme designed to promote the interface between research and policy (the Office of Deputy Prime Minister scheme) currently offers an enhancement of £2,000 above the standard rate. The Research Councils CASE awards designed to promote knowledge transfer between industry and universities have for some time offered higher stipends. The EPSRC refers to existing practice in the ‘Photonics programme’ where starting salaries above pt 6 are ‘regularly announced’ and further refers to the flexibility HEIs have to increase stipends through the DTAs. According to the EPSRC, “the flexibility of the new DTA system has been used by universities to offer higher stipends in specific areas’ and evidence suggests that differential stipends are emerging….with an average premium of £450 above national minimum and £1000 in engineering and £1500 in chemical engineering”. The EPSRC also refers to the growing use of higher stipends in specific engineering schemes awarding an additional £4,500 with £1,500 paid by the EPSRC and £3,000 from industry although it suggests that this has not prevented retention problems.

At postdoctoral level, grant applicants are used to the conventional approach of making a case for the salary requested on the ground of skills and experience. As the BBSRC put it, the “appointment of postdoctoral researchers is made on the basis of experience required”. The ESRC similarly states that funding councils have “some flexibility in agreeing to higher salaries where a case can be made”. Where an appointment at above spine point 6 is requested, details should be provided to explain the higher level appointment: “however, this is currently based on the needs of the post rather than the general state of the labour markets within that area”.

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92 For details of the Wellcome Scheme see Annex 3.
93 Quoted from BBSRC submission to OST, p.3.
The ESRC respondent said that although they had no evidence as such, “it’s clear in economics in particular people are recruiting higher up the scale across the board so I do wonder whether RAs have benefited from this”. Some institutions had already accepted the practice of enhanced pay in areas facing recruitment difficulties:

“In a competition for good academic staff [members of academic staff who could deliver for the RAE – “the rest aren’t relevant”], we would pay 30% above the average salary, and in some very rare cases – where a candidate has an offer from Harvard – we would offer 60% above the usual salary” [PG Research, ESRC, b]

“As you know there’s a special market weighting for salaries which gives a very modest monthly bonus for economists and accountants which has been in place, it’s come to an end now I think, it’s been in place about 3 years” [HoS, ESRC, c]

As we noted above, the situation is particularly difficult in the case of unnamed researchers where a strong presumption exists that appointment will be at spine point 6 unless the applicant provides justification for a higher level. In certain areas such as bioinformatics, the BBSRC has made it known that it will allow researchers to be employed at higher spine points in order “to deal with recognised recruitment problems” (p. 7). Whether grant holders are aware of this and feel confident to present this case is unclear. Although the EPSRC had already started permitting cases to be made on the grounds of skills shortages an awareness issue remained and “the community hadn’t appreciated it”. The BBSRC also noted that institutions “often have to supplement salaries in order to retain key staff” - presumably using their own resources. The differential ability of institutions and groups to engage in this kind of topping-up emerged in the site visits and presents further distortions to the relationship between skill and salary which cannot be justified on any objective grounds (reflecting as they do institutional wealth and policy).

4.6 THE IMPACT OF ENHANCEMENTS ON RECRUITMENT AND RETENTION

4.6.1 How much pay makes a difference?
This section considers how much pay makes a difference to career decision-making. The Roberts scheme provides an average enhancement of £2,000 on PhD stipends and £4,000 on postdoctoral salaries. The question is, is this enough to make a difference and encourage those that might otherwise chose to move into another sector or abroad to remain in academic research?

The approach of the Research Councils suggests that there is another question too – whether the enhancement is enough to attract someone to work in a particular way (and get involved in knowledge transfer activities, for example) or to develop their quantitative skills? In answering this question we need to consider the reference group/s and whether they are comparing themselves to a specific occupational sector at home or abroad or, in a more general sense, comparing living standards against some more general notion of what is reasonable or even attractive.

4.6.1.1 Doctoral Level
The increase in general Research Council stipends to £12,000 was seen as a major step forward and, for the majority of recipients, this was seen to be a reasonable and attractive sum broadly equivalent to a salary of about £20,000. Many students funded by other bodies were receiving less than this although some were on higher stipends (those linked to industrial placements or in professional areas).

“This is already quite a lot of money...[Q: So you are quite satisfied with what you are being paid?] Yes” [PhD, BBSRC, b]

One PhD student felt certain that enhanced stipends would encourage more people to remain at university to undertake doctoral research:

“I think it definitely does help people to decide to do a PhD. Suppose they have a choice between 19-20k in industry and they really don’t want to go into industry, but 10k for a PhD seems really, really low. They may say, ‘there’s a big difference there, I’ll go for industry’, but if you are looking at 14-15k for a PhD, they might say ‘well, there’s no real difference there’” [PhD, BBSRC, b]

In some cases respondents argued that ‘another couple of thousand’ would make a difference especially in London but suggested that this should be applied across the board (and not targeted on shortage areas):
“It’d be nice for the level of the stipends to go up, to be honest, but the key thing is that we get more money in altogether” [PG Research, EPSRC, d]

“I would say that the stipend of £15,000 or £16,000 would probably make a difference” [Res Admin, ESRC, b]

There was evidence to suggest that the accumulation of student debt might begin to bite a little on this situation and especially in cases where researchers had less recourse to financial support and/or subsidized student accommodation (which helped a great deal). In such circumstances some researchers said that they would not have embarked on a PhD if the stipend had been any lower than £14,000 as this level at least enabled them to stabilize their financial situation (if not to reduce their debt).

The general stipend increase (to £12,000) has made less of an impact on the attitudes of mature or career re-entrants. The increase to £14,000, whilst welcome, is unlikely to have much impact on this group who often face a significant drop in income. Interestingly, one PhD student had moved from outside (where she was earning £30k) to take on doctoral studies. For her, the enhanced studentship was the only option since it paid far more than a ‘normal’ studentship:

“I would have thought twice about going for a normal ESRC studentship. I didn’t apply for one of them which I could have done because its two grand less than what I got last year which was about £10,000, which would have looked really low and unappealing to me” [PhD, ESRC, a]

Whilst the increased stipend was welcomed by PhD candidates, it is not clear that they are making an immediate comparison with salaries in other sectors or abroad but rather considering the impact of the stipend level on their ability to manage their financial situation, focus effectively on their research (without the need for a second job for example) and achieve a reasonable standard of living. Housing costs were a major factor in this regard. Doctoral candidates with partners and children faced greater difficulties in this respect particularly when shared ‘student-style’ accommodation was inappropriate. This depends on the financial stability of their partner of course.

“If I’d not have had enhanced pay, I’d have thought about doing some weekend work” [PhD, BBSRC, b]

“I think the pay is good pay. I have no complaints about pay. I think it depends on your personal circumstances. So with me I have a partner so I’m probably in a better position I don’t think I could support a house on my own so it depends what kind of age you are as well” [PhD, ESRC, a]

Although enhanced stipends might not be sufficient to encourage people to choose the academic sector, relatively small differences might shape the choice of institution resulting in a degree of competitive ‘shopping around.’ They might also influence the choice of field:

“I don’t think a couple of thousand would make a huge difference - it may make a difference between whether they go to one place or another, but it’s not enough to sway their career decision” [HoS, ESRC, a]

When invited to comment on how much money would have a significant impact on to recruitment at doctoral level answers varied. In business and veterinary schools, the answer was often that a doubling of stipend at least would be required.

“I would have thought to make any significant difference you’d have to double it or it wont make a great deal of difference – to have an impact you’d have to double it and say, how much would a graduate get if they are going into business, what’s their average salary?” [PG Research, ESRC, a]

In our survey, we asked research supervisors how much PhD stipend levels should be:

Table 3: Research Supervisors Responses to What Level Stipends Should Be

<table>
<thead>
<tr>
<th>Amount</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>£25,000 or more</td>
<td>5</td>
<td>2.8%</td>
</tr>
<tr>
<td>£20,000-£24,999</td>
<td>20</td>
<td>11.1%</td>
</tr>
<tr>
<td>£15,000-£19,999</td>
<td>78</td>
<td>43.3%</td>
</tr>
<tr>
<td>£10,000-£14,999</td>
<td>74</td>
<td>41.1%</td>
</tr>
<tr>
<td>Less than £10,000</td>
<td>4</td>
<td>2.2%</td>
</tr>
</tbody>
</table>
4.6.1.2 Postdoctoral Level
Starting salaries for postdoctoral researchers vary enormously (see Annex 3). There is also a lot of variation in starting salaries in the shortage areas. Many postdoctorates continue to face considerable financial difficulties and their decision about whether or not to take a position is often shaped by their perception of whether they could manage financially or not (rather than direct comparison with pay in other sectors). Whilst pay was not a major factor shaping career decision-making (to the extent that they were specifically looking for high rates on pay), many of the respondents were finding it very difficult to support a reasonable quality of life.

“For me the money, well any more is a bonus and if I wanted to earn millions I would be doing something different...I don’t see how there’s scope for making tons of money in academia” [PDRS, ESRC, c]

A number of respondents argued quite forcefully that the Roberts’ increases were too small to have any impact whatsoever in terms of attracting people into research careers:

“The Roberts money is peanuts. Where there are big issues with recruitment and retention, the money on offer through Roberts is so little as to make no difference at all. Here, where there are key shortage areas, we have worked something out for ourselves. Other departments, where there are fewer problems with recruitment and retention, have offered, for example, accelerated increments that are at least equal to Roberts” [PG Research, ESRC, b]

“We do find it hard to recruit but I can’t tell you if we were advertising at £30,000 instead of £21,000 we would get loads more applicants. I suspect we wouldn’t for the people who we are recruiting are people who are willing to put up with being on short term contracts. By offering more money we might get more applications but I’m not sure we would get more quality applications” [PI, ESRC, c]

In other cases the impact of the enhancement was closely related to the age and life-course of the individual concerned. This is also true at doctoral level but, as expected, the problem increases at postdoctorate level:

“For the fresh PhD students, [contractual] security is not a problem, they’re used to insecurity anyhow and hopefully they’re not married or if married their partner is working so the security issue is less important than pay. As they get older the security part becomes...well they need more money anyhow because their partner’s going to stop working because they’re having children or whatever so they need the money and the lack of security makes it very difficult to plan life as a couple. You don’t know whether in 2 years time you’re going to have to move to the other end of the country so it varies with age and circumstances. As I say early on money is secondary I think, but in the longer term its security plus you need the money” [PG Research (2), EPSRC, d]

“There’s a point to be made about salaries for junior academics and research fellows, people who are sort of in their mid to late 20’s and that is the time in people’s lives when they’re looking to settle down and find somewhere to live and perhaps start a family and you’re asking them to do that in London on the sorts of salaries that we can offer them, I mean steady on - that’s a problem” [PI, EPSRC, d]

Our survey responses reveal some tension amongst principal investigators as to what postdoctoral starting salaries should be:

Table 4: Principal Investigators Responses to What PDRS Starting Salaries Should Be

<table>
<thead>
<tr>
<th>Amount</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>£30,000 or more</td>
<td>16</td>
<td>8.6</td>
</tr>
<tr>
<td>£25,000-£29,999</td>
<td>92</td>
<td>49.7</td>
</tr>
<tr>
<td>£20,000-£24,999</td>
<td>65</td>
<td>35.1</td>
</tr>
<tr>
<td>Less than £20,000</td>
<td>12</td>
<td>6.5</td>
</tr>
</tbody>
</table>

4.7 UNINTENDED CONSEQUENCES AND ‘RISKS’

4.7.1 Pay Structure and the Potential Effects of a Post-Scheme Pay Drop?
We have already noted (in Section 3) that researchers are more concerned with pay structure and the prospects for pay progression (as part of overall career progression) than their current or next position. Their
immediate financial circumstances are important in terms of making ends meet as much as wider career planning. In that context, it is important to consider the potential effects of a post-stipend or post-position pay drop on retention. A report by the Wellcome Trust raised this issue in the context of the career decision-making of their doctoral candidates:

“An important issue for Trust-funded students was their appreciation that they were likely to take an effective pay cut, due to the tax exemption of student stipends, if they took a first position that was not Trust funded” (2000, p.19)94

This situation is acknowledged by the BBSRC and echoed in many of the interviews with doctoral and postdoctoral researchers. There was a sense from some of the interviewees that the increased PhD stipends and especially any further increases at that level will make the transition to some postdoctoral positions financially difficult since the move may imply a fall in real income. This was particularly the situation for those students on CASE awards:

“I mean, if I go into academia, I’ve seen adverts for jobs for research officers, they are very low, and in some cases they are lower than what I’m on now, I think, once you take the benefits away and all that. That’s when pay would be an issue, if that’s going to be the case…Anyway, salary isn’t my major concern for my next job, but on the other hand it does matter” [PhD, ESRC, a]

“You have to bear in mind that a starting salary is something around 20k now so once you’ve taken off the tax and you compare that with a PhD stipend with a CASE top up then the PhD student could actually be doing better” [Res Admin, EPSRC, b]

4.7.2 Structuring Effects
The interviews were also concerned to identify whether the scheme had had a structuring effect on stipends and salaries in the shortage areas. Although the Research Councils are major funders of research in the UK, they are by no means the only or in some cases the principle source of research funding.

Evidence of a ‘structuring effect’ might be interpreted in a positive light to the extent that it encourages best practice and ratchets up levels of pay as institutions and funding bodies attempt to ‘match’ salaries. Certainly this would appear to be the objective of the Wellcome Trust and the European Commission’s Marie Curie Scheme. On the other hand, if resources do not exist to meet these increased levels of expectation and competition then pressures to ‘match’ salaries and stipends might result in some unintended consequences potentially undermining policy outcomes.

The site visits suggest that many institutions or research groups were indeed attempting to match the Robert’s stipends and salaries in order to compete for the best researchers but also to avoid perceived unfairness and the tensions this might cause (see below). One institution referred to its policy of ‘levelling-up’ to Research Council rates:

“Now the key figure is £11,000-£12,000 which over the past 3 years we have been using as our reference point; we took that reference point from the ESRC because we were aiming to match the level of the ESRC grant. Our position has been and remains that it is too low and that you need to move to a kind of figure of £14,000 plus which the ESRC now envisages for disciplines that are facing heavy demand. … what we will now be doing is trying to change our corresponding internal scholarships which we'd raised from outside donors etc in order to move towards the figure of £14,000 so that we're offering a similar package to all students whether they are ESRC funded or not” [HoS, ESRC, b]

“We actually made the conscious decision that we would award a stipend which was set at the graduate school level because at that time EPSRC stipends were terrible and paid £8000 or £7500, MRC was £10,500 and Welcome was £12,500 so we decided we would in fact implement the DTA at an enhanced stipend level anyhow and we kept picking that up so it’s always been at the level of the MRC stipend which has been driven largely in response to the Wellcome through the market leaders” [PG Research, EPSRC, d]

The lead taken by the Research Councils also provided legitimacy in some situations encouraging institutions to push ahead and introduce market-related pay. One interviewee was pleased that the Research

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94 A similar situation was noted in our assessment of the impact of the Marie Curie scheme (Van de Sande, Ackers and Gill, 2005).
Councils had acted upon this since the institution would then have to follow, and this would be particularly beneficial for the Department (itself an ESRC-defined shortage area):

“We felt that the key issue was whether the Research Councils could establish the principle of differential funding because we heard that once that could be established the institutional mechanisms would then be in place for disciplines like ours to make a case” [HoS, ESRC, b]

The practice of ‘matching’ seems to be more prevalent in the case of stipends (perhaps reflecting the use of DTAs and the different implications of doctoral funding65) than postdoctoral positions.

Some institutions expressed resentment at the pressures specific schemes (and Wellcome in particular) placed on institutions to level-up pay:

“If the Welcome Trust wants to pay its fellows or its students more money then that’s its prerogative but it can have no expectation that the university will take on that responsibility for all of the rest of its staff” [HoS, BBSRC, b]

Another spoke of a deliberate attempt by Wellcome to influence researcher pay in general:

“[The Wellcome Trust] had a policy of driving up salaries thinking they could force the Research Councils and HEIs into forcing them up but they’ve said they are not doing it – they couldn’t afford it” [PI, BBSRC, b]

Perhaps the main concern in relation to the structuring effect lies in the potential impact on the volume of positions. Although quality is a key concern across all funding bodies the volume of positions is also a concern and in some respects (for example the desire to increase knowledge transfer activity or promote new research areas) volume is at least as critical as quality (the two go hand in hand).

“In a situation like ours where we are really on the boundaries of how many studentships we can take with the DTA money that we normally get if we had to pay more for students out of that same pot then instead of getting three students we’ll get one. So all that can do is make things worse” [PG Research, EPSRC, a]

“If enhanced stipends do come in, it creates upward pressure elsewhere - it’s bound to, it’s market pricing. It could mean that there are fewer scholarships to go around, especially if you double them. Instead of having two [studentships], you get one” [PG Research, ESRC, a]

The EPSRC is careful to point out that “the aspiration to increase average postdoctoral pay will not be realised without some reduction in research volume supported by the Research Councils” (p. 4). In relation to PhDs, it argues that “as budgets for training are often held at department level higher stipends also tend to reduce the overall number of places in those areas”.

Concerns around volume are exacerbated in situations where the level of stipend begins to act as a deterrent to bodies who might have funded doctorates in the past (including the institutions themselves). Discussions with respondents in the field of animal disease research, for example, identified the importance of many small charitable bodies who were prepared to fund doctoral candidates but generally at a lower rate than the Research Councils. Such bodies whilst no doubt keen to support their researchers are also under pressures from their trustees to spend funds wisely and often do not have significant funding to commit to research.

Of course one option open to institutions in this situation is to ‘top-up’ the scholarships offered by other funders with their own funding (or indeed to ‘spread’ the Roberts money across these groups) as the institution referred to above has done. The ability to ‘top-up’ stipends in this way is very uneven however with some institutions or groups much more able and willing to do so.66

However, where institutions had already been drawing on funds to provide enhancements in shortage areas, the new support was very welcome indeed. One research administrator spoke of how the additional enhancement money freed up funds that could be used to fund more scholarships:

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65 Many HEIs have their own doctoral scholarship schemes.
66 The ability to do this will not only depend on the institutions overall wealth but its approach to research funding and the extent to which decision-making is devolved to schools and research groups.
“The additional funding is always welcome because it allows us to release what we would have used to fund another PhD. So we’re not complaining” [Res Admin, EPSRC, d]

4.7.3 Impact on the Length and Quality of Contracts
As we have noted, the issue of pay and contractual security are closely related. The interviews with research administrators, principal investigators and postdoctorates during the site visits identified a number of situations in which the desire or necessity of increasing the salary was achieved through a reduction in the length of the post or through a reduction in the number of hours worked (resulting in a part-time appointment). Provided the enhancements are fully funded this should not effect positions in the designated areas, at least for the duration of their award, but it may have an impact on other researchers whose salaries have been increased to match those of their colleagues. There is also a risk that PIs might attempt to reduce the perceived risk of including higher salaries in proposals by reducing the length of contracts.

4.7.4 Shortages Falling Outside the Designated Areas
This study focused on those institutions that received a large proportion of the enhanced stipend funds and on the disciplines defined as shortage areas. As such it has not engaged with the recruitment difficulties faced by other disciplines or related areas and in other institutions. Nevertheless, some respondents in the site visits drew our attention to these situations and the possibility not only that key areas were missing but also that the policy might simply encourage greater competition within the academic sector sucking people from related disciplines and areas and potentially exacerbating shortages there. The following administrator makes the point:

“Presumably another area of science would suffer as a result of reduced competition because the people would be applying to work in Area X rather than Area Y so it’s not certain that the aggregate effect on science will be beneficial” [Res Admin, BBSRC, b]

4.8 ADMINISTRATIVE COSTS
We have already made the point about limited awareness of the scheme and confusion about its specific operation. Linked to that is the issue of transaction or administrative burden and costs (both to the Research Councils and the institutions). One research administrator made the following point:

“I don’t know what sums are involved but it sounds as though it’s possibly something that’s got a heavy administrative load and possibly not much return...it’s sort of these tiny ring fenced amounts of money are always a lot of bother” [Res Admin, ESRC, b]

Our perception is that it is not so much the administrative costs of managing the scheme that is the problem here but the extent to which its reliance on the effective communication of information via administrative units within institutions limits awareness and understanding of the scheme resulting in resentment.

4.9 THE PRINCIPLE OF SELECTIVE ENHANCEMENT: ATTITUDES TO DIFFERENTIAL AND MARKET PAY
There was a fairly strong sense within the research community that the policy of targeted enhancements was unfair and divisive. This was not simply a moral rejection but reflected a specific concern about employment relations within a school or research group where people working in close proximity to one another and effectively doing the same type of work could be rewarded differently. Although differential pay is widespread in practice, it is typically based on some measure of skill level or qualification and justified on grounds linked to merit or performance. The logic of market-pay implies a potential inversion of the relationship between merit and reward and in the current research environment (and research assessment) this is a rather hard pill to swallow. In addition to these concerns, the implementation of the equal pay principle (promoting equal pay for work of equal value) via role analysis and the new single pay spine lies in some tension with the idea of market pay.97

The question for this report is not whether the targeted enhancements are morally or ethically ‘wrong’ but whether attitudes towards this situation might limit the efficacy of the policy to shape impact. Having two proximate employees of broadly equal skill level and qualification receive different earnings by virtue of the fact that one is working in a designated shortage area presents some difficulty for managers. Where the

97 See Annex 3 for further discussion.
person commanding the higher salary is less well qualified and skilled this creates some more serious concerns. This situation is described in the AACSB report (2003) as a problem of “salary inversion” which derives from the problems of scarcity and results in “poaching”.

Many of the respondents expressed genuine concerns about the divisive impact of selective enhancements on their research groups:

“If everybody could get an enhanced stipend that’s fine but it won’t be everybody, it’s bad enough for my research group when I have people on EPSRC stipends of £7000 and people on Welcome stipends of £12500 and college ones of £10500; all of them are reasonably good PhD students doing the same things and yet one’s getting £5000 more than the other” [PG Research (2), EPSRC, d]

“If your pay differed purely because of the department you are in, then people would be a bit miffed” [Res Admin, EPSRC, c]

“The difficulty is one of comparability; all CRS staff are on fairly miserable salaries really and they do talk to one another and if an individual is receiving a top-up which others are not it can cause unrest” [PG Research, EPSRC, d]

In some cases principal investigators pointed to the subtle difference between postdoctorates working on funded projects and cases where individuals had applied for and been awarded a personal fellowship. The latter situation was considered to be less problematic as it reflected individual endeavor and a competitive process and the PI was playing less of a direct employment role. The respondent from the EPSRC was concerned that attitudes to the ‘legitimacy’ of the scheme might restrict impact:

“Some people think it’s very unfair that one student should get more than another and everyone should be paid the same, whereas we are trying to create a market” [PI, EPSRC, a]

One respondent described the general feeling in a meeting organized to discuss the policy of targeting ESRC funds on shortage areas:

“There was an ESRC presentation here in early summer and there was a lot of heated discussion because it was focused on specific areas in the business school – management, business and economics – and it was just set in that context so other people not in those areas felt quite strongly that it shouldn’t be identified with one particular area. They felt it wasn’t justified – it wasn’t fair that a particular group would get more money for fellowships than another group” [Res Admin, ESRC, a]

The ESRC respondent also pointed to existing disparities between Research Council funded and non-Research Council funded posts:

“It’s already a problem between RC funded and non RC funded studentships as uni stipends have not kept up with RC increases. So there is already a problem there” [Res Admin, ESRC, a]

“I can see problems in the department as opposed to between departments. The departments will recognise that someone with crystallography skills is hard to come by as opposed to someone who wants to be trained in basic chemistry. There wouldn’t be a problem. But I can see as well that people sitting alongside each other at the same bench and one getting paid £14K and the other getting paid £17K from the same funding body, I can see that causing a problem perhaps” [Res Admin, EPSRC, d]

One Principal Investigator told us that the existence of enhanced salaries had made him responsible for finding more money for all his postdoctorates in his lab:

“The real problem for me is that when we get extra money – I can’t be divisive in the lab – so if I get extra money for 1 post-doc I have to find it for the rest. You have to make it up from other sources. There are usually some grants where you have a little leeway in how you spend the money…I would pool money and try to be fair to everyone” [PI, BBSRC, c]

Another specific factor related to the way in which the scheme has been operationalised (and the EPSRC approach specifically) concerns the decision to enhance only new awards in the shortage areas and not to top-up existing grants and stipends. Not only was this considered to be unfair (by those that were aware of it), it also caused some confusion increasing the uncertainly around the rationale for targeting funds.
Human resources staff were more used to and more pragmatic about the need for differential pay:

“A market paid policy has been agreed as part of the pay negotiations that addresses those issues about, you know, it’s all very nice, it’s still all good equal pay but why are they chucking people extra money just because they work in a particular area? It goes back to the market forces and those changing and being realistic about the work that needs to be done. Okay yes we can have a generic job description for a researcher in a very broad spectrum but if that person is the only person in the world who knows how to research on a particular piece on technology for example then we know that we’re going to have to pay over and above” [HR, EPSRC, d]

On HR respondent noted how the Unions had also come to accept the logic of market pay in their institution:

“We’ve also got agreement with the unions around market place opportunities so there is an understanding that the pay scales that we have don’t always attract the right people to do the right sort of work so we have got that understanding that we may have to pay over and above what the evaluated jobs would come out as” [HR, EPSRC, d]

In other cases, university structures were seen to impede more flexible approaches:

“It’s the traditional university structures that are getting in the way of all this because there’s a salary scale and people work their way up it on an annual basis and that’s the end of it. That kind of model just doesn’t work in an outfit like ours, we’d have lost everybody a long time ago” [HoS, ESRC, c]

At higher level it is also clear that elements of market-pay are already entrenched within the system to the benefit of certain disciplines:

“In terms of general equity I would go for everybody getting the same - I think it probably could cause such a lot of unhappiness by having differential rates. Mind you if you look at academic salaries and certainly if you look at the professoriate who do more bargaining over what they get and are not on the fixed scale, I think you will find that at the very top end you will find the economists and the medics and probably the statisticians and at the bottom you will find the social scientists and the English and French professors. So I think the market does come into play there” [PI, ESRC, c]

**SECTION 4 SUMMARY: IMPLEMENTING ENHANCED PAY**

- **Allocating Funds to Shortage Areas**
The Research Councils are at various stages of implementation of the Roberts enhanced salaries and stipends scheme. Each Research Council has taken a different approach to delivering the scheme.

- **Targeting Versus General Increases**
The enhancements in both the BBSRC and the EPSRC could be applied to a large proportion of awards (and perhaps as many as 50% of postdoctoral positions). This raises important questions about the efficacy and justifiability of targeting.

- **Awareness of the Scheme and Entitlement**
Levels of awareness (in terms of both eligibility and process) are low across the board reflecting the lack of an effective high profile communication strategy and relying on institutional trickle-down and word-of-mouth. Many key actors either do not know of the scheme and have therefore not applied or do not realise that they have benefited from it.

- **Flexibility versus Certainty**
The diversity in approach to implementation across the Research Councils reflects the desire to respect the principle of subsidiarity supporting a responsive and flexible approach. It may, however, compound the general confusion about the scheme and its operation. Whilst devolving responsibility to institutions to allocate the funds as they see appropriate (through DTAs for example) does recognise the importance of local knowledge and context, it increases the risk of targeted funding being used in other ways For example increasing the volume of awards. It also makes evaluation of the effects difficult to assess (see below)

- **Grant Application Behaviour and the Review Process**
The nature of the research funding system and concerns amongst postdoctoral researchers about costing themselves out of a job in grant applications coupled with constraints in applying for funding in their own right (in the BBSRC and EPSRC) are serious factors shaping the attractiveness of remaining in the academic
sector. The research community not only need better information about the scheme itself but specific and concrete assurance that the review process will not disadvantage applicants who submit grant applications involving higher salaries. Concerns about the potential tension between ‘value-for-money’ criteria and the need to recruit high quality staff continue to shape grant application behaviour.

- **Distinguishing Named and Unnamed Researchers**
The reluctance to cost salaries at a higher level in research applications is a particular problem in relation to unnamed researchers where the convention has been to peg the salary at spinal point 6 (£22,289). In such situations the applicant can refer to the skills needed for the job but not the specific skills and experience of the researcher as such. It is generally accepted that it is easier to make the case for salary progression for existing staff (named researchers) seeking contractual renewal.

- **Mid-Post Retention and Attrition**
Many PIs are concerned about losing researchers prior to the end of a grant. This causes problems in terms of completing work effectively. Whilst the acceptance of higher salaries, especially of existing and named staff, in new grant applications might help to support retention, this does not solve the problem of mid-post retention and prevent people leaving positions before the end of the contracts.

- **Market Pay**
In general, researchers are more concerned about securing a reasonable standard of living than making direct comparison with pay in others sectors. Where comparisons are made it is with overall career packages and not simply pay. The findings in response to a question about ‘how much pay would make a difference’ back up this point – in most cases the £4000 enhancement in postdoctoral pay had made a real practical difference but remained inadequate. Where respondents did make direct comparisons with pay in other sectors, such as in economics and business for example, the level of enhancement required to begin to match salaries was considerable (at least double existing levels). It is neither practicable nor desirable to begin to match these kinds of salaries across the board. Although evidence suggest that some institutions are awarding much higher salaries in some areas (notably in economics, for example) many institutions could simply not afford to do this. There was also serious concern that attempting to do this on a broader level would reduce significantly the volume of positions (see below).

- **Structuring Effect and the Impact on Volume**
The study showed evidence that the measures were having a structuring effect with institutions and other grant awarding bodies attempting to match Research Council pay where possible (at least to the general stipend level) in order to compete with these awards and develop a level playing field within schools and research groups. Whilst this can be viewed positively in terms of generating overall pressure on academic pay, it may have unintended consequences in terms of pushing some funding bodies out of the market altogether reducing the overall volume of positions. It may also specifically advantage more wealthy institutions and groups.

- **Market Pay versus Equal Pay?**
The policy of targeted enhancement lies in tension with general trends in recruitment based upon performance on the one hand and equality on the other. This is more than a moral concern. The problems associated with employing staff on different salaries to do effectively the same work in proximate situations was by no means only raised by human resources staff (as suggested in the tender). It was most keenly felt by PIs who are the people with the most immediate day-to-day contact with and managerial responsibility for researchers.

- **A Responsive Approach?**
It is apparent from the study that responsive forms of salary and stipend enhancement have evolved in many situations and have existed for some time. The PI or supervisor seeking to recruit a researcher is faced with a complex interplay of situations including financial considerations but also personal circumstances and motivations, institutional factors, networks and the attractiveness of the research area. The ability to attract applicants, encourage them to accept positions and retain researchers requires them to engage with this coincidence of events and the relational quality of pay in that context and often at an individual level. It could be argued that this approach is more flexible and responsive (to the specific personal and employment situation) and could be retained rather than institutionalizing designated shortage areas which appears to attract some resentment within the research community. Of course this renders the situation even less transparent.

- **Shortages of Specific Transferable Skills**
It is important to distinguish between general recruitment problems and specific shortages of skills. Where the case for enhancement can be made on grounds directly linked to skill or qualifications this is a stronger
and more acceptable basis for pay differentials than the ‘market’. Arguably, this case could be used with respect to the need for quantitative skills obviating the need for direct comparisons with the ‘market’.
Section 5: Conclusions

5.1 GENERAL CONCLUSIONS

Whilst the findings would support the contention that serious problems exist in the recruitment and retention of researchers at both doctoral and postdoctoral level, the scope of those shortages is quite broad and subject to fairly rapid and unpredictable change. Where shortages exist across the board it is not clear that a policy of targeting pay will be efficient and acceptable to the research community. The emergence of interdisciplinary approaches and their specific encouragement by the Research Councils throws further doubt on the ability to target effectively. The clearest rationale for targeted enhancements exists where acute problems are readily identifiable and relatively stable such as in engineering or economics or in areas where professional experience is required. However, the level of enhancement required to make a significant difference in these areas is substantial (possibly at least double existing levels). Enhancing stipends and salaries to that extent and using Research Council funds for that purpose is likely to generate policy externalities that might undermine the very problem it is seeking to resolve. Most obviously it will necessarily have an impact on the volume of awards (and not just Research Council awards). It might also exacerbate the kind of salary inversion that is slowly taking place in some areas already resulting in tensions and resistance within the wider academic community. Where more specific concerns exist related to the skills base and the difficulty in recruiting and retaining people with skills in quantitative or statistical methods it could be argued that more traditional approaches to pay could be used in preference to ‘market’ tagging. It has always been possible to make a case to Research Councils on the basis of the skills required to do the work; what is new is the opportunity to make a case not based on skills but on market shortages. The former route is more transparent and acceptable and where possible should be preferred. Where the concern is to augment recruitment in order to fulfil various strategic or policy objectives (such as encouraging knowledge transfer activity or research on avian flu) one might equally question the rationale for using market-pay approach. In such cases it might be more appropriate to ring-fence awards and actively market them.

Having discussed the problems associated with the definition of shortage areas, the study has raised important questions about the emphasis on pay as a factor shaping the career decision-making of researchers. Pay is of course important. Our general conclusion is that the general increase in stipend levels brought doctoral pay up to an acceptable level (although £14,000 was preferred!). In future it might be necessary to take into account rising student debt when deciding upon annual increases. Pressures to extend the pre-qualification period might imply further debt and discourage progression.

Pay levels at postdoctoral level remain too low to support an acceptable quality of life for the majority. The enhancements have undoubtedly improved the quality of life of recipients enabling them to devote more time to their research and stabilise their personal financial situation. It is not clear that they have shaped career paths in any significant way, however, and on that basis it is rather difficult to justify only improving the quality of life of those people working in shortage areas. Of greater importance is pay structure, however and the ability to predict pay progression. This is linked to much broader questions about career paths and the attractiveness of research careers which are themselves directly related to the system of funding of research and HEIs in the UK.

Whilst significant systemic changes are called for in order to achieve real improvement in the employment status of contract researchers, some specific measures might help in the short term. These include overall increases in pay and the effective removal of the notional ceiling that blocks the pay progression of contract researchers (in the grant application process) resulting in a trade off between pay and contract. In addition to this, changes in the Research Councils’ approach to permitting contract researchers to become either co- or principal investigators (as the ESRC has done) would increase the ability of contract researchers to exercise autonomy and independence and develop their own research career.

The importance of a career path or trajectory is more critical in the case of the national recruitment pool. Many researchers from abroad will continue to come to the UK to further their careers and boost their CVs; many of these are not at least initially concerned about career structures in the UK. UK nationals will be looking at their career prospects within the UK in the longer term rather than at one employment episode and considering pay in that light. Of course, foreign nationals will also begin to consider career structure once they have spent some time in the UK and start to consider their future location and plans. Career structure and pay progression is therefore critical to the retention of both national and non-national researchers.

To the extent that a rationale exists for targeted enhancements, the study has thrown up some serious concerns around the implementation of this type of scheme and the level of awareness and understanding of
it. Our impression is that whilst some of this could be resolved through the development of a clearer and higher profile communication strategy this is not the end of the story. Targeted enhancements, like the 1970s policies of means-tested benefits and area-based social policy, are highly complex and demand a very sophisticated and transparent evidence base. This does not currently exist and in many respects cannot exist without incurring significant administrative costs and restricting institutional flexibility in the administration of the scheme.

If selective enhancement is to be included as one of a range of tools designed to deal with recruitment and retention problems then careful attention needs to be paid to the issue of evidence. Implementation needs to be done in such a way as to enable funding systems to respond to a fluid and fast-changing research environment. Clearly, room exists for improvement in this respect both in communication and in evaluation. Some proposals are included in the report.

Even if it is possible to identify distinct recruitment and retention difficulties that are caused by increasing pay differentials between the academic sector and other employment sectors and be clear that enhancing pay will improve the situation, the problem remains that the research community may not accept the validity of the approach. Attitudes towards differential pay need to be considered in the light of the current context with increasing pressure to link pay and funding to individual performance and merit and to ensure that equal pay is awarded for work of equal value. Many of the respondents in the study, and PIs in particular, were concerned not just that market pay was profoundly inequitable but with the consequences of this for the management of research teams on the ground.

Market-pay or selective enhancement is a rather blunt tool with which to respond to a highly complex and fluid situation. It could also trigger a number of unintended consequences which might reduce the effectiveness of the tool itself.

The wider research community, to the extent that it supports pay differential at all, generally prefers approaches based on objective, transparent and merit-based criteria. Market-pay flies in the face of current attempts to promote equal pay for work of equal value or performance-related pay. On that basis, it might be wise to ensure that all alternative steps are taken before institutionalizing the logic of market-pay.

### 5.2 LIMITATIONS OF THE CURRENT STUDY

The research on which this report is based is limited for a number of reasons. Firstly, it was conducted at a very early stage in the implementation of the policy. Levels of awareness and the embedding of the policy might be expected to increase over time. On the other hand, an early study at this phase might support effective policy reflection and ‘fine-tuning’ before the policy is rolled-out to other Research Councils.

#### 5.2.1 Shortages in Other Areas

As the tender required us to focus site visits on the shortage areas defined by the Research Councils we were unable to assess whether academics working in other areas, technically falling outside defined shortage areas, were experiencing similar kinds of problems. The site visits were also focused on institutions receiving a large share of Research Council funding. It might be expected that other less research intense institutions are experiencing greater recruitment and retention difficulties.

#### 5.2.2 Leavers’ Attitudes to Pay

It is important to remember that the findings on attitudes about pay were obtained through work with researchers who had taken the decision to remain in doctoral and postdoctoral research. The study has not begun to gauge the perspective of their peers who decided not to continue in academic research. It might be useful to do some work with a cohort of final year undergraduates and Masters students who are in the process of making that decision and assess their attitudes to pay and research careers in general.

#### 5.2.3 Non-Traditional Students

The research team is acutely aware that this study has focused, to a large extent, on ‘traditional’ Research Council funded studentships. Although some flexibility has begin to emerge, in the main these scholarships are offered on a full-time basis. However, almost 50% of UK doctorates are registered on a part-time basis. The majority of these receive little if any Research Council support (particularly in terms of maintenance element). Part-time doctoral researchers constitute a diverse and growing pool of research talent. Relatively little is known about their situation and career plans.
5.2.4 Assessing the Quality of Applicants
It has been clear to us for some time that institutions are not collecting in any systematic way information on application behaviour. This was identified as a serious problem in our HEFCE study on early career researchers and also in our work on the implications of internationalisation and brain drain. Generating this kind of information on the quality of applications would, according to the BBSRC ‘impose significant additional administrative burdens on academic institutions.’ We would concur with this view. The CSLPE team has been developing a project over the last year, in response to this issue, designed to map the demand for positions in the UK. This includes plans for a number of institutional case studies focused specifically on the quality of applications. We planned to go beyond simple measures of quality (such as first degree result or the possession of a relevant Masters level qualification) through detailed work with supervisors and PIs.

98The EPSRC agreed that information on degree result is a ‘poor indicator of the need for differential stipends.’ It did refer to the possibility of measuring changes in the level of premature departures but this may also be misleading.
References


AACSB (2003) Sustaining Scholarship in Business Schools, St. Louis: AACSB


THE SELECTION OF HEIs

The tender instructed the team to focus on those institutions receiving a large proportion of the Roberts Review enhancements. Data on the location of holders of research council awards was combined with other information to produce a list of potential sites. The list was then agreed with RCUK and the three participating research councils. Site visits have been completed at the following institutions resulting in 81 completed interviews:

- University of Bristol
- University of Cambridge
- Cardiff University
- University of Edinburgh
- Imperial College London
- University of Leeds (including a pilot in one area and a second ‘visit’ to another discipline)
- London School of Economics
- University of Manchester
- University of Oxford
- University College London

THE SELECTION OF INTERVIEWEES

Each site visit focused on one of the following shortage areas (as designated by the research councils). Four of the site visits focused on a BBSRC designated shortage areas, 4 on an EPSRC areas and 3 on an ESRC areas. Interviews were held with:

- Research Council Principal Investigators;
- Heads of Departments or Schools;
- Directors of Postgraduate Research;
- Human Resource Managers;
- Key Administrative Staff Involved in Research Applications;
- Contract Researchers;
- PhD Students.

Copies of the interview schedules are attached at the end of this annex. The interviews were transcribed and analysed using a software programme for qualitative analysis (QSR N6).

THE ONLINE QUESTIONNAIRES

Online questionnaires were designed to supplement the interview data and reach a broader cross-section of the research community than contained in the site visits. Three versions of the questionnaire were therefore developed and were aimed at:

- Principal Investigators and/or PhD Supervisors;
- Contract Researchers Funded by Research Council Grants;
- Research Council-funded PhD Students.
Attitudinal and open-ended questions were asked in relation to stipends and salaries, including awareness of the Roberts enhancement scheme.

Contact details of the population were supplied by three research councils; BBSRC, ESRC and EPSRC. The type of contact offered by the Research Councils differed and this may have influenced the level of response - the ESRC supplied details of individual PhD students, whereas for the BBSRC and the EPSRC the questionnaires were sent via principal investigators, PhD supervisors or DTA coordinators.

The short duration of the project meant that questionnaires were fully operational for less than one month. At the close of the questionnaire on 1st December we had received the following responses:

**Table 1.1: Number of questionnaire responses received**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Investigators</td>
<td>292</td>
</tr>
<tr>
<td>Contract Research Staff</td>
<td>194</td>
</tr>
<tr>
<td>PhD Students</td>
<td>947</td>
</tr>
</tbody>
</table>

PhD students and contract researchers were asked which research council funded their research, the results of which are as follows:

**Table 1.2: Number of questionnaire responses received by research council**

<table>
<thead>
<tr>
<th>Research Councils</th>
<th>PhD Students</th>
<th>Contract Researchers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBSRC</td>
<td>90</td>
<td>45</td>
<td>135</td>
</tr>
<tr>
<td>ESRC</td>
<td>520</td>
<td>44</td>
<td>564</td>
</tr>
<tr>
<td>EPSRC</td>
<td>188</td>
<td>70</td>
<td>258</td>
</tr>
<tr>
<td>AHRC</td>
<td>21</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>PPARC</td>
<td>6</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>MRC</td>
<td>24</td>
<td>7</td>
<td>31</td>
</tr>
<tr>
<td>NERC</td>
<td>50</td>
<td>9</td>
<td>59</td>
</tr>
<tr>
<td>CCLR</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>D/K</td>
<td>13</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Joint</td>
<td>103</td>
<td>9</td>
<td>112</td>
</tr>
<tr>
<td>Total</td>
<td>1015</td>
<td>199</td>
<td>1214</td>
</tr>
</tbody>
</table>

Multiple responses were allowed, and several respondents indicated more than one research council (even those who did not answer 'joint'). Therefore the numbers are greater than the total of responses. As expected, the vast majority were funded by the BBSRC, the ESRC or the EPSRC. Copies of the questionnaire are attached as appendices to this annex.

**THE KEY INFORMANT INTERVIEWS**

In order to pay and enhanced salaries schemes in the broader context of debate about recruitment and retention difficulties in the UK a series of key informant/stakeholder interviews were completed. These discussions were held with:

- Association of University Teachers (AUT);
- Wellcome Trust;
- DG Research, European Commission;
- Representatives form each of the three research councils involved.

**THE COMPLIMENTARY DATA**

In addition to the empirical work for this project we used a number of sources of complementary data:

- **The Athena Survey of Science, Engineering and Technology in Higher Education – ASSET**[^1] - in 2004 invited higher education employees to comment on their working conditions. The sample included all grades of academic and research staff. For the purposes of this study the data was reanalysed particularly in relation to pay and other working conditions.

The Marie Curie Impact Assessment (IMPAFEL) and the Mobility and Excellence in the European Research Area: Promoting Balanced Growth in an Enlarging Europe (MOBEX2) Recent studies by the authors have gathered comparative information about the UK's attractiveness as a host country for European researchers. The recently completed IMPAFEL project\(^2\) was concerned with the impact of Marie Curie Fellowships funded under the European Commission’s Framework 4 and Framework 5 programmes. This fellowship scheme requires the recipient of the grant to move to another European country. The study – based on over 2,198 completed questionnaires - provides much information on the perspectives of European doctoral and post-doctoral researchers on the relative importance of pay in research careers. MOBEX2 is a comparative study of Polish and Bulgarian researchers in the UK and Germany (which is taking place over the process of those countries accession to the EU). A questionnaire and 30 interviews with researchers based in the UK have been carried out which explore career and migration motivations for moving to the UK, including the issue of pay.

The HEFCE Study - recent HEFCE reports supply data from the Higher Education Statistics Agency (HESA) on pay by grade, discipline and institution.\(^3\)

INTERVIEW SCHEDULE FOR DOCTORAL CANDIDATES

Education

When did you start your PhD?

*Did you do a masters before? (funded?)*

*(Roberts money only came in Jan 04 so was the doctorate applied for / started after this?)*

Did you consider alternatives to a PhD or other career routes?

*why/why not?*

Who is funding you?

*What was the process of doing this PhD?*

*How important was the stipend level to you when deciding whether and where to do a doctorate?*

*How much do you receive/ when?*

Is your doctorate f/t or p/l?

Do you know how competitive UK research council stipends are with under funders? Did that influence doctorates you would apply for?

*Internationally/ with other sectors/ careers / research funders e.g. charities/?*

Employment

Please give a summary of your employment history?

*Positions/where/ contract length / funders*

*Were any of these full-time occupations? How did their pay compare to your PhD stipend?*

What do you hope to do following your PhD?

*Sector / type of position / contract /location*

*Which factors are important for you in selecting a job?*

*How important will pay be in determining this?*

*What level of salary will you be looking for?*

---


If you plan to leave research why?

**Roberts’ money for enhanced salaries and stipends**
Do you know whether your field is classed by the UK research councils as an area facing skills shortages/problems in recruitment?
   Why do you think this is?

Have you heard of the Roberts’ review money that is available to enhance stipends and salaries?
   If so how / where/ when?

Do you know whether your stipend has been enhanced in your PhD position?
   If yes – when/ what level how much for and who made the case? Success?
   If not why not?

How much money makes a difference to a doctoral position? Why?

Do you think enhanced stipends would improve the recruitment of doctoral candidates in your field?

**INTERVIEW SCHEDULE FOR POSTDOCTORAL RESEARCHERS**

**Employment**
Career and pay history
   Positions/where/ contract length / funders

When did you start this contract?
   Roberts money only came in Jan 04 so was the proposal for this positions after this?

How influential was pay in deciding to take this position?
   Whereabouts on pay spine when they started / have they had increments?

Do you know how competitive UK research council salaries are with other funders? Would that influence positions you apply for?
   Internationally/ with other sectors/ careers / research funders e.g. charities/?

What do you plan to do after this contract?
   Sector / where?
   If they plan to leave research why?

How important has pay been in your choosing research positions?
   And in the future?

**Education**
If you are a post-doc when and where did you get your PhD?

Who funded you? How important was the stipend level to you when deciding to do a doctorate?
   How much did they receive/ when?
   Did you consider doing anything else why/why not?

**Roberts’ money for enhanced salaries and stipends**
Do you know whether your field is classed by the UK research councils as an area facing skills shortages/problems in recruitment?
   Why do you think this is?

Have you heard of the Roberts’ review money that is available to enhance stipends and salaries?
   If so how / where/ when?

Do you know whether your salary has been enhanced for this position?
   If yes – when/ what level how much for and who made the case? Success?
If not why not? 
Have you been either encouraged or discouraged to do this by your institution?

How much makes a difference? Why?

The process of applying for salary enhancement?
How does it work – does it raise any problems etc?

Do you think enhanced salaries would improve the recruitment and retention of contract researchers in your field?

INTERVIEW SCHEDULE FOR PRINCIPAL INVESTIGATORS

Background
Number of doctorates you supervise / who they are funded by? 
Number of contract researchers you work with/ who they are funded by

Would you class your field as an area facing skills shortages/ problems in recruitment? 
Why? / Do you know if the research councils class it as such?

General Pay & Recruitment Issues
Have you had any problems recruiting doctoral candidates? 
Why is this? Probe how far pay is the cause of this? Other factors? 
Where are you recruiting from – UK throughput? Quality of recruits?

How important are stipend levels to the ability to recruit doctoral candidates?

Are people with doctorates in your field progressing into research careers? 
Other alternatives?

Have you had any problems recruiting researchers to work on research council funded projects? 
Why is this? Probe how far pay is the cause of this? Other factors? 
Where are you recruiting from – UK throughput? Quality of recruits?

How important is pay to the retention of post-doctoral researchers funded by UK Research Councils?

How competitive are contract researchers’ salaries funded through UK research councils? 
Internationally/ with other sectors/ careers / research funders e.g. charities/?

Roberts’ money for enhanced salaries and stipends
Have you heard of the Roberts’ review money that is available to enhance stipends and salaries? 
If so how / where/when?

Have you applied for any enhanced stipends for doctoral candidates or salaries for contract researchers? 
If yes – when/ what level how much for and why did you make this case(s)? Success? 
If not why not? 
Have you been either encouraged or discouraged to do this by your institution?

Do you plan to apply for enhanced stipends or salaries in the future under this scheme? 
Why? Why not? How much makes a difference?

What do you think the affect of the higher stipends will have on retention of students into doctoral studies in the medium to long-term?

Do you think enhanced salaries will improve the recruitment and retention of contract researchers in your field?
INTERVIEW SCHEDULE FOR DIRECTORS OF POSTGRADUATE RESEARCHERS

**Background**
Do you know whether there are departments in your institution that are experiencing difficulties in recruiting good quality doctoral candidates?
  - If yes – where? Why do you think this is?
  - Do you have strategies in place to try and deal with this?
  - If no – why not
  - Is student debt an factor?

Where do you recruit most doctoral candidates from?
  - UK/EU/overseas?
  - What proportion are funded by UK research councils?

Do you recruit part-time doctoral students?

Do you know the destinations of your doctoral candidates?
  - Do people go into University research careers? Any problem areas you know of?

**Roberts’ money for enhanced salaries and stipends**
Have you heard of the Roberts’ review money that is available to enhance stipends and salaries?
  - If so how / where/when?

Did you notify people in your institution about this funding?
  - Why / why not?
  - Who targeted? How? When?
  - What was the response?

Do you know whether your institution applied to the research councils for any enhanced stipends for doctoral candidates?
  - Which disciplines?
  - The process of this – who made the case?
  - Success rates?
  - Were there any problems with this?
  - If not why not?

Do you know of any plans in your institution to apply for enhanced stipends or salaries in the future under this scheme?
  - Why? Why not? How much makes a difference?

Are there any difficulties institutionally in introducing enhanced stipends and salaries into specific fields?
  - How does it fit with University policy / strategies? How does it fit with pay spine?

Do you think the level of research council stipends influence other funding schemes?
  - How so examples?

Structuring Effect – Impact on other stipends etc? Consequences

INTERVIEW SCHEDULE FOR HEADS OF SCHOOL

**Background**
Are there areas in your school/department that are experiencing difficulties recruiting doctoral candidates?
  - Do you get good applications/ quality recruits?
  - How long has this been happening?
  - Why is this? Probe how far pay is the cause of this? Other factors?
  - Where are you recruiting from – UK throughput? Quality of recruits?
Are there areas in your school/department that are experiencing difficulties in recruiting contract/post-doctoral researchers?
   Do you get good applications/ quality recruits?
   Why is this? Probe how far pay is the cause of this? Other factors?
   Where are you recruiting from – UK throughput? Quality of recruits?

Where do the difficulties lie? In attracting people into doctorates / contract research positions AND/OR in keeping them in research careers?
   Why?

Do you have any departmental or institutional strategies in place to try and deal with skills shortage areas?

How competitive are contract researchers’ salaries funded through UK research councils?
   Internationally/ with other sectors/ careers / research funders e.g. charities?

Roberts’ money for enhanced salaries and stipends
Do you know if the UK research council’s classify fields in your department as facing skills shortages?

Have you heard of the Roberts’ review money that is available to enhance stipends and salaries?
   If so how / where/when?
   Have you been either encouraged or discouraged to do this by your institution?

Did you notify staff in your department/school about this funding?
   Why / why not?
   Who targeted? How? When?

Do you know whether there have been applications to the research councils from your department for enhanced research council stipends for doctoral candidates?
   Which disciplines?
   The process of this – who made the case?
   Success rates?
   Were there any problems with this?
   If not why not?

Do you know whether there have been applications for enhanced salaries for research council funded contract researchers in hard to recruit areas?
   Which disciplines?
   The process of this – who made the case?
   Success rates?
   Were there any problems with this?
   If not why not?

Do you know whether your institution has applied for enhanced salaries to retain research council funded contract researchers in areas of skills shortage?
   Which disciplines?
   The process of this – who made the case?
   Success rates?
   Were there any problems with this?
   If not why not?

Do you know of any plans in your department to apply for enhanced stipends or salaries in the future under this scheme?
   Why? Why not?

How much makes a difference?

General Issues
Are there any difficulties institutionally in introducing enhanced stipends and salaries into specific fields?
   How does it fit with University policy / strategies?

What do you think the effect of the higher stipends will have on retention of students into doctoral studies in the medium to long-term?

Do you think enhanced salaries will improve the recruitment and retention of contract researchers in your department?

Structuring Effect – Impact on other stipends etc? Consequences

INTERVIEW SCHEDULE FOR HUMAN RESOURCES MANAGERS

Background
Do you know whether there are departments in your institution that are experiencing difficulties in recruiting contract researchers?
   If yes – where? Why do you think this is?
   Do you have strategies in place to try and deal with this?
   If no – why not?

Where do you recruit most contract researchers from? UK/EU/overseas?

Roberts’ money for enhanced salaries and stipends
Have you heard of the Roberts’ review money that is available to enhance salaries?
   If so how / where/when?

Did you notify people in your institution about this funding?
   Why / why not?
   Who targeted? How? When?
   What was the response?

Do you know whether your institution applied for any enhanced salaries for research council funded contract researchers in hard to recruit areas?
   Which disciplines?
   The process of this – who made the case?
   Success rates?
   Were there any problems with this?
   If not why not?

Do you know whether your institution has applied for enhanced salaries to retain research council funded contract researchers in areas of skills shortage?
   Which disciplines?
   The process of this – who made the case?
   Success rates?
   Were there any problems with this?
   If not why not?

Do you know of any plans in your institution to apply for enhanced stipends or salaries in the future under this scheme?
   Why? Why not? How much makes a difference?

Are there any difficulties institutionally in introducing enhanced stipends and salaries into specific fields?
   How does it fit with University policy / strategies? How does it fit with pay spine

Structuring Effect – Impact on other stipends etc? Consequences
INTERVIEW SCHEDULE FOR RESEARCH ADMINISTRATORS

**Background**

What's your role?

Do you know if there are areas in your school/department that are experiencing difficulties recruiting and retaining quality doctoral candidates or contract research staff?

- How long has this been happening?
- Do you know why?

Do you know of any departmental or institutional strategies in place to try and deal with skills shortage areas?

Do you know if the UK research council's classify fields in your department as facing skills shortages?

**Roberts' money for enhanced salaries and stipends**

Have you heard of the Roberts' review money that is available to enhance stipends and salaries?

- If so how / where/when?
- Have you been either encouraged or discouraged to do this by your institution?

Did you notify staff in your department/school about this funding?

- Why / why not?
- Who targeted? How? When?

Do you know whether there have been applications to the research councils from your department for enhanced research council stipends for doctoral candidates?

- Which disciplines?
- The process of this – who made the case?
- Success rates?
- Were there any problems with this?
- If not why not?

Do you know whether there have been applications for enhanced salaries for research council funded contract researchers in hard to recruit areas?

- Which disciplines?
- The process of this – who made the case?
- Success rates?
- Were there any problems with this?
- If not why not?

Do you know whether your institution has applied for enhanced salaries to retain research council funded contract researchers in areas of skills shortage?

- Which disciplines?
- The process of this – who made the case?
- Success rates?
- Were there any problems with this?
- If not why not?

Do you know of any plans in your department to apply for enhanced stipends or salaries in the future under this scheme?

- Why? Why not? How much makes a difference?

Are there any difficulties institutionally in introducing enhanced stipends and salaries into specific fields?

- How does it fit with University policy / strategies?

Structuring Effect – Impact on other stipends etc? Consequences
SKILLS SHORTAGES WITHIN THE REMIT OF THE BBSRC

**KEY FINDINGS**

- There was no clear consensus from the interviewees about which areas were facing skills shortages. However, those areas identified by some respondents included: stem cell research; bioinformatics; animal physiology; quantitative genetics; molecular biology; plant sciences; and proteomics.

- There was also no clear consensus on the meaning of skills shortages and whether this was about quantity (lower numbers of people applying to do PhDs or becoming PDRS) or quality (existing PhD students and PDRS lacking ‘excellence’).

- Respondents noted how skills shortages in particular areas fluctuated over time - fluctuations were seen to be shaped by labour market conditions, contemporary public or policy agenda [such as bird flu] and funding initiatives.

- Postgraduate recruitment was generally seen as less problematic although quality concerns existed. On the whole, institutions were getting people in and training them.

- More concern was expressed in relation to postdoctoral recruitment and retention. Concerns here included low pay, the lack of a career path for research scientists within HE, and industrial competition.

- Differences in skills shortages are seen to be compounded by institutional reputation and location. This is particularly the case for London-based institutions and Oxford and Cambridge.

- Finally, some respondents reported buoyant recruitment pools within particular fields. These areas included biological systems and ecology.

Respondents’ Perceptions of the Designation of BBSRC Shortage Areas

A number of respondents were unaware of the skills shortages identified by BBSRC:

“[Q: Did you know that stem cell research was deemed a shortage area?] I did not know that, in the sense of being 100% sure. Stem cell, in being a new kind of research area – well not exactly new, but comparing it to cancer research or, I don’t know, neuroscience as a whole – it’s a relative newcomer I would say. I knew the PhD might be linked to that, since stem cell has not been paid too much attention, but I was not 100% sure that stem cell was a shortage area” [PhD, BBSRC, b]

“I wasn’t even aware there were skills shortages in this field, I don’t know if there are” [PDRA, BBSRC, d]

“I don’t know really - I’m trying to think what the skills shortages are. Some of them seem quite precise to me, stem cells I think is one of the defined one, and others seem a little bit vague…” [HoS, BBSRC, d]

Others were concerned about the potential impact of this lack of awareness about ‘official’ shortage areas on grant applications:

[Q: Are you aware of any areas within the school that are facing skills shortages. Are there any areas facing recruitment problems?] I’ve not got any specific areas. I know that it seems to be that whenever we get an award in, and there’s fault on all sides. The mentality of PIs applying to research councils is that it’s an unnamed post so we’re only going to ask for the minimum level so spine point 6 level and
they don’t consider themselves, you know, can they employ somebody at that level in this area. So what tends to happen is that the award comes in and we interview and find out that it is a problem and we just appoint at a higher level on the scale and cut the duration of the contract. So there’s no prior thought given to ‘is this a shortage area’ and it is difficult to find that out in the short timescale of putting an application together. It is something I do say to PIs, you know, will you be able to appoint at that level? And they say they need to keep the costs down. But personally I couldn’t say what a shortage area would be but, for example, biological systems isn’t a shortage area there are a lot of people coming in that but the price you pay for them is higher. [Q: Do you know if the BBSRC defines any areas within the school as shortage areas?] I know that a couple of years ago I think it was when it was first said that funding would be made available for enhanced salaries, the BBSRC themselves on two or three awards, we got in their award letter which said we’d applied for the basic spine point 6 and they came back and said we think this is shortage area, we’re going to give you spine point nine. I think that happened two or three times. I only know because I was in the central university administration then and I couldn’t tell you if that was in biology or chemistry though. I work quite closely with the BBSRC awards and training people which is good for me because its financial side of it and bureaucracy and guidelines and things like that but on the other hand they are not the scientists, they are money people, so I’m not getting a good dialogue on that area about shortage areas. Maybe that’s something I should be exploring because then I can be out saying this is a shortage area we should be asking for a higher salary” [Res Admin, BBSRC, b]

“No, if you must know I think people are not particularly sure which topic areas and streams of things which your topic area might fit and they seem to change and vary quite a lot in how broad or how narrow” [PG Research, BBSRC, b]

Some worried about particular subjects not being identified as official skills shortage areas, since these were seen as important subjects that should be protected:

“Well for us [molecular biology] it’s essential because that’s basically what we do, that’s also what the BBSRC funds really. I would argue that it is actually fundamental and it would be a tragedy if we can’t get enough people in that area because that’s the area that real advances are made in” [HoS, BBSRC, d]

And were also concerned with the way in which BBSRC identified the shortage areas:

“It could just be that we’re not in a priority area - well if we’re not it would be interesting to know how these priority areas were defined because I used to be on the BBSRC panel a few years ago and I know that at the time we certainly fed back comments that it was difficult to recruit in the plant area so why stem cells are on and plants are not I don’t know” [HoS, BBSRC, d]

Skills Shortages: Respondents’ Perceptions

Whilst not all respondents were aware of the BBSRC’s identification of shortage areas and expressed concern about how BBSRC had come to that point, many identified areas they personally felt were experiencing skills shortages:

“Are there skills shortages? I think that’s quite a tricky question. I think in some areas there may be skills shortages...one area that immediately comes to mind is bio-informatics” [PG Research, BBSRC, d]

“The whole animal physiology has died a death really with the shift to cell biochemistry” [Res Admin, BBSRC, a]

“Well stem cells probably is one of them actually because it’s a small...it’s a new area and it’s necessarily small and because it’s attracted a lot of initiatives there is high demand. What would the other areas be? Quantitative genetics – others often say so anything quantitative is difficult to recruit for in biological sciences...Yes so quantitative, stem cells and plant sciences stand out as particular areas of difficulty” [HoS (1), BBSRC, b]

“My area is proteomics and there is a skills shortage” [PI, BBSRC, c]

“I would like it to be explicitly mentioned as an area that plant science is where there is a skills shortage” [HoS, BBSRC, d]
The Fluctuating Nature of Skills Shortages
Respondents also noted the fluctuating nature of skills shortages in particular areas. Various reasons were given for these fluctuations:

“Neuroscience is very interesting now, repairing spinal cords and lesions caused by MS, for example, and our area is very sexy as everyone is scared about bird flu so we have no problem getting people in infectious diseases” [HoS, BBSRC, a]

“The areas become attractive when you start publishing in the high rank journals – it’s a loop and the smart people go to these areas. The whole area of physiology isn’t trendy at the moment but it is important. It’s just not seen as attractive at the moment” [Res Admin, BBSRC, a]

“I think that these things go in trends right, and right now stem cells are very trendy so there is going to be a massive influx into it in the next few years and it will not be a shortage area very soon and there’s no way that you’re really going to speed it up. I know that this is something that possibly is not in my own interests to say but I think that at the moment there’s quite a lot of focus on stem cells...I think that it should be focused on the quality of the science and training good scientists. You know, traditionally a lot of people in the field of developmental biology are stem cell biologists so those people are out there and, actually, my post-doc is someone who came to me who’s a developmental biologist and I consider myself to be a development biologist and we do a lot of work with stem cells but it really depends on who I’m talking to. I’m not so sure that there really is a shortage, there’s no crisis definitely; I mean there will be a large influx of people because it’s quite trendy at the moment but I think like with all science that right now there’s a rush to translate stem cells as quickly as possible and that’s probably more the MRC than the BBSRC and I think that that policy will be proved to probably be wrong in the next few years because science doesn’t move as fast as the politicians would like it. Then there may be a backlash so if the government is going to put more and more enhanced stipends into stem cells to get people into stem cells and the government is thinking and then it doesn’t gain then it could be disappointing and we invest all this money so I think that’s a very big risk here. I do think that it does require a sustained investment from the government to get this to just the funding so if this country is really serious about trying to transmit from stem cells as they are now to viable technology then it needs to be a long term cash investment and it’s not just the terms and salaries. It’s not just about convincing people to switch from one field to the stem cells, it’s about setting up centres of excellence, it’s about creating PhD training programmes, it’s about taking the best students and getting them to start doing stem cells as opposed to trying to provide cash incentives” [PI, BBSRC, b]

Postgraduate Recruitment
Relatively few respondents admitted to problems in attracting postgraduate students:

“I don’t believe there is a massive difficulty” [HoS (1), BBSRC, b]

“I think recruitment is less easy in some specialist areas. [Q: Bio-informatics for instance?] No, this is totally different if you’re recruiting PhD students you are training them so it’s really easy to recruit bio-informaticians because they all want to be trained but then when they’ve got their training they’re unlikely to do a post-doc there, they’re likely to go and have a job in industry” [PG Research, BBSRC, d]

“I would say we get quite good quality PhDs – there is an issue about how much they get paid and the hardship they suffer when they are students – but I don’t think per se there is a problem in quality” [HoS, BBSRC, c]

One attributed this to the success of their institution’s postgraduate marketing strategy and the feeder routes they had developed for their field:

“I think at PhD level we have quite a honed way of doing it. We basically go to the schools within [the university] and advertise there and get high quality home grown candidates out of there - we do a mail shot to the bio-chemists, the university do a scheme which allows an undergraduate in their middle year to spend the summer funding her doing a research project and that is a good recruitment pool and then we use find-a-phd.com. With the internet it’s a lot easier. The last few years we have had pretty good candidates to choose from, much better than before” [HoS, BBSRC, c]

In other cases, however, respondents talked of difficulties in recruiting people of adequate quality at both postdoctoral and postgraduate level:
“[Q: Do you experience problems in recruiting at PhD and post-doc level?] Yes, both. [Q: In any particular areas?] Not really – it’s just a problem getting very skilled people. [Q: Is this a recent problem?] No it’s been going on for some time actually. [Q: So it’s general – PhD and post doc?] We don’t have problems getting candidates come forward – it’s getting good quality candidates. I can usually fill a position but I’ve stopped now just filling positions – if I can’t get a good enough candidate, I won’t fill it now. It’s getting the right quality” [PI, BBSRC, c]

Postdoctoral Recruitment
Recruitment and retention problems were a greater concern at postdoctoral level. A range of explanations were identified by respondents for these problems - low pay, the declining attractiveness of research careers, the lack of identifiable career paths for research scientists, and competition for trained scientists from industry:

“I have been involved in the Research Councils for years and chaired committees, for example, the problems is you get strategy boards talking about skills shortages, like in animal health, but what do they actually mean by that? Does it mean vets or technicians or scientists who are prepared to research diseases? I find it hard to come to a sensible conclusion about that: you cannot say there is a shortage of vets, for example, there are new schools opening and a lot of vets coming from Spain, for example. But, vets prepared to go into research careers, now that is a skills shortage. That is not going to be solved by a few quid in the Roberts Review - that is only going to be solved by restructuring the entire HE profile to keep careers for scientists. That’s the point – there needs to be a career path for research scientists” [HoS, BBSRC, a]

“I think it’s difficult to give you a general answer, certainly my impression is recruiting to research jobs - leaving aside the studentships - goes up and down. I’m not sure whether it’s the actual area or whether it’s the project itself which influences people but clearly some people find it quite difficult to, not so much recruit, but to get a decent field, you tend to get very few people…you get lots of applications from India and China but not very many Europeans. Why that should be I don’t know - I don’t know whether research isn’t seen as a very attractive career these days but that’s in addition to subject specific shortages and I have a general impression that it’s not all that easy to find research people in some of the plant science areas as well” [HoS (2), BBSRC, b]

“On the vets’ side we have lectureships where we just cannot recruit, we just cannot in vet pathology, anaesthesia and so on…and in those specialist areas, an increase in salary would be very, very useful” [Res Admin, BBSRC, a]

“I suppose one area that immediately comes to mind is bio-informatics where you’re competing with a very strong healthy industrial source outside so certainly our own trainees in bio-informatics have all left and got jobs outside the university including some of the very good ones who might have hoped to stay in university research” [PG Research, BBSRC, d]

Location and its Effect on Skills Shortages
Some respondents suggested that the ability to recruit and retain varied according to the location and reputation of the institution:

“I think partly it’s the XXX name – Oxford, Cambridge and Imperial and within XXX we are quite a high profile big lab and all the stuff we do has a direct human relevance. So everyone coming here will know that the biochemistry we do gets infused into man in the time frame that they are here. When you sit and talk to a student they can see – it’s very easy to understand what we are trying to achieve and also obesity and diabetes it’s all in the news” [HoS, BBSRC, c]

Buoyant Recruitment
In some areas respondents reported few recruitment problems:

“We do not have any problems with recruitment because far more people want to go into ecology so it’s always very encouraging in a way that we can put out an advert and we get lots and lots of people” [PI, BBSRC, d]

“It’s probably easier to say the areas that are not experiencing difficulties and that’s anything to do with ecology and fluffy animals and general altruistic feeling that people would like to do something for the environment and the animals. Any areas of plant science, any molecular and particularly plant it’s always a problem getting people. Anything sort of fluffy, it’s easier” [HoS, BBSRC, d]
SKILLS SHORTAGES WITHIN THE REMIT OF THE EPSRC

KEY FINDINGS

- There was no clear consensus from the respondents about the areas facing skills shortages. The following areas were identified by some respondents: analytical chemistry; organic chemistry; electronic engineering; image processing; ophthalmology; computer science; e-science; geometrics; atomic physics; and laser physics.
- Although the EPSRC did not advertise the areas it selected to the research community, there was a surprising resonance between those areas and the fields identified by respondents.
- Respondents noted how skills shortages varied with time and, in particular, were shaped by external circumstances and the wider economy.
- Marked variation existed both between and within institutions, in experiences of recruiting doctoral candidates.
- Greater problems were experiences at post-doctoral level but these were often ‘solved’ or ‘masked’ through international recruitment.

Perceptions of Shortage Areas

A substantial range of areas were identified as experiencing skills shortages supporting the EPSRCs analysis:

“I think analytical chemistry can be regarded as a shortage area along with physical organic chemistry” [PI, EPSRC, a]

“In computer science and the information technology area, there is a chronic skills shortage” [PI, EPSRC, b]

“I don’t think there are any specific areas that appear to have, well I lie actually, the one area that comes to mind is ophthalmology” [Res Admin, EPSRC, d]

“Statistical science definitely, electronic engineering and computer science” [PG Research (1), EPSRC, d]

“I know it’s difficult in engineering and it’s difficult in the life sciences and physical sciences. Mostly in the scientific areas it’s more difficult” [PG Research (2), EPSRC, d]

“I would possibly say image processing and geometric because they’ve had trouble getting people” [PhD, EPSRC, b]

“Computer science generally is a discipline with difficulties in recruitment and retention...there are sub-areas which are especially difficult - one would be the area of e-science” [HoS, EPSRC, b]

“It’s been a problem for a number of years in electronic engineering and some other areas within the school of engineering” [Res Admin, EPSRC, b]

“Well obviously atomic physics and laser physics” [PDRS, EPSRC, c]

“It’s been implicit that e-science has been a difficult area to recruit in” [HoS, EPSRC, b]

Some respondents were concerned about the evidence upon which decisions are being made both by the Research Council’s and in the Roberts Review:

“I couldn’t actually see the logical link or the evidence for when Gareth came out with this list of shortage subjects - I wasn’t clear on the evidence on which they’d identified those particular areas as
being shortages. I mean some were the usual suspects which everybody automatically says are shortage subjects, it’s a bit like the argument that the universities are closing chemistry departments and there are less students wanting to do chemistry and that’s absolutely true, it’s happening. What I’m not sure of is how many chemists subjectively does the country need. On the basis of that you should then be clear in how many you should be training and making sure that they’re training really high quality people. Maybe Gareth did actually collect a lot of data but he came out with as I said the usual suspects and the stats what I knew about because there were experienced people just dashing off into industry” [PG Research (1), EPSRC, d]

Variations in Skills Shortages: Trends over Time
There was an acknowledgment by some respondents that skills shortages changed over time:

“Yes but one year it might be that we haven’t got quite so many wanting to do colloids and next year we might be inundated. One year analytical chemistry might be a little more difficult but last year we were inundated and we could have filled those places many times over in analytical chemistry so it varies and it also varies within the school” [PG Research, EPSRC, a]

“I mean certainly it has been very variable. It appears to me to have been worse a couple of years ago when we were trying to recruit people then for these kinds of research positions. It seems to me to be slightly less of a problem now but it is still difficult” [PI, EPSRC, b]

Moreover, because of the close relationship areas within the EPSRC’s remit have with industry, particular areas experience cyclical skills shortages as they compete with industrial trends;

“So statistical science definitely, electronic engineering and computer science have had in cycles - when the dot.com boom was at its height, students just went straight off, they didn’t want a PhD they wanted to set up the next Dot.com Company and make a million. When it crashed suddenly we had lots of good applicants more than we could cope with so those two have gone in cycles. Currently in fact it’s not bad at all, the IT industry obviously hasn’t clearly recovered fully yet so at the moment we’re not having that much difficulty although whether that’s true across the rest of the sector I don’t know” [PG Research (1), EPSRC, d]

Postgraduate Recruitment
There was no clear consensus amongst the respondents as to whether there were particular recruitment problems at postgraduate level. Put simply, some had problems, and some did not:

[Q: Would you say there were any issues with recruiting and retaining good quality researchers and postgraduates within the department?] I don’t think we do have any problems, I think the number of applications that we have for postgraduates is probably more than we can handle and post docs as well, I think we’ve got pretty much a good supply of very good post docs” [HoS, EPSRC, a]

“We’re not so bad on postgraduates - we’ve been working very hard to grow our postgraduate school within this school and we’ve managed to do that and we get some people from our undergraduate degrees who have done well and carry on and we get some people who got masters degrees as well” [HoS, EPSRC, b]

“It’s very interesting, with regard to difficulty with recruitment, I get the impression we don’t have too much difficulty in attracting students but finding funding can be difficult. [Q: So you’ve already got the demand but it’s meeting it and matching it with funding?] Yes that can be difficult and it differs in different areas of the school. If there’s some areas of the school can get industrial funding for example more easily than others and so do have the funds there then very often that doesn’t marry up with the distribution of applicants unfortunately” [Res Admin, EPSRC, a]

“For PhDs that I currently have they were all people who had done degrees here previously in the immediate past so they either came off our MSc in computing or our BSc in computing science programme so in that respect it was fairly easy to recruit them because you just take the best of what is available locally even though some of those PhD positions may have been advertised we still chose the local ones rather than the ones we knew little about” [PI, EPSRC, b]

“Well PhD students, no there’s not a shortage, however of my group typically the majority of research students would come from countries other than the UK” [PI, EPSRC, d]
“Certainly British student numbers have declined dramatically; when I first came here in 1976 we would have taken on something like 14 or 15 British students in our area here and now we’re down to 2 or 3” [PG Research, EPSRC, c]

“I got the impression from Ophthalmology that they were struggling to find candidates of sufficient quality to award a PhD studentship to” [Res Admin, EPSRC, d]

[Q: What about the quality of your applications then that are coming in? Are they strong candidates that you’re getting and are you getting many responses?] Loads in terms of unsolicited applications probably 3 or 4 every week. Yes, so since I only have a finite number of research students and finite funding to fund them most of those are discarded [Q: Does that mean that when you do recruit that they are strong candidates then?] Yes” [PhD, EPSRC, d]

Postgraduate recruitment issues were seen to be less of a concern for the leading research institutions:

“I think the top 10 have less difficulty in attracting good quality students than other institutions lower down the rankings so those are the ones that I’m immediately aware of” [PG Research (1), EPSRC, d]

“I wouldn’t say there was any of our schools that are particularly struggling. I mean we have the occasional vacancy which is hard to fill but generally we do manage to fill them in the research area mainly because we’ve got a growing reputation for being a good research university” [HR, EPSRC, b]

However, when postgraduate recruitment problems were highlighted, some respondents noted the role of pay as a potential cause:

“Yes we do find it difficult to obtain applications from high quality UK PhD students and the reason for that’s fairly obvious - if you’re a bright young graduate with a first class degree and a big overdraft the last thing you want to do is be a student for 3 more years in a city with a high cost of living” [HoS, EPSRC, d]

“It’s been a problem for a number of years in electronic engineering and some other areas within the school of engineering just because starting salaries for new graduates are so high and if you’re coming in with a PhD stipend of 12k or so you have to have the sort of student who has got an eye on the middle ground if you like who can sort of see beyond the salary levels for the next three years and who wants to get involved in PhD level research” [Res Admin, EPSRC, b]

Postdoctoral Recruitment
For EPSRC respondents, the problem of recruiting at postdoctoral level was partly overcome by recruiting from beyond the UK:

“We generally look further a field for post docs and there it’s been quite difficult and quite often we got lots of applications from China or India or other places that we may not be very familiar with and we’re not familiar with the qualifications that they have or the institutions where they got those qualifications so it is difficult to make a judgement about their quality and so that has been a problem” [PI, EPSRC, b]

[Q: Do you have problems recruiting for your post-doctoral research positions?] Not really no, I advertised one fairly recently and we had a shortlist of 4 very good candidates so no not really. They are mostly UK based people and one of my post docs is currently of US citizenship and came from Chicago which is pretty unusual actually to get people from the US [PI, EPSRC, a]

“It depends very much on the area you know, if you are in a fashionable area, but in an area like mine which is crystallography which is not that fashionable as it used to be if I put an advert out for a post-doc I get no applicants from Britain, none whatsoever, and that’s been going for years like that” [PG Research, EPSRC, c]

“We don’t seem to have a lot of trouble with recruitment in any area and we do get quite a lot of because my team deals specifically with work permits as well so I know we do a lot getting work permits for research staff as well I’d say. Recruitment’s not really a big issue that I’m aware of” [HR, EPSRC, d]
Postdoctoral recruitment problems were mediated to some extent by the lure of ‘research stars’ within particular institutions:

“I think there are issues about getting high quality research staff and it is a bit dependant on individuals so the charismatic, world-famous research leader might get more applications than a less famous member of staff regardless of the merit of the piece of work he’s done or the job opportunity that was offered to the individual post-doctoral researcher. Many of my colleagues, me included, get regular applications for post-doctoral positions when we don’t have any to offer” [HoS, EPSRC, a]

However, some respondents noted that it was retaining postdoctoral research staff that was a key problem - and pay was seen as a key issue here;

[Q: We’ve talked a little bit about the recruitment of people but how important do you think pay is to the retention of contract researchers? Once you’ve got them here have you won the battle? Or is pay a real issue in retaining them then?] You may have won the battle for a short spell of time but of course over time people will want to maintain their salary levels which of course maintain pace with inflation but also which keeps pace with their increasing domestic commitments as they get married and buy houses and have families so, yes, it is important that we keep that under review on an annual basis” [PI, EPSRC, b]

“You have to bear in mind that a starting salary on a RA1a scale is something around 20k now so once you’ve taken off the tax and you compare that with a PhD stipend with a CASE top up then the PhD student could actually be doing better” [Res Admin, EPSRC, b]

SKILLS SHORTAGES WITHIN THE REMIT OF THE ESRC

**KEY FINDINGS**

- There was marked consensus about the areas facing skills shortages. These included: management; economics; accountancy; and advanced quantitative methods. However, not one respondent from across the ESRC sites identified area-based studies, education or knowledge-transfer activities as fields experiencing skills shortages.¹

- Economics, in particular, has a long tradition of being perceived as an area which has continually experienced skills shortages despite a number of initiatives from the ESRC and particular institutions to rectify this situation.

- In those areas identified as experiencing skills shortages, the field was limited both in terms of volume and quality.

- At postgraduate level in business and economics, there was real concern over the declining numbers of UK students applying to do PhDs. However, non-UK nationals were still willing to undertake PhDs in these areas.

- Post-doctoral recruitment is a major problem in the shortage areas but institutions were able to recruit people from abroad.

**Perceptions of Designated Shortage Areas**

There was broad agreement about areas experiencing skills shortages by the respondents - and this matched closely with the areas ESRC have identified:

“We have significant trouble in significant areas – the classic ones are accountancy and marketing” [HoS, ESRC, a]

“Economics is the worst…and in management and business we’ve got similar problems” [PG Research, ESRC, a]

“There is a huge deficit of people with good quantitative skills in social sciences” [PI, ESRC, c]

¹ We have noted in the main report that the site visits did not include education so this may explain the lack of reference to education.
Are there any departments here that are experiencing skills shortages? "Economics is…" [HoS, ESRC, c]

"The big problem is economics…of course there are obvious areas within economics, particularly to do with social statistics, and also econometrics, which overlap with well-known other areas of skills shortages within the social sciences. Basically, anything that involves hard number crunching, we know there’s a problem" [PG Research, ESRC, c]

Alongside this shared consensus, that was also a sense that these shortage areas had faced problems for some time:

[Q: You said it was difficult to find people, would you say quantitative methods is an area that is facing skills shortages and problems in recruitment?] Hugely so and I think that is very well documented and we’ve all been going round saying it for years and it’s not just the UK either" [PI, ESRC, c]

The stability of economics in particular as a skills shortage area is also reinforced by the number of schemes already in place to ‘reward’ and retain staff in these fields. The ESRC has always paid higher salaries to researchers within ‘research priority’ areas:

Yes because my discipline is regarded as a shortage area or priority discipline because you had to have a reason to apply for 23k and not 21k – so one of my reasons was that my discipline was a priority discipline" [PDRA, ESRC, a]

Some institutions also admitted to always giving bonuses to its economists and accountants:

“As you know there’s a special market weighting for salaries which gives a very modest monthly bonus for economists and accountants which has been in place, it’s come to an end now I think, it’s been in place about 3 years” [HoS, ESRC, c]

There were a few respondents who, however, were unaware of the shortage areas identified by ESRC:

“I believe that ESRC has identified some areas but I don’t know which areas those are" [HoS, ESRC, a]

“I don’t know to be honest; I think they’ve drawn up a list of areas that they’ve classified as shortage areas" [Res Admin, ESRC, b]

[Q: Do you know if the UK research councils classify areas in your department as facing skills shortages?] I don’t know [Res Admin, ESRC, c]

Quality and Quantity: A Dual Problem for ESRC Shortage Areas?

Some respondents noted that there was a dual problem for some of those disciplines identified as having skills shortages - in terms of quantity and quality - at all levels:

“We have significant trouble in significant areas – the classic ones are accountancy and marketing – accounting being the very small pool, very small numbers applying even at doctoral level and we have a real problem recruiting academics as well. In those areas its few numbers and not great quality” [HoS, ESRC, a]

“The problem is we don’t get UK students wanting to do PhDs in sufficient numbers, and I guess you need to say of sufficient quality” [PG Research, ESRC, a]

The size and quality of the recruitment pool for both postgraduates and post-doctorates in these shortage areas was a serious cause for concern amongst our respondents.

Postgraduate Recruitment

In economics and business, there was a shared unease about the decreasing numbers of UK applicants for postgraduate study:

“In the national press last year they said there were no UK nationals starting economics PhDs – they had got it wrong, there was a handful but maybe less than that… the situation is pretty dire in terms of getting UK students to come here…[As for] international students, we get those sufficient – we don’t
need to do a great deal in terms of publicity, they are knocking at the door to do PhDs. The problem is we don’t get UK students wanting to do PhDs in sufficient numbers, and I guess you need to say of sufficient quality” [PG Research, ESRC, a]

“[Q: Are you experiencing problems recruiting doctoral candidates?] Absolutely, yes. The big problem is economics. The problems in government, anthropology and sociology are not shortages of PhD candidates, but shortage of PhD candidates with funding and the problem in economics is there’s a shortage of PhD candidates, especially domestic PhD candidates” [PG Research, ESRC, c]

“[Q: What about actually recruiting doctoral candidates for economics?] It’s a struggle all the time. I think we do reasonably well, I think, but there are relatively few” [HoS, ESRC, c]

“[Q: So you’re recruiting them in economics mainly from overseas, are you?] Insofar as they can be recruited overseas. Even that’s a problem” [PG Research, ESRC, c]

One respondent noted that the “broad church” underpinning business and management should have meant that the recruitment pool for postgraduates in these areas was larger:

“If you look at management and business we’ve got a similar problem in the sense of recruiting students but perhaps not as bad – but then management and business covers a wide range of disciplines – accounting and finance, marketing, HRM and work/employment relations and management in general – so it’s a broad church and you’d think there was more opportunity to attract students...the problem is we don’t get UK students wanting to do PhDs in sufficient numbers” [PG Research, ESRC, a]

In relation to advanced quantitative methods, one respondent laid the blame for the small recruitment pool at the British secondary school:

“[Q: Why is there a shortage of statisticians?] That’s a really interesting question and I’ve thought about that a lot. And as usual when you think about these a lot you’re not sure in the end. My kind of personal starting point is that it’s got nothing to do with university education at all, but with the chronically low level of education in the British school system. Certainly, the 18 year old students we get here are pretty able. The average 18 year old that’s doing social science at Manchester is very literate yet he’s not terribly numerate. So there’s something going on further back as it were in the production cycle. But I also think, I mean it depends what you want to learn, admittedly. But I don’t actually think that getting to a kind of reasonable level of competence in statistics is actually very difficult for any intelligent person, a level of competence that would allow you to work with big data sets” [PG Research, ESRC, c]

Another respondent did note the steps ESRC had made in trying to improve postgraduate recruitment in advanced quantitative methods:

“[Q: So do you know if the ESRC classes your area as a shortage area?] Oh yes well certainly the ESRC has they have all the initiatives to encourage more secondary analysts and they’ve got quotas for different topic areas and on PhD application forms there’s little boxes to tick as to whether this is a secondary analysis area and whether it meets one of the priority areas and then you get more brownie points. So they are certainly doing what they can” [PI, ESRC, c]

Postdoctoral Recruitment
Discussions about postdoctoral recruitment were typically couched in terms of the need to recruit and retain academic staff - as opposed to research staff - by the respondents in the ESRC site visits. Nonetheless, it was clear that at postdoctoral level, many disciplines were ‘solving’ skills shortages through recruiting non-UK nationals:

“We get a good list of applicants, but most of our appointments in the past, I would say in the past 8 years have been non-UK citizens. So what’s manifestly clear is that the UK base of economists must be in decline because we’re not getting applicants from UK citizens. We’re not getting many applicants from UK-trained people; we’re appointing people who have been trained in the States or Europe” [HoS, ESRC, c]

“There’s an even more acute problem of actually getting qualified staff, particularly staff from the UK, to teach in economics departments...I mean, well you’ve probably done this, if you talk to sociologists,
the country’s overrun with sociologists who study identity but there aren’t exactly a load of sociologists who can cope with large data sets” [PG Research, ESRC, c]
**RCUK Annex 3: Postgraduates and Postdoctoral Researchers on Pay**

**ACTUAL PAY AND THE IMPORTANCE OF PAY**

**PhD Stipends**

Currently, standard Research Council studentships offer £12,000 per year for those outside London, and £14,000 for those in the capital. CASE studentships are set at £16,000 for those in London, and £14,000 per year for elsewhere.

However, some Research Council funded students we interviewed were receiving lower amounts: in Cardiff one student was receiving £10,500 and at LSE another student was receiving £11,000. Studentships are increasingly being provided through the DTG with institutions free to set their own stipend levels. This may be higher or lower than the Research Council minimum. The highest stipend in our sample was £17,000 – a CASE studentship with a £6,000 partner contribution. Only one of the PhD students we spoke to was in receipt of an enhanced stipend – a BBSRC studentship paying £14,000 per year.

Research Council studentships do not compare favourably to some other schemes (see below for wider discussion). The Wellcome Trust pay higher stipends generally and also pay higher stipends for vet students. For a student starting a PhD in 2005, the Wellcome Trust pays £17,595 for those in London and £15,732 for those outside. For vet students, a point system operates and stipends range from £16,519 to £22,137 outside London and from £18,475 to 24,758 in London. The Royal Society currently does not offer postgraduate training funds. Most university studentships are set at the Research Council level of £12,000.

The following table shows the range of stipend levels the postgraduates who completed our questionnaire were receiving:

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</tbody>
</table>

As illustrated above, 7.4% of UK students reported receiving less than £10,000 this year – although this did include some students who were on fees-only awards (not in receipt of a maintenance award). 59% of postgraduates in our survey reported receiving a maintenance award of £12,000 in 2005, and a further 17.4% received £14,000. Three quarters of UK doctoral candidates surveyed received a stipend of less than £14,000. Only 6.5% of doctoral candidates had a stipend of £15,000 or more.

Our questionnaire findings – and the table below - have also shown that higher starting stipends have been introduced and that the greatest proportion with stipends of £14,000 or more started in 2005:

---

1 This table corresponds to UK doctoral candidates only – we have removed the answers given by overseas postgraduates and fees-only student since this would skew our findings as they did not receive a full maintenance studentship.
Table 3.2: Survey Respondents' Level of Stipend by PhD Start Date

<table>
<thead>
<tr>
<th>Year started PhD</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>£1-£4,999</td>
<td>1.6%</td>
<td>.4%</td>
<td>.4%</td>
<td>.5%</td>
<td>.3%</td>
<td>.3%</td>
<td>6.1%</td>
</tr>
<tr>
<td>£5,000-£9,999</td>
<td>28.6%</td>
<td>3.2%</td>
<td>5%</td>
<td>4.8%</td>
<td>2.7%</td>
<td>10.0%</td>
<td>61.1%</td>
</tr>
<tr>
<td>£10,000-£11,999</td>
<td>14.3%</td>
<td>28.6%</td>
<td>3.7%</td>
<td>4.8%</td>
<td>2.7%</td>
<td>100.0%</td>
<td>59.3%</td>
</tr>
<tr>
<td>£12,000</td>
<td>21.4%</td>
<td>28.6%</td>
<td>59.5%</td>
<td>66.3%</td>
<td>64.0%</td>
<td>100.0%</td>
<td>59.3%</td>
</tr>
<tr>
<td>£12,001-£12,500</td>
<td>4.8%</td>
<td>4.2%</td>
<td>2.1%</td>
<td>3.6%</td>
<td>3.6%</td>
<td>10.0%</td>
<td>4.1%</td>
</tr>
<tr>
<td>£12,501-£13,999</td>
<td>14.3%</td>
<td>12.7%</td>
<td>2.8%</td>
<td>4.8%</td>
<td>1.8%</td>
<td>100.0%</td>
<td>4.1%</td>
</tr>
<tr>
<td>£14,000</td>
<td>21.4%</td>
<td>14.3%</td>
<td>15.8%</td>
<td>16.0%</td>
<td>20.4%</td>
<td>100.0%</td>
<td>17.3%</td>
</tr>
<tr>
<td>£14,001-£14,999</td>
<td>3.2%</td>
<td>3.2%</td>
<td>4.3%</td>
<td>3.5%</td>
<td>1.8%</td>
<td>100.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>=&gt;£15,000</td>
<td>3.2%</td>
<td>11.2%</td>
<td>3.6%</td>
<td>4.3%</td>
<td>5.3%</td>
<td>100.0%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>63</td>
<td>215</td>
<td>187</td>
<td>225</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Postdoctoral Salaries

Research Councils do not insist upon certain salary levels for postdoctoral researchers – salaries are set by institutions. There is some pay variation for PDRS across British HEIs as illustrated by our site visit interviews and researcher questionnaire. The lowest PDRS salary in our site visits was £19,460 and the highest was £28,000-£32,000. Interestingly, one PDRS who was awarded an enhanced salary by the BBSRC was only receiving £22,500. The variation is unsurprising since postdoctoral pay will be determined by the years of postdoctoral experience gained by the researcher - and not all our respondents in the site visits were in their first postdoctoral positions. It has been possible however to extract the information on salaries given to us by PDRS in their first postdoc position from our survey. The following table reveals a significant degree of variation in starting salaries for PDRS:

Table 3.3: Starting Salaries for First-Times PDRS Survey Respondents

<table>
<thead>
<tr>
<th>Amount</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>£17,000-£18,999</td>
<td>2</td>
<td>2.8</td>
</tr>
<tr>
<td>£19,000-£20,999</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>£21,000-£22,999</td>
<td>23</td>
<td>32.9</td>
</tr>
<tr>
<td>£23,000-£24,999</td>
<td>18</td>
<td>25.7</td>
</tr>
<tr>
<td>£25,000-£26,999</td>
<td>10</td>
<td>14.3</td>
</tr>
<tr>
<td>£27,000-£28,999</td>
<td>6</td>
<td>8.6</td>
</tr>
<tr>
<td>=&gt;£29,000</td>
<td>4</td>
<td>5.7</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100%</td>
</tr>
</tbody>
</table>

Our own mapping exercise of academic jobs advertised in the THES in 2005 provides some illustrative examples of PDRS pay variation across ESRC and EPSRC shortage areas. In Management and Business, 5 research assistant jobs were advertised at £12,887-£14,751 at Glamorgan University. However, a research economist position at the LSE was advertised at £44,919. In Engineering, Leeds Metropolitan University were advertising for a researcher at £12,887-£17,601. However in Computer Science and IT, research fellow positions were ranging from £18,777-21,640.

The ASSET survey analysis we undertook also confirms the pay variation of researchers in UK HEIs. 6.5% of contract research staff in the survey were on salaries of less than £20,000. 67% had salaries between £21,000 and £30,000. After that, the numbers begin to dwindle, with only 15% receiving £31,000-£35,000 (compared to 43% of lecturers) and 8% with salaries between £36,000-£40,000 (compared to 23% of lecturers).

HESA data tells a similar story for full-time researchers:

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2 The THES has proved the least popular place for BBSRC departments to advertise vacancies.
Table 3.4: HESA Data researchers per salary group

<table>
<thead>
<tr>
<th>Salary Group</th>
<th>Researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>£5000 and under</td>
<td>0%</td>
</tr>
<tr>
<td>£5001 to £10000</td>
<td>0%</td>
</tr>
<tr>
<td>£10001 to £15000</td>
<td>1%</td>
</tr>
<tr>
<td>£15001 to £20000</td>
<td>9%</td>
</tr>
<tr>
<td>£20001 to £25000</td>
<td>45%</td>
</tr>
<tr>
<td>£25001 to £30000</td>
<td>30%</td>
</tr>
<tr>
<td>£30001 to £35000</td>
<td>9%</td>
</tr>
<tr>
<td>£35001 to £40000</td>
<td>4%</td>
</tr>
<tr>
<td>£40001 to £45000</td>
<td>1%</td>
</tr>
<tr>
<td>£45001 to £50000</td>
<td>0%</td>
</tr>
<tr>
<td>Over £50000</td>
<td>1%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>22320</td>
</tr>
</tbody>
</table>

(Source: Generated from HESA staff record 2002-03)

Studentships and Fellowship Schemes withEnhancements: Some Examples

There are examples of Government and funding bodies providing money to raise the salaries of researchers within the UK. The Wellcome Trust considers itself a leader on increased pay for PhD students and academics within the sector (Wellcome Trust, 2002). Although the pay of postdoctoral researchers is based on university pay scales since October 1989, Wellcome Trust-funded postdoctoral researchers have received an enhancement premium of two, three or four points (depending on location) worth between 8-16% of their basic salary (Wellcome Trust, 2002, and Research Careers Initiative, 2003, p. 19). Prior to this the Trust increased PhD stipends to an amount equivalent to the salary of a pre-doctoral research assistant. And, in October 1999, the Trust granted a salary enhancement of 30% for many of its research fellows at UK universities. It is to be noted that The Trust has now reformed its salary enhancement schemes (see below). From April 2006 incremental salary enhancement policies for post-doctoral research assistants employed on grants will no longer be promoted or funded

Other research funders also provide salary enhancements. The Arthritis Research Campaign (ARC), for example, has a Special Purpose Grant that is designed to provide a flexible funding source for research. Through this grant an enhancement premium is available for the salaries of non-clinical postdoctoral research staff. The premium relates to points on the academic scale and varies according to location.

In our own interviews during our site visits, we spoke to a number of people who raised various issues and concerns about Wellcome fellowships and grants:

“I think that there is a difference between defining a shortage area and enhancing the salary there and Wellcome enhancing every salary irrespective of the area their in. That’s where you can get two people doing exactly the same experiments and one is paid higher. There’s no consideration given to the area they work in and I think the enhancement policy in shortage areas, if you look at them, the person employed there will be at a higher level because they will have more experience, it’s an established area so you will have to pay more. So if it’s a managed enhancement policy that’s fine. I don’t agree with the Wellcome’s blanket enhancement policy...The Wellcome enhancement policy will lead to more expensive RAs” [Res Admin, BBSRC, b]

“If the Wellcome Trust wants to pay its fellows or its students more money then that’s its prerogative but it can have no expectation that the university will take on that responsibility for all of the rest of its staff” [HoS, BBSRC, b]

“I think it would be interesting to compare the productivity of MRC and Welcome fellows; my bet is that the MRC ones do just as well...I’ve often thought that Welcome fellows turn out to be under-achievers...they think they’re God when they get a Wellcome fellowship... they bite off an enormous project and they reckon they’ll save the world and get a Nobel Prize next week and then they don’t whereas people on a more modest remuneration scheme are just in the same position as every other

3 http://www.wellcome.ac.uk/doc%5Fwtd004125.html
4 http://www.arc.org.uk/research/forms/Special.htm
academic. Certainly the productivity of Welcome fellows compares purely with university staff who have to teach” (HoS, BBSRC, b]

Pay Modernisation in UK HEIs

Through the Joint Negotiating Committee for Higher Education Staff (JNCHES) a framework agreement for the modernisation of pay structures was negotiated. This agreement “provides a common national framework for pay arrangements that fit with institutions’ varying missions and circumstances”. The principles within the agreement should be implemented from 1 August 2004 “or as soon as practicable thereafter” and full implementation is envisaged by 1 August 2006, “subject to the funding arrangements in the devolved administrations”. The agreement covers a number of key areas for reform: pay spines, grading, staff development and review, progression between grades, progression within grades, working hours, attraction and retention premia and equal opportunities.

The changes proposed within the agreement that are to have a great impact on institutional structures are those relating to pay spines and grading. The institutions that sign up to the agreement are to use a single, nationally set pay spine, to determine the pay rates for all staff. Institutions covered by the agreement will then determine grades according to common principles and in particular though job evaluation and role analysis. The agreement includes “a commended model pay structure” it is thought that this could apply to most institutions.

However alongside this policy we can see guidance for the introduction of attraction and retention premia or market related pay supplements. The JNCHES guidance on role analysis and job evaluation that was produced in January 2004 states that a feature of role analysis and job evaluation processes is that they “are solely concerned with internal relativities account is not taken of market rates”. If this is so what is the relationship between these aspects of pay modernisation and those that seek to allow for variation in order to address skills shortages?

Within the Independent Review of Higher Education Pay and Conditions, Bett recognised a need for market variation in HE pay. Referring to tools like role analysis and job evaluation Bett states that “[t]hey imply a neutral labour market context. But that will not always be the case: recruitment and retention difficulties may well arise if pay rates vary significantly from national norms in particular localities or for particular sets of competences” (Independent Review of Higher Education Pay and Conditions, 1999, para. 149). In these circumstances it is understood that HEIs need some flexibility in order to respond.

Annex E of the JNCHES Framework Agreement for the Modernisation of Pay Structures contains guidelines for the use of attraction and retention premia. Here it is stressed that in order to comply with the law, variation to the pay of individuals whose work is of equal value must be objectively justified. The importance of having in place visible and transparent policies and practices that relate to rates of pay within the market is stressed. Guidelines are set out for developing both policies and procedures. The guidelines emphasise the need to establish and demonstrate the case for market supplements, to record the rationale for decisions taken on the matter (for example use, level and eligibility) and to review the continued use of market supplements. It is also suggested the mechanisms be put in place to remove supplements when they are no longer considered necessary for example including within an employment contract the circumstances under which the supplement will be removed. The potential impact that such supplements could have on equal pay is acknowledged, it is recommended that the proportions of men and women, people of different racial groups and those with disabilities within the groups of employees that receive pay supplements be identified and monitored and that differences should be objectively justified.

Attitudes Towards Pay

Having reviewed the literature in the area of recruitment and retention in higher education, Metcalf and colleagues (2004, p. 19) conclude that conclude “pay is a major issue”. This concern is echoed at the level of public policy. The Independent Review of Higher Education Pay and Conditions placed discussions of relative pay squarely in the context of recruitment and retention stating: “If pay is significantly below market rates, the intangible attractions of working in higher education will needs to be correspondingly greater, or institutions will be unable to fill vacant posts or have to appoint generally poorer quality candidates than they would wish”

http://www.ucea.ac.uk/index.aspx?ContentId=23&bc=JNCHES&p=JNCHES

4
Certainly key policy actors such as The Wellcome Trust have identified pay as an aspect of recruitment and retention difficulties (see above for details of enhancement schemes). The Cross-Cutting Review of Science and Research Final Report states that the relative decline in pay discussed above “matters to the extent that it is causing increasing recruitment and retention difficulties in particular areas.” The European Commission also cites pay as one of the reasons for people leaving the higher education sector: “salaries are one of the most visible issues of career recognition”. The University and Colleges Employers Association (UCEA) commissioned study into recruitment and retention of staff in the higher education published in 2002 concurs. Both the survey and case study elements of the study found comparatively low pay to be a major factor in recruitment and retention difficulties. A later UCEA survey (published in 2003) also found pay to be an issue, significant in particular to young academics. Here perceived low salary levels and introduction of incentive schemes were found to be important issues.

**Pay and Deciding to do a PhD: Questionnaire Analysis**

Our postgraduate questionnaire results can provide some insight into the importance of stipend levels in decisions about doing a PhD. For BBSRC-funded postgraduates, 60% said the level of stipend was important in the decision to do a PhD; 7% said that it was important to receive a stipend but the level was not important and 33% said the level of stipend was not important.

The majority of those who said the level of stipend was important noted that this was mainly so that they would have enough money to live on without struggling or amassing further debt:

“\textit{It was important as you have to be able to live and have a good quality of life.}”

“\textit{Very important because studying PhD is already challenging and required full commitment, therefore if the stipend is enough to cover all the living costs (obviously that depends on situation of the place of study, whereas London will be more expensive) and maintenance, that means less stress i.e. without having to think about money problems}”

“\textit{Important to know that I could afford to live in the area}”

Those who indicated that the level of stipend was only moderately important, mostly said that other factors, particularly the research project and location, were more important. Some said that it was not the most important factor, but they still needed enough to live off:

“\textit{Mainly chose the title and institute not the stipend but it was a deciding factor}”

“\textit{Fairly important. The funding has to be sufficient to live on, and I was working in Industry at a contract manufacturing plant. I enjoyed the work and if the wage drop had been too severe I would have found it hard}”

“\textit{It was a factor but not the most important, however it had to be enough so that I can live ok}”

For ESRC-funded postgraduates, 61% said that the level of stipend was important in their decision to accept the PhD position, 23% said that it was important that they received a stipend but the level was not important, and 18% said that the stipend level were not an important factor.

The majority of those who said stipend level was important tended to refer to their previous salary levels (more ESRC respondents returned to PhD study after a stint in the external labour market than any other group) or the financial burden of bringing up a family:

“I wouldn’t have been able to afford to carry on to a PhD unless I had got funding. The fact that I knew stipends were going up was a significant factor for me. It’s quite difficult to adjust to the change from £40K+ to living as a student”

“\textit{Very important as I could be doing a better paid job instead of still being a student}”

“\textit{Very. I left full time employment to do the research}”

“Extremely important. As I am in my thirties and married, having a decent stipend makes me feel like I am earning my living and that my research is worth funding”
“Very as I have a young family to support and students are not eligible for help with childcare costs from government”.

Just over half 50.5% of EPSRC-funded students in our questionnaire felt that the level of the stipend was important in their decision to do a PhD:

“It was the deciding factor - returning to University was a massive decision and in my case I could only go back to University if the stipend level was high enough for me to be comfortable”

“Vital - I have a mortgage, wife and two children”

“Very important - I would not have continued my studies without guaranteed funding. Level of funding needed to be sufficient to cover all living expenses and fees. It is nice not to have to worry about money”

14.3% of EPSRC postgraduates said that they needed only enough money to live on:

“Enough money to live on was the requirement”

“Not very important but had to be reasonable to live on to a decent standard. The quality of the academic supervisor is more important”

12.1% said that it was important that they received a stipend but the level was not particularly important:

“It is important to receive a stipend – not the level”

“Needed funding, level not too important” [provided around £1000 per month]

However, 23% stated that the stipend level was not an important factor. For these respondents, other issues – such as the institution and the need to undertake doctoral training – were more important in the decision to do a PhD:

“I didn’t really have any choice. It was something I needed to do”

“I did not consider other institutions”

Pay and Deciding to do a PhD: Interview Analysis

The general consensus from our postgraduate interviewees was that stipend levels mattered in terms of giving them enough money to live on – and that this should not be lower than current minimum stipend levels - but they were not a determining factor in their decision to undertake a PhD:

[Q: How much did the level of stipend influence your decisions about whether and where to do your PhD?] To be honest it didn’t. I know that the idea of the studentships is to give enough money to live off and it does for me” [PhD(1), BBSRC, a]

“My stipend has gone up to about 12k from the BBSRC and 3k from CASE NON-ACADEMIC PARTNER. It is very good and to be honest there is no way I would be able to do a PhD unless there was that kind of money… Pay is a big part of it – I wouldn’t be able to afford to do a PhD on less than £12k a year but there are other things that are important too” [PhD(2), BBSRC, a]

“EPSRC stipends have gone from £9k in my first year what should be £10.5k in the second year and £12k in the third year, but I’m still £10.5k. That’s obviously just the way I’m funded, I was aware that £9k I wouldn’t be living a luxurious lifestyle but I managed to survive on pretty much a similar amount as an undergraduate so I just knew I’d be able to carry on that sort of lifestyle” [PhD (2), EPSRC, b]

“I mean I think the pay is good pay. I have no complaints about pay. I think it depends on your personal circumstances. So with me I have a partner so I’m probably in a better position I don’t think I could support a house on my own so it depends what kind of age you are as well” [PhD, ESRC, c]

Others also noted how current stipend levels were now ‘competitive alternatives’:

“I think that at the moment is a good level of stipend, I don’t think the stipend is a dominant factor in recruitment for most people I really don’t… As long as they know they’re going to have enough to live
on and live comfortably that extra top-up I don’t think is going to be a determining factor” [PI, EPSRC, a]

“£14k that equates roughly to £22k taxable income which to train someone seems a very reasonable amount. It’s different to when it changed…the stipends were very low, you know some people were only getting about £6k a year to live on in London. No chance, you know. But £14k, you know, tax-free” [Res Admin, EPSRC, d]

Moreover, some interviewees talked about the negative consequences if stipends were to rise any further:

“In a situation like ours where we are really on the boundaries of how many studentships we can take with the DTA money that we normally get if we had to pay more for students out of that same pot then instead of getting three students we’ll get one. So all that can do is make things worse” [PG Research, EPSRC, c]

“If enhanced stipends do come in, it creates upward pressure elsewhere – it’s bound to, it’s market pricing. It could mean that there are fewer scholarships to go around, especially if you double them. Instead of having two [studentships], you get one” [PG Research, ESRC, a].

Some postgraduate respondents suggested that if stipends were any higher - indeed, even now for those on CASE studentships receiving significant non-academic partner contributions - this may mean they would experience a pay drop when they took on their first postdoctoral position:

“I mean, if I go into academia, I’ve seen adverts for jobs for research officers, they are very low, and in some cases they are lower than what I’m on now, I think, once you take the benefits away and all that. That’s when pay would be an issue, if that’s going to be the case” [PhD, ESRC, a]

“A lot of people are aware that you go off, do a PhD and then when you go onto a postdoc you are only earning maybe £1k or £2k more - a lot of people are put off that” [PhD(1), BBSRC, a].

“I’m doing OK - £15k per year tax free - so, if anything, when I start a postdoc I might even be looking at a decrease in my salary which would be very hard” (PhD(2), BBSRC, a]

Postdoctoral Pay: Is this enough? Questionnaire Analysis

Within the ASSET survey, respondents were asked to comment on any aspect of their working conditions where they felt they were disadvantaged in comparison with those on lecturer grades and above. Out of the 493 respondents, 324 were contract research staff. The most common answers related to contractual status (218 responses) but around 67 respondents raised pay as an issue. The majority of responses simply referred to low pay or too little pay. However, some mentioned difficulty progressing up the pay scale associated with short term work or with the status of their position. Less redundancy pay or having to sign waiver clauses to the right to redundancy pay was also raised as an issue. Some also mentioned issues with pensions.

As discussed in the earlier section of this annex, there is wide pay variation amongst PDRS in UK HEIs. In our site visits and questionnaires we asked participants about the importance of pay in their decision to become a postdoctoral researcher. In our contract researcher questionnaire, we asked respondents ‘how important was pay in your decision to take this position in this institution/location’?

- **BBSRC Contract Research Staff and the Importance of Pay**

In total 37 BBSRC researchers replied to this question. The responses were roughly evenly split between those who felt that the salary level was an important factor, and those who felt it was not. 46% (n=17) said the salary was an important or fairly important consideration, and 54% (n=20) said that salary was not an important consideration.

Of the 17 who said salary was an important or fairly important consideration, 53% (n=9) said it was important, whereas 47% (n=8) said it was only of moderate importance. Of the 9 who said salary was important, only one gave any explanation, so it is not possible to draw conclusions on why they answered the question in this way. A few of the 8 who said salary was only of moderate importance explained a little more. In the main the explanation given was either that their salary expectations were modest, or that salary was only one factor among many, for example the following two:

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6. New legislation prevents the use of waiver clauses.
“Reasonably important: if I had been appointed at the bottom of the RA1A scale I would probably have not taken the position”

“It was important, but the project/location was more so”

The 20 who said salary was not an important consideration answered this way mainly for two reasons: first, there was little choice since research salaries are not high and tend to be similar from one institution to another: “Not important. Equally bad everywhere”; and second, their main motivation was to continue their project or continue with research: “I have little choice if I do the work I want to do”.

**ESRC Contract Research Staff and the Importance of Pay**

41 ESRC funded researchers responded to the question on the importance of pay. 56% (n=23) said that the salary was an important or fairly important consideration, and 44% (n=18) said the salary was not an important consideration in their decision to accept the post. So similarly to the BBSRC researchers, the responses were roughly evenly split between those who attached importance to salary levels and those who did not. However, here the slight majority thought that the salary was important.

Of the 23 who said the salary was an important consideration, only 9 pointed to it as very significant:

“Important: wanted to maintain certain standard of living”

“Initially not important (in 2001), but now that I’m about to gain my PhD and have 4 years’ experience as a researcher in the area – I have been working as research officer alongside a part-time PhD - I do not feel my pay level matches my skills and experience, and this will influence my decision whether to remain in academia or not over the next 2 years”

The other 14 said that the salary was only fairly important, in most of these cases, it was one factor in their decision but not the main one:

“The content of the job was the main influence in my decision, but I did note that the salary was very good for the location. As I had to relocate for the position if the salary had been a lot lower then I would have had to reconsider the position”

“Fairly important but not the main factor - in practice the pay is about the same as my last job”

Generally, for those whom salary was not an important factor, the reason given was that job satisfaction was more important:

“Not that important - more concerned with job satisfaction”

“Pay was less important than the opportunity to work abroad, collaborate with my current associates, and gain research experience”

**Postdoctoral Pay: Is this enough? Interview Analysis**

From our interviews during the site visits, some noted how postdoctoral salaries - particularly those between £19k and £23k, and especially when people were working in London - needed to be higher so people could buy houses or start families:

“For the fresh PhD students, [contractual] security is not a problem, they’re used to insecurity anyhow and hopefully they’re not married or if married their partner is working so the security issue is less important than pay. As they get older the security part becomes…well they need more money anyhow because their partner's going to stop working because they’re having children or whatever so they need the money and the lack of security makes it very difficult to plan life as a couple. You don’t know whether in 2 years time you’re going to have to move to the other end of the country so it varies with age and circumstances. As I say early on money is secondary I think, but in the longer term its security plus you need the money” [PG Research, EPSRC, d].

“There’s a point to be made about salaries for junior academics and research fellows, people who are sort of in their mid to late 20's and that is the time in people's lives when they're looking to settle down and find somewhere to live and perhaps start a family and you’re asking them to do that in London on the sorts of salaries that we can offer them, I mean steady on - that’s a problem” [HoS, EPSRC, d].
Many also talked about the general cost of living here in the UK - and particularly London. This was also an issue for postgraduates too:

“I guess what I’m getting isn’t that bad, but when you just compare the standard of living to what it is in Australia, you’re not earning that much more, like everything costs double but your wage isn’t” (PD, Biological Sciences, Leeds)

“Obviously there’s a financial problem and that relates not just purely to shortage areas but there’s really one that is specific to London and the South East and the cost of living because students are prepared to live together in a slum. As a post-doc you hope that you don’t have to and eventually you might even get married and have a mortgage so finance becomes important and that’s a major issue for us in London and I’d say probably most people in the south east would tell you the same thing” (Vice Provost Research, UCL).

“I’ve heard people complain that the cost of living is high in other cities but I can’t imagine it’s as bad as in London” (HoS, UCL, Electrical Engineering)

ATTITUDES TOWARDS MARKET PAY IN UK HEIS

From the site visits, it was abundantly clear that universities were ‘warming’ to the idea of market pay and most respondents thought it was ‘inevitable’:

“We do not have a stated policy [but] we do work very flexibly within the salary ranges recognising that it is very difficult to make a quality appointment at the lower end of the scale particularly when the standard your setting in person specification for the job mean really that you have to be looking at a higher grade and higher points within the grades...The scene is set at Cardiff already because we very much operate that way in senior level and professorial appointments where certain disciplines are attracting the bigger salaries, you know, that’s life and I think it is fine as long as the criteria for applying are seen to be consistent and fair and justifiable then I don’t really think it will be a problem at all” [HR, EPSRC, b]

“We are looking at market supplements for particular disciplines and sub-disciplines...By and large there’s an acceptance that if market factors mean you have to pay more to particular groups within particular areas, people just accept it” [HR, ESRC, c]

“We don’t do it [pay market supplements] for contract research staff” [HR, ESRC, c]

“Most people accept we are in a market” [HoS, ESRC, b]

“Oh course, engineering academics get paid more than the English professors - not huge differences - but there is no external market for English professors and there’s a plentiful external market for engineers” [PI, EPSRC, d]

“We have to pay the market rate to keep them otherwise we lose them...if we employ someone on a contract research basis we don’t pay what they think they can get elsewhere they will go, and we face continual market pressure to make sure that salaries area in line with expectations of the staff... we play the system very aggressively to make sure these people have a reward” [HoS, ESRC, c]

The implementation of the national pay spine can also be seen as further evidence of both HEFCE’s and the Government’s encouragement of pay variation for HE staff. There is a clear assumption, however, that market pay - and the incentive schemes that may come with it - are for use in high-level academic appointments or high-level ‘research stars’. Because of this assumption, the impact this will have on the recruitment and retention of PDRS is likely to be minor. This is a point echoed in earlier work by Oliver and Ackers (2005), who analysed the HR strategies of 10 leading HEIs:

“The majority of incentive schemes drawn up by the institutions to recruit and retain the best employees such as market supplements and ‘golden hellos’ were targeted at established ‘research stars’ and lecturers. There appeared to be a clear divide between contract research staff on the one hand and established staff on the other creating an apparent policy tension between recruitment and retention targets and improving the employment conditions of contract researchers” (Oliver and Ackers, 2004: 4)
HOW MUCH PAY MAKES A DIFFERENCE FOR POSTGRADUATES AND POSTDOCTORAL RESEARCHERS?

One of the questions asked within the ASSET survey could shed some light on pay as a factor in people's choice to move into employment within HE. Question 9 of the Survey asked respondents who had previously worked in Industry or in Research Institutes (excluding any employment while studying), what contributed to their choice to work in HE. Respondents were offered 22 factors to choose from as well as the option to choose ‘other’ and to state factors other than those listed within the question. Better pay was not commonly cited as a reason to work in higher education. Only 6.8% of respondents to question 9 selected better pay as a contributory factor to their choice to work in higher education. The most commonly selected factor was academic freedom, selected by 66.6% of respondents. Other commonly selected factors include the research area (44.6%), enjoy teaching (39.8%) and more flexible hours (37.7%). Other factors that were not commonly cited as contributing to the choice to work in higher education include better childcare facilities (0.7%), lower pace of work (2.4%) and inequality of opportunity in other places of work (research institute – 1.4% and industry – 2.9%). Of the respondents to question 9, 167 named factors other than those listed that contributed to their choice. Few of these factors related to pay, however one respondent discussed a drop in their pay stating “drop in pay, more hours etc compared to industry”. Some respondents (3) mentioned a dislike for making money or profit stating “a desire to “know” my subject area rather than make money”, “distaste for galloping greed” and “Dislike profit-driven ethos of industrial sector” however this does not necessarily indicate a willingness to accept lower levels of pay.

This section considers how much pay makes a difference. The Roberts scheme provides an average enhancement of £2,000 on PhD stipends and £4,000 on post-doctoral salaries. The question is, is this enough to make a difference and encourage those that might otherwise chose to move into another sector or abroad to remain in academic research? The Research Councils approach suggests that there is another question too – whether the enhancement is enough to attract someone to work in a particular way (and get involved in knowledge transfer activities, for example) or to develop their quantitative skills. In answering this question we need to consider the reference group(s) and whether they are comparing themselves to a specific occupational sector at home or abroad or, in a more general sense, comparing living standards against some more general notion of what is reasonable or even attractive.

This annex first looks at the data from our questionnaires with postgraduates, contract research staff and principal investigators. It then critically reflects upon the accounts given in the site visit interviews on how much pay makes a difference.

Are Postgraduates Satisfied with Stipend Levels? Questionnaire Analysis

UK research council funded students reported general satisfaction towards their stipend level in 2005: 15% reported dissatisfaction, 48% were neutral and 52% were satisfied:

Table 3.5 Levels of Stipend Level Satisfaction amongst Postgraduate Survey Respondents

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid very dissatisfied</td>
<td>31</td>
<td>4.0</td>
<td>4.1</td>
</tr>
<tr>
<td>2</td>
<td>82</td>
<td>10.5</td>
<td>10.8</td>
</tr>
<tr>
<td>3</td>
<td>250</td>
<td>31.9</td>
<td>32.8</td>
</tr>
<tr>
<td>4</td>
<td>280</td>
<td>35.8</td>
<td>36.7</td>
</tr>
<tr>
<td>very satisfied</td>
<td>119</td>
<td>15.2</td>
<td>15.6</td>
</tr>
<tr>
<td>Total</td>
<td>762</td>
<td>97.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing</td>
<td>-1</td>
<td>21</td>
<td>2.7</td>
</tr>
<tr>
<td>Total</td>
<td>783</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

As the above table shows, the vast majority of postgraduates surveyed are reasonably satisfied with stipend levels: in the main they are grouped in the middle, with the largest groups 4 and 3. However, more of the PhD students were satisfied than dissatisfied (contrasted with contract researchers, who are discussed below).

Of these 148 respondents who were dissatisfied or very dissatisfied (around 17% of all respondents), 89 gave an explanation as to how much pay would make a difference. The question was asked open-ended and answers fell into the following main groups:
Stipends should be comparable with what they could be earning:
Around 17% of respondents (n=15) suggested that stipends should be comparable to what they could earn as skilled graduates. This varied from an amount around the national average wage or towards the lower end of graduate starting salaries, to the amount that they felt they could be earning. The lowest amount mentioned was £15,000:

“I would like to see the stipend be in line with at least the lower level of income expected after graduation. This is typically around £15,000. It seems unfair that students who choose to continue in education be financially disadvantaged”

The highest amount mentioned was around £30,000:

“It should be equal to an equivalent position in industry, obviously allowing for tax and NI deductions. I could earn £30,000+ (gross) in industry with just my undergraduate degree, so it should at least match this”

Typical amounts mentioned were around £20,000:

“Equivalent to a starting salary for a top-line graduate in the private sector is approx £20k gross”

Stipends should be sufficient to relieve financial pressures:
Around 26% (n=23) of respondents proposed that stipends should be adequate to meet the various financial pressures PhD students may face. Pressures identified included: enough to pay off students debt; enough to live a professional, non-student lifestyle; enough to buy equipment and books; and enough to reduce the need for earning more money from teaching.

Here the amounts mentioned tended to be lower than for those comparing their stipend with what they could be earning, and were typically less than £20,000. The highest figure mentioned was £18-£20,000. Additional amounts on top of the PhD stipend, which was £12,000 in the majority of these cases, were between £1,000 and £5,000 extra:

“I think £15,000 a year should be the minimum paid out. This would facilitate the purchase of equipment, books, and so on in addition to a reasonable lifestyle”

“£2,000 more a year would allow a reasonable standard of living in which you would feel you were a professional or part of the academic community, rather than carrying on a student lifestyle” [current stipend = £10,000]

“An extra £3,000-£4,000 would make a lot of difference. I would not need to teach” [current stipend = £12,000]

Non-UK students should get same as UK students:
11 non-UK students thought that they should receive the same amount as UK students. These issues are discussed in more depth in Annex 4 on Internationalisation.

Increase length of PhD to 4 years (6 responses):
Around 7% of postgraduates in our questionnaire thought that the stipend should be paid for a fourth year.

Studentships should offer other benefits (5 responses):
A further 6% of postgraduates (n=5) noted that studentships should include other contributions such as childcare, pension contributions and paternity leave.

The remainder of respondents stated an amount, but did not give an explanation. The amounts varied between £2,000 and £5,000 extra per year or stipends of between £12,000 and £18,500.

Interestingly, we were also able to chart satisfaction levels with stipend levels. As could be expected, general levels of satisfaction rose with the level of pay. There were however, some people in receipt of higher level stipends who report dissatisfaction with pay. This indicates that satisfaction with pay is relative to individual cases:
Table 3.6: Stipend Level Satisfaction by Actual Stipend Received

<table>
<thead>
<tr>
<th>How satisfied are you with your pay?</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>very dissatisfied</td>
<td>2</td>
</tr>
<tr>
<td>£1-£4,999</td>
<td>.9%</td>
</tr>
<tr>
<td>£5,000-£9,999</td>
<td>2.7%</td>
</tr>
<tr>
<td>£10,000-£11,999</td>
<td>9.5%</td>
</tr>
<tr>
<td>£12,000</td>
<td>76.2%</td>
</tr>
<tr>
<td>£12,001-£12,500</td>
<td>4.0%</td>
</tr>
<tr>
<td>£12,501-£13,999</td>
<td>8.0%</td>
</tr>
<tr>
<td>£14,000</td>
<td>9.5%</td>
</tr>
<tr>
<td>£14,001-£14,999</td>
<td>2.7%</td>
</tr>
<tr>
<td>£15,000</td>
<td>4.8%</td>
</tr>
<tr>
<td>Total %</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
</tr>
</tbody>
</table>

Moreover, we found some evidence to suggest that older PhD researchers are least satisfied with their stipend:

Table 3.7: Stipend Level Satisfaction by Age Group

<table>
<thead>
<tr>
<th>How satisfied are you with your pay?</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>very dissatisfied</td>
<td>2</td>
</tr>
<tr>
<td>Age grouped (small groups)</td>
<td></td>
</tr>
<tr>
<td>21-23</td>
<td>2.7%</td>
</tr>
<tr>
<td>24-25</td>
<td>2.6%</td>
</tr>
<tr>
<td>26-27</td>
<td>2.6%</td>
</tr>
<tr>
<td>28-29</td>
<td>2.7%</td>
</tr>
<tr>
<td>30-34</td>
<td>7.1%</td>
</tr>
<tr>
<td>35-44</td>
<td>12.3%</td>
</tr>
<tr>
<td>=&gt;45</td>
<td>2.1%</td>
</tr>
<tr>
<td>Total</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

Are Contract Researchers Satisfied with Pay? Questionnaire Analysis

The table below indicates the answers the survey generated in response to the question of whether contract research staff were happy with their salary levels. The majority were neither dissatisfied nor satisfied with their salary, although there was higher proportion that were dissatisfied (answers 1 or 2 combined) than satisfied (answers 4 and 5 combined):

Table 3.8: Salary Satisfaction Levels amongst PDRS Survey Respondents

<table>
<thead>
<tr>
<th>Rating 1-5</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 very dissatisfied</td>
<td>21</td>
<td>11.2%</td>
</tr>
<tr>
<td>2</td>
<td>47</td>
<td>25.0%</td>
</tr>
<tr>
<td>3</td>
<td>70</td>
<td>37.3%</td>
</tr>
<tr>
<td>4</td>
<td>39</td>
<td>20.7%</td>
</tr>
<tr>
<td>5 very satisfied</td>
<td>11</td>
<td>5.8%</td>
</tr>
<tr>
<td>188</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

There were 56 clear responses to the question on “how much more (salary) would make a difference?” 57% (n=32) simply stated an amount without further explanation. However, for those who did provide some explanation as to how much more salary would make a difference, responses included:
Salaries should be inline with equivalent professions (33% of respondents): 33% of respondents [n=8] who provided an explanation as to how much more salary would make a difference suggested that their salary should match what they could earn in comparable professions:

“The academic wage should be realigned with other professional wages (e.g. doctors and MPs). As a result contract research staff wages should rise by the same proportion. At the very least the basic salary for a postdoc should be raised to the basic “postdoctoral” salary in the pharmaceutical industry.”

“Well put it this way - I would like my salary to reflect my qualifications, experience and the amount of work I do. My partner is a maths secondary school teacher (2-II degree) and earns £34,000 a year. I have a PhD and don’t get 13 weeks holiday a year and earn £22,500. Postdoc positions are now being advertised for people to start on a minimum of £26,000!”

Salaries should reflect the level of work experience: 29% of respondents who provided an explanation [n=7] argued that salaries should reflect the training and experience some CRS had:

“A starting salary around the £30,000 level would be more reflective of the years of training, education and experience I have developed”

Salaries should be enough to cover living costs: 8% of respondents [n=2] who provided an explanation as to how much salary would make a difference called upon pay to be high enough to at least cover the cost of living here in the UK:

“Probably around extra £5k as this would allow me to get a foot on the property market. If it was easier to find work elsewhere doing the same job I’d be satisfied but there are very few job opportunities outside of NOCS and the Met Office”

Salaries should compensate for the lack of job security: 12% of respondents [n=3] made reference to the lack of job security in CRS positions and noted that salaries should act as a soother to this insecurity:

“Another £5,000? However, it is more the precarious nature of the employment status and contract rather than just the salary that I am dissatisfied with. I could live with the salary if I felt it would be more permanent”

Salaries should be performance-related: Interestingly, 17% of respondents [n=4] who provided an explanation as to how much more salary would make a difference appeared to point towards a system of performance-related pay for CRS:

“Removing the ceiling on each scale to allow progression through scales and points. I have to forgo annual increment because I started on the top of the scale 18 months ago”

“If the minimum post-doc pay was £25k that would make a huge difference. Although I think experience needs to be rewarded to some extent, there should be more focus on paying post-docs according to their actual responsibilities, which are far greater in small labs. I feel that someone such as myself, with lots of responsibilities from the start, and now 2 years in, should be paid £27-28k”

What Amounts Would Make a Difference? Actual amounts mentioned, as can also be seen from some of the quotes above, were all in the bracket of approximately £22,000 to £39,000. The lowest amount actually mentioned was £22,710 and the highest amount mentioned was £39,000 as reasonable contract researcher salaries. Generally, the actual amounts stated were grouped around the £30,000 mark

In summary, most PhD students and contract researchers are neither satisfied or dissatisfied with their pay. However, contract researchers are far more dissatisfied than PhD students. The main issues for PhD students were: (1) that pay should be sufficient to avoid financial hardship; (2) that pay should be comparable to what they could be earning; (3) that non-UK students should not be discriminated against; (4) that the stipend should cover 4 years; and (5) that other benefits, such as pensions and maternity rights, would be more useful. The actual amounts that that would make a difference for PhD students were between £12,000 and £18,500 a year. Contract researchers in the main tended to simply state an amount. The amount that would make a difference to contract researchers was between £23,000 at the lower end and up to £39,000 as a maximum. However, most responses talked of a salary of around £30,000 per annum. The
main issues identified were that salaries should be equivalent to other highly qualified professionals and that they should reflect their experience.

How Much Pay Makes a Difference in Attracting PhD Students: Interview Analysis

The increase in general Research Council stipends to £12,000 was seen as a major step forward and, for the majority of recipients, this was seen to be a reasonable and attractive sum broadly equivalent to a salary of about £20,000. Many students funded by other bodies were receiving less than this although some were on higher stipends (those linked to industrial placements or in professional areas):

“This is already quite a lot of money…[Q: So you are quite satisfied with what you are being paid?] Yes” [PhD, BBSRC, b]

One PhD student felt certain that enhanced stipends would encourage people to remain at university and go on to PhD study:

“I think it definitely does help people to decide to do a PhD. Suppose they have a choice between 19-20k in industry and they really don’t want to go into industry, but 10k for a PhD seems really, really low. They may say, ‘there’s a big difference there, I’ll go for industry’, but if you are looking at 14-15k for a PhD, they might say ‘well, there’s no real difference there’” [PhD, BBSRC, b]

In some cases respondents argued that another couple of thousand would make a difference especially in London but suggested that this might be applied across the board:

“It’d be nice for the level of the stipends to go up, to be honest, but the key thing is that we get more money in altogether” [PG Research, EPSRC, d]

“T would say that the stipend of £15,000 or £16,000 would probably make a difference” [Res Admin, ESRC, b]

There was evidence to suggest that the accumulation of student debt might begin to bite a little on this situation and especially in cases where researchers had less recourse to financial support and/or subsidized student accommodation (which helped a great deal). In such circumstances some researchers said that they would not have embarked on a PhD if the stipend had been any lower than £14,500 as this level at least enabled them to stabilize their financial situation (if not to reduce any debt):

“The only thing that assures me that I’m doing the right thing at the moment by doing a PhD is the fact that I’m not getting further into debt. If I was getting further into debt I would not be here because through my undergraduate studies I owe £12k or £13k so if I knew I was adding to that, there’s no way I’d be here” [PhD(1), EPSRC, b]

“I suppose if you’ve got the student loan there’s a whole load of money you owe it would be quite attractive to then get a job and pay it off but I guess at the time I thought well I’m not going to have to pay it off for the 3 years I’m doing a PhD anyway, and then I can go and get a job afterwards and pay it off” [PhD(1), EPSRC, c]

“I know that the idea of the studentships is to give enough money to live off and it does for me – Cambridge is an inexpensive place - in college I am paying a lot less than in Oxford (she has the offer of a college room for the whole duration of her PhD)” [PhD, BBSRC, a]

The general stipend increase to £12,000 has made less of an impact on the attitudes of mature or career re-entrants:

“If you’re attracting students, then part of me thinks £12k is good but if people have been working it’s not” [Res Adm, ESRC, b]

The increase to £14,500, whilst welcome, is unlikely to have much impact on this group who often face a significant drop in income. Interestingly, one PhD student had moved from outside (£30k a year working as a regional policy officer) to take on doctoral studies. For her, her ODPM/ESRC studentship was the only option since it paid far more than a “normal” studentship:

“I would have thought twice about going for a normal ESRC studentship. I didn’t apply for one of them which I could have done because its two grand less than what I got last year which was about £10,000, which would have looked really low and unappealing to me” [PhD, ESRC, a]
Whilst the increased stipend was welcomed by PhD candidates, it is not clear that they are making an immediate comparison with salaries in others sectors or abroad but rather considering the impact of the stipend level on their ability to manage their financial situation, focus effectively on their research (without the need for a second job, for example) and achieve a reasonable standard of living. Housing costs were a major factor in this regard. PhD candidates with partners and children faced particular difficulties in this respect especially when shared ‘student-style’ accommodation no longer seems acceptable. This depends on the financial stability of their partner of course:

“If I’d not have had enhanced pay, I’d have thought about doing some weekend work” [PhD, BBSRC, b]

“I think the pay is good pay. I have no complaints about pay. I think it depends on your personal circumstances. So with me I have a partner so I’m probably in a better position I don’t think I could support a house on my own so it depends what kind of age you are as well” [PhD, ESRC, c]

Although enhanced stipends might not be sufficient to encourage people to choose the academic sector, relatively small differences might shape the choice of institution resulting in a degree of ‘shopping around’. They might also influence the choice of field:

“I don’t think a couple of thousand would make a huge difference - it may make a difference between whether they go to one place or another, but it’s not enough to sway their career decision” [HoS, ESRC, b]

“I mean obviously if you give them £50,000 a year yes but realistically what you’re going to do is add an extra £1000 a year you might attract students who are already interested in research to go somewhere. There are universities that pinch our students by offering them incentives, they give them an extra £1000 a year or something and we don’t do that here. So I think money like that will have a marginal effect on candidates who already want to do research; I don’t think it will have an enormous effect on attracting the other people into research” [PG Research, EPSRC, c]

“I mean there was one this year, a girl came along to a particular department and said yes, she was apparently absolutely 1st class and she was trying to bump up the salary, she was vying us against other institutions. And we literally just turned round and said “you either want to come here or you don’t”. If it comes down to the fact that I don’t know Kings will pay you £1,000 per year more or Bath or whoever, then great go there. We are not going to give into a lottery” [Res Admin, EPSRC, d]

When invited to comment on how much money would make a real difference to recruitment at doctoral level answers varied enormously. In the broad field of business and economics, the answer was often that a doubling of stipend at least would be required.

“I would have thought to make any significant difference you’d have to double it or it wont make a great deal of difference – to have an impact you’d have to double it and say, how much would a graduate get if they are going into business, what’s their average salary?” [PG Research, ESRC, a]

In relation to IT and computer science, people were also advocating increases to the minimum stipend – but these increases were more moderate:

“I suppose for PhD maybe something like £15k would be perhaps fairly attractive as a stipend for a PhD student. I would imagine that would allow them to live reasonably here” [PI, EPRSC, b]

For engineering fields, again respondents did suggest a rise in stipend levels to attract more (and better) PhD candidates:

“Assuming its tax free, I would say about £15k-£17k, somewhere around there would be about right. [Q: That would make it equivalent to £22k or something like that?] Yes, that would be about right. It wouldn’t be hugely disadvantageous” [PI, EPSRC, d]

However, some people were reluctant to suggest any further increases in stipend levels for fear of the knock-on effect this would have on stipends and salaries across the HE sector:

“If you give them too much then that raises too many expectations later on and then you have that whole knock-on effect all the way through academic salaries” [PI, BBSRC, d]
Against this discussion, it should be noted that many respondents were reluctant to give an amount – and also, perhaps more importantly, the postgraduates we spoke to were, on the whole, more than satisfied with their stipend level. However, from our survey, research supervisors’ perspectives on this question of how much would make a difference are particularly interesting:

Table 3.9: Research Supervisors Responses to What Level Stipends Should Be

<table>
<thead>
<tr>
<th>Amount</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>£25,000 or more</td>
<td>5</td>
<td>2.8%</td>
</tr>
<tr>
<td>£20,000-£24,999</td>
<td>20</td>
<td>11.1%</td>
</tr>
<tr>
<td>£15,000-£19,999</td>
<td>78</td>
<td>43.3%</td>
</tr>
<tr>
<td>£10,000-£14,999</td>
<td>74</td>
<td>41.1%</td>
</tr>
<tr>
<td>Less than £10,000</td>
<td>4</td>
<td>2.2%</td>
</tr>
</tbody>
</table>

How Much Pay Makes a Difference in Attracting PDRS: Interview Analysis

As illustrated earlier, starting salaries for post-doctoral researchers vary enormously and, from our preliminary analysis of the mapping data, there is also some variation in starting salaries within the shortage areas. Many post-docs faced considerable financial difficulties and their decision about whether or not to take a position was often shaped by their perception of whether they could manage financially or not (rather than in direct comparison with other sectors). Whilst pay was not a major factor shaping career decision-making - to the extent that they were specifically looking for high rates on pay - many of the respondents were finding it very difficult to support a reasonable quality of life:

“For me the money, well any more is a bonus and if I wanted to earn millions I would be doing something different…I don’t see how there’s scope for making tons of money in academia” [CRS, ESRC, c]

“It’s not so much about salary…I don’t want children but if I did I wouldn’t be able to manage” [PDRS, BBSRC, a]

“AREA is an expensive place to live. So if I lived somewhere cheaper it would bother me less – houses here are very expensive plus we have to support two households – my husband lives in another city…I have to share and I would like my own place” [PDRS, BBSRC, a]

One respondent argued quite forcefully that the Roberts’ increases were too small to have any impact whatsoever:

“The Roberts money is peanuts. Where there are big issues with recruitment and retention, the money on offer through Roberts is so little as to make no difference at all. Here, where there are key shortage areas, we have worked something out for ourselves. Other departments, where there are fewer problems with recruitment and retention, have offered, for example, accelerated increments that are at least equal to Roberts” [HoS, ESRC, b]

In other cases the impact of the enhancement was closely related to the age and life-course of the individual concerned. This is also true at doctoral level but, as expected, the problem increases at post-doc level:

“For the fresh PhD students, [contractual] security is not a problem, they’re used to insecurity anyhow and hopefully they’re not married or if married their partner is working so the security issue is less important than pay. As they get older the security part becomes…well they need more money anyhow because their partner’s going to stop working because they’re having children or whatever so they need the money and the lack of security makes it very difficult to plan life as a couple. You don’t know whether in 2 years time you’re going to have to move to the other end of the country so it varies with age and circumstances. As I say early on money is secondary I think, but in the longer term its security plus you need the money” [PG Research, EPSRC, d]

“There’s a point to be made about salaries for junior academics and research fellows, people who are sort of in their mid to late 20’s and that is the time in people’s lives when they’re looking to settle down and find somewhere to live and perhaps start a family and you’re asking them to do that in London on the sorts of salaries that we can offer them, I mean steady on - that’s a problem” [HoS, EPSRC, d]
Attitudes towards how much money would make a real difference to the ability to recruit and retain post-docs varied across disciplines. Once again serious pressures were evident in economics and business where salaries in the private sector – and also the US - were considerably higher:

Business - “I think a postdoc salary should be around £27k or £28k for a postdoc starting his career…The starting salary in the US for an academic is about $100,000” [PDRS, ESRC, b]

Physics - “I think something around well £30k would be easier” [PDRS, EPSRC, c]

Engineering - “If it wasn’t to be too disadvantageous it would need to be around £33k-£35k, something like that. [Q: As a starting salary?] Yes” [PI, EPSRC, d]

“I wouldn’t put an absolute figure on it…I think it’s important that the gap between what you can get in the private sector and what you get in the public sector needs to be narrower than it is now” [PI, EPSRC, b]

In some fields very significant increases would be needed to make a big difference:

“We do find it hard to recruit but I can’t tell you if we were advertising at £30,000 instead of £21,000 we would get loads more applicants. I suspect we wouldn’t for the people who we are recruiting are people who are willing to put up with being on short term contracts. By offering more money we might get more applications but I’m not sure we would get more quality applications” [PI, ESRC, c]

Again, the questionnaire responses from principal investigators revealed some interesting suggestions as to what starting salaries should be for PDRS:

Table 3.10: Principal Investigators Responses to What PDRS Starting Salaries Should Be

<table>
<thead>
<tr>
<th>Amount</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>£30,000 or more</td>
<td>16</td>
<td>8.6</td>
</tr>
<tr>
<td>£25,000-£29,999</td>
<td>92</td>
<td>49.7</td>
</tr>
<tr>
<td>£20,000-£24,999</td>
<td>65</td>
<td>35.1</td>
</tr>
<tr>
<td>Less than £20,000</td>
<td>12</td>
<td>6.5</td>
</tr>
</tbody>
</table>

Just under 50% of those we surveyed felt that starting salaries for PDRS should be between £25k-£30k - this is despite current postdoctoral positions being advertised at £19,640 across the UK.

Hard Cash or Salary Points?
Some interviewees stated that merely adding cash lump sums to existing salaries were perhaps not the best method to (re)attract the best PDRS. Instead, they suggested offering salaries that were further up the pay spine:

“It’s difficult to generalise. A significant difference might be 2 or 3 salary points and that’s a useful bargaining point” [Res Admin, EPSRC, b]

“It’s a pain in the neck if they just add an amount – it is better if they enhance it by a point or two pints. The cost of administering it as an addition of a sum through the payroll system negates the whole benefit, not to the individual but to the institution” [Res Admin, BBSRC, a]
INTRODUCTION

Researchers are one of the most geographically mobile occupational groups. Recent studies by the CSLPE have gathered comparative information about the UK’s appeal as a host country for European researchers. This fact sheet brings together some of these findings combined with information gathered in site visits for the RCUK project. The first section profiles the number of international staff and students in the UK then moves on to describe the impact of internationalisation from the perspective of University staff involved in recruitment. The second section relates the perspective of mobile researchers towards salaries and stipends in the UK.

THE PROFILE OF INTERNATIONAL STAFF AND STUDENTS IN THE UK

Research Staff
Staff from abroad form an increasingly important component of the UK academic labour market - according to data from the Higher Education Statistics Agency (HESA), thirty eight per cent of the 22,093 ‘early career’ researchers (those on research-only contracts and in lower research grades) working in English universities in 2002-03 were non-UK nationals whereas only eighteen and a half per cent of staff in all other grades were non-UK nationals (Ackers and Gill, 2005). Analysis by the Association of Union Teachers (AUT) found the majority of non-UK staff are concentrated in the ‘research only’ field whereas the majority of UK staff are in teaching and research positions (Table 4.1). For those employed in research positions they are most likely to be found on fixed term contracts. This is important as research has found “staff on non-permanent contracts are significantly more likely to leave UK HE than their colleagues on permanent ones” (Stevens, 2005, p. 32).

<table>
<thead>
<tr>
<th>Primary Employment Function</th>
<th>Teaching Only</th>
<th>Research Only</th>
<th>Teaching and Research</th>
<th>Total %</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>10.1%</td>
<td>26.2%</td>
<td>63.7%</td>
<td>100%</td>
<td>112,770</td>
</tr>
<tr>
<td>Other EU</td>
<td>7.6%</td>
<td>51.7%</td>
<td>40.7%</td>
<td>100%</td>
<td>12,075</td>
</tr>
<tr>
<td>Not known</td>
<td>30.9%</td>
<td>23.2%</td>
<td>45.9%</td>
<td>100%</td>
<td>6,105</td>
</tr>
<tr>
<td>Other overseas</td>
<td>4.7%</td>
<td>54.4%</td>
<td>40.9%</td>
<td>100%</td>
<td>15,930</td>
</tr>
<tr>
<td>Total %</td>
<td>10.2%</td>
<td>31.2%</td>
<td>58.5%</td>
<td>100%</td>
<td>146,880</td>
</tr>
<tr>
<td>Total</td>
<td>14,940</td>
<td>45,835</td>
<td>86,105</td>
<td>146,880</td>
<td></td>
</tr>
</tbody>
</table>

(Source: Court in Ackers and Gill, 2005)¹

The distribution of early career researchers from abroad is clustered in the UK – overseas staff comprise 31% of the research staff in Yorkshire and Humberside, 41% in the South East and 45% in the East but the reasons for this regional and likely institutional imbalance are still unknown (Adams, et al, 2005). When looking at full time early career research staff there are no obvious differences in pay when taking into account nationality.

Research Council-Funded Staff
In response to a questionnaire directed at contract researchers funded by research councils we received 194 responses. 61% (108) were from the UK, including 2 with dual nationality, and 34% were non-British. The remainder did not answer the nationality question. The non-British contract researchers were split almost equally 48% hailing from EU countries (29) and 52% (31) from outside the EU.

International Student Recruitment
In terms of undergraduate students the majority are still awarded to students hailing from the UK. In 2003-04 260,450 fulltime first degrees were awarded of these 229,250 (88%) were to students whose usual residence

¹ The accuracy of these data is limited by the large number of unknown entries.
prior to study was the UK, 23,645 (9%) were to other EU domiciled and 18,555 (7%) were ‘overseas’ domiciled. Largely, the classifications awarded were similar by domicile although a greater proportion of UK domiciled students achieved upper second degrees (Table 4.2). It can therefore be argued that there are no dramatic differences in quality at this stage of recruitment.

Table 4.2: % Full-Time First Degrees Awarded 2003-04 by Domicile and Classification

<table>
<thead>
<tr>
<th></th>
<th>First class</th>
<th>Upper second</th>
<th>Lower second</th>
<th>Third class/Pass</th>
<th>Unclassified</th>
<th>Total first degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom domiciled</td>
<td>10%</td>
<td>47%</td>
<td>31%</td>
<td>6%</td>
<td>6%</td>
<td>229250</td>
</tr>
<tr>
<td>Other European Union domiciled</td>
<td>11%</td>
<td>38%</td>
<td>33%</td>
<td>10%</td>
<td>8%</td>
<td>12645</td>
</tr>
<tr>
<td>Non-European-Union domiciled</td>
<td>10%</td>
<td>33%</td>
<td>37%</td>
<td>12%</td>
<td>8%</td>
<td>18555</td>
</tr>
</tbody>
</table>

(Source: Adapted from HESA data: http://www.hesa.ac.uk/holisdocs/pubinfo/student/quals0304.htm)

International PhDs

It is apparent that by doctoral studies the UK is in receipt of an increasing number of mobile students. In 2003-04 there were 11,680 full-time PhDs awarded 59% of which were to students who were domiciled in the UK prior to their studies, 13% were to students domiciled elsewhere in the EU before their PhD and 28% to non-EU domiciled students. That is nearly two-fifths of PhDs were awarded to students who did not reside in the UK prior to commencing their PhD studies. The questionnaire for PhD students with research council funding and a maintenance grant meant that most non-UK candidates would be ineligible. However, some PhDs with fees’ only awards did complete the survey. From this we can deduce the trend that non-UK students who are undertaking a PhD in the UK are often older than their UK counterparts:

Table 4.3: Age of UK PhD candidates by Nationality Group

<table>
<thead>
<tr>
<th>Age</th>
<th>Nationality Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UK</td>
</tr>
<tr>
<td>21-23</td>
<td>18.8%</td>
</tr>
<tr>
<td>24-25</td>
<td>29.5%</td>
</tr>
<tr>
<td>26-27</td>
<td>15.3%</td>
</tr>
<tr>
<td>28-29</td>
<td>9.8%</td>
</tr>
<tr>
<td>30-34</td>
<td>9.3%</td>
</tr>
<tr>
<td>35-44</td>
<td>10.7%</td>
</tr>
<tr>
<td>&gt;=45</td>
<td>6.4%</td>
</tr>
<tr>
<td>Total %</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>782</td>
</tr>
</tbody>
</table>

The next section goes onto consider the consequences of this substantial level of recruitment from overseas for UK academia.

The Implications of Increased Overseas Recruitment

Reasons for the upturn in recruitment of research staff and students to the UK from overseas are complex and are a result of a number of different push and pull factors. There is conflicting evidence on what this means for the UK labour market. The Roberts’ Review acknowledged that the UK was to a certain extent experiencing a ‘brain drain’ and that there are ‘undoubtedly a number of examples of top UK scientists and engineers being tempted to work abroad by better pay and conditions, particularly UK academics tempted by larger salaries overseas.’ (Roberts 2002 p.185) However they argue that this is compensated for by the number of incoming scientists and engineers concluding that in fact the UK was in a position of ‘brain gain’. More recently a study by the Higher Education Policy Institute (Bekhradnia and Sastry, 2005) found that the UK was on balance benefitting from international mobility and that mobility occurred most amongst post-doctoral staff. The aim of

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2 Although domicile does not map directly to nationality it is a compulsory field for which HESA data is gathered unlike nationality.

3 This is likely to be due to longer periods of study in other countries for undergraduate degrees.
this study, in trying to measure the balance between outbound and incoming staff, was useful. However, in
tracking peoples movements through HESA data, publications and ‘Who’s Who’ there are some difficulties with
the method. The first of these is whether it captures the full picture of mobility – the emphasis on ‘who’s who’ and
the ‘publications record of highly cited staff’ concentrates the study around a relatively elite and prominent group
of researchers. This was however complemented with the publications record of a larger sample of staff in
1994,1999 and 2004. There are some problems with using this data along with the HESA data on staff
movements. Firstly, it may fail to pick up shorter moves. Perhaps more problematic is whether it can effectively
track peoples movements - the reliance on publications may mean it misses moves outside academia or the
true location of people. It is interesting however that they find a link between the mobility of UK academics and
excellence ‘Mobility is associated with high quality: not all migrants are high quality - a significant proportion who
migrate do not subsequently pursue an academic career – but a high proportion of those who become senior
academics have migrated at some point, usually early in their careers.’ (Bekhradnia and Sastry, 2005, p.12)

Other evidence points to the fact the UK benefits as a magnet to migrant researchers. A recent report into the
impact of the European Commission’s Marie Curie Fellowship Scheme found the UK proved to be the most
popular destination in Europe, hosting 28% of all Marie Curie fellowships under Framework Programmes four
and five (Van de Sande et al. 2005) Taking into account the number of outbound fellows in relation to the
number of inbound fellows this resulted in a net gain of 2714 researchers to the UK from this scheme alone
(Ackers, 2005). Similarly it is the most popular European host for Erasmus students (Maiworm and Teichler,
1997). Whilst there is consensus that it is important and beneficial for the UK to be an attractive destination to
migrant researchers this does also raise some concerns. The first of these is whether the number of researchers
coming to the UK somehow making up for a deficit in domestic appointments?

Mills et al (2006, forthcoming) found that a third of all appointments in the social sciences are now non-UK
nationals with marked variation by discipline; in economics two-thirds of appointments were of non-UK nationals
and only 40% of appointees in economics completed their highest degree in the UK (compared to 38% in the
US). The figure for ‘social statistics’ is even higher at 70%. As evidence shows that many researchers later
return to their country of origin or move elsewhere abroad this could potentially create a future deficit in
academic staff (Van de Sande et al, 2005; Bekhradnia and Sastry, 2005, Metcalf, 2005).

The perspectives of staff involved in recruitment towards the growth in international applications and
appointments follows.

**GENERAL TREND FOR MOBILITY IN HE**

Evidence from site visits at Universities (Bekhradnia and Sastry, 2005) and a review of universities Human
Resource strategies (Adams et al, 2005) shows a growing awareness about the need to recruit in a global and
competitive market. Partially, the removal of red-tape has encouraged applications from researchers from the
EU and, increasingly, from other countries. Staff involved in recruitment told us that it is now usual to have more
applications from overseas than the UK:

“I think the labour market is international really for us. We tend to, we don’t worry about where they’re
from, we worry about what they’ve got and what they can bring” (Research Manager, ESRC area)

“Having people come here is standard but it’s always been that way, for a lot of years it’s always been the
case that people wanted to go abroad to do their post docs” (HoS, EPSRC)

**INTERNATIONAL RECRUITMENT POSES SPECIFIC CONCERNS**

This increase in applicants from overseas is not problem-free though. There were some specific concerns -
firstly, that posts were attracting blanket applications and secondly, the difficulty in assessing the quality of some
of these applications:

“Unsolicited applications are fine but they are very often from people from outside the UK …well it’s very
difficult for us to know whether they’re any good or not so the vast majority of them just disappear but
when you do have a post getting a really good post-doc is not trivial” [HoS, EPSRC]

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4 This fellowship scheme requires the recipient of the grant to move to another European country
“Although I received a number of applications most were from under-qualified UK applicants or overseas applicants. Many overseas applications were from unsuitable candidates with no specific experience in a relevant field” [PI, BBSRC, Questionnaire]

“I had 100+ application for 2 recent jobs, 3 from the UK (the UK ones were very poor e.g. no PhD or PhD in random area), the rest from India, China etc. We spend days doing interviews on the phone” [PI, EPSRC, Questionnaire]

**INTERNATIONAL RECRUITMENT IS PLUGGING A HOLE IN THE ABILITY TO RECRUIT DOMESTICALLY**

Alongside this more general trend for an international academic labour market go problems in recruiting ‘home’ candidates into research positions. This suggests that to some extent overseas recruitment is making up for a lack of interest, or indeed skills, in the UK itself. The questionnaire distributed to research council supervisors and principal investigators found that from 206 responses 17% of supervisors reported difficulties in filling a research council funded doctoral position in the last two years. When asked ‘Have you recently experienced any difficulties in recruiting suitable research assistants to work on Research Council funded projects?’ of the 235 Principal investigators who responded, 35% answered yes. Recruitment problems, particularly those stemming from the domestic pool of talent drying up or choosing alternatives seemed prevalent across the board:

“We don’t have problems getting candidates come forward – it’s getting good quality candidates. I can usually fill a position - I’ve stopped now just filling positions – if I can’t get a good enough candidate I won’t fill it now…Its people who can do the job – when I started 25 years ago most people with a first would think about doing a PhD – they don’t now so I regularly get applications from people with 2.2s who I can’t take” [PI, BBSRC]

“It’s all very well having home applicants – but if they are crap…Then you are wasting your time – once bitten twice shy – I’ve had one bad experience and I’m not going to take the best of a bad lot again” [PI, BBSRC]

“My most recent EPSRC grant (starting 3 years ago, student now writing up), we ended up funding an overseas student (non EU) with the University making up the fee difference, because we were unable to attract a suitably qualified UK based PhD student” [PI, EPSRC, Questionnaire]

Problems in recruitment seem particularly acute in some areas:

“The problem is [in management and business] we don’t get UK students wanting to do PhDs in sufficient numbers - and I guess you need to say of sufficient quality too” [PG Research, ESRC].

“High quality research associates with a strong training in social research methods and theory are actually quite rare. We attract large numbers of applicants, but appointable candidates are fewer in number” [PI, ESRC]

“Most of our appointments [economics] in the past 8 years have been non-UK citizens. So what’s manifestly clear is that the UK base of economists must be in decline because we’re not getting applications from UK citizens. We’re not getting many applicants from UK-trained people, we’re appointing people who have been trained in the States or Europe…at all levels…It’s a struggle all the time” [HoS, ESRC]

“The science is good and we investigators try very, very hard, but the cost of living, debt and ‘real world’ issues are against us. I estimate 80%-90% of PhDs we train at the moment are non-UK” [Supervisor, Computer Science, Questionnaire].

There are also mixed opinions about recruiting PhD students from abroad. Opinions are often influenced by the fact that EU and overseas students are usually ineligible for research council maintenance awards:

“[Q: And the quality issues in relation to overseas students?] I don’t even look at them to be honest because financially its not possible – they always think the university can find the money – they say
they’ve got the money to come and then spend the whole time expecting the university to bail them out – I won’t look unless they come with a cheque for £80k” [PI, BBSRC]

“We have a large number relatively speaking of good students from Europe who want to come. We have various mechanisms of paying for them…, the school funds 3 or 4 studentships every year on basically the same deal as the research councils without the strings so they are popular and filled very quickly. Of course the strings are changing because RCUK has now said that if a student has been educated here they can apply on the same grounds as our home students” [PG Research, BBSRC]

For supervisors and staff, the explanation for why it is harder to recruit UK nationals is linked to the more general problems around pay and attractiveness of research careers.

RETENTION OR RETURN OF INTERNATIONAL STUDENTS AND STAFF?

As the introduction shows there are a significant number of researchers in the UK from abroad. Even though the quality of these staff and students is not being called into question, and is often highly praised, the ability to later retain them in the UK academic system is frequently seen as an emergent problem:

“I know the overseas ones you see just return home” [PG Research, EPSRC]

“Most graduate students in my field leave; they either go back to their home country and do whatever or the British students go into banking…The majority of people in my field don’t [stay on] and it also raises problems then if you get a grant for a post-doc it’s been years since I’ve been able to get a British person to take a job like that no matter what the pay is. My last one was Russian and I’ve had a succession of post-docs from different countries; it’s been years since I’ve had a post-doc from Britain' [PG Research, EPSRC]

“A lot of them [overseas students] are financed by people back home - governments or educational systems - so a lot of them have to go back” [PG Research, ESRC]

“There was a big report done in America on the renewal of the profession and the regeneration of people like ourselves - there is a crunch coming along if we don’t do something. It’s global – we are not attracting UK or home students to renew the profession. It’s OK to say ‘yes, attract them from the EU and elsewhere’ but there are issues about the ability to do that and the composition of the faculty – if it was everyone from overseas, OK, that’s very international but its like saying we can do without the manufacturing industry in the UK. Surely we need to be able to renew this important area from within our own resources – it’s a key issue…seeing that we are not renewing the profession and replacing ourselves. It would be foolish to rely totally on people from overseas – it will feed through in terms of research performance, many return home. It’s complex and we have got to be careful and it takes us into an area where people think you are saying home people are better” [PG Research, ESRC]

A recent study by the National Institute of Economic and Social Research, found evidence to support this:

Academics from other EU (and EEA) countries, Australia, New Zealand and the US are more likely to leave UK HE than UK (and other foreign) academics. Our results support the hypothesis that these staff enter academic employment in the UK after completing a higher degree in the UK, but ultimately intend to return to their home country. If this is the case, such staff will only represent a short-term solution for lower-level jobs in UK higher education unless they can be persuaded to remain in the UK (Stevens, 2005, p31-32)

KEY FINDING

This study has found that there is some concern amongst the academic community that substantial, and increasing, recruitment from overseas may potentially lead to a problem in the sustainability of UK academic staffing. There is also concern that much as the UK gains from international recruitment it is in part making up for a deficit of ‘home’ students continuing into doctoral or postdoctoral positions.
This section places UK stipends and salaries in relation to elsewhere internationally. This study was not equipped to undertake a systematic review of international pay. However, this is a very important area as studies have shown that decision making by migrant researchers is often influenced by pay (along with other factors such as language, access to excellent groups, family and culture c.f. Van de Sande et al, 2005). Metcalf et al. (2005) draw together some of the evidence about UK pay compared to that available in other countries. Provan (2001, quoted in Metcalf, 2005) conducted a comparison of academic salaries in Australia, Canada, UK, New Zealand, South Africa and Singapore and found that the UK came off poorly against the countries apart from Canada.

In comparing salaries internationally it is important to relate them to the cost of living within a country. This analysis is shown for leading research countries in the table below, with actual salaries being contrasted with the OECD purchasing power parity in the ‘real’ columns. Here we can see the UK is favourable compared to the other countries of study apart from the US. When looking at these figures it should be remembered that the group with which this study is concerned, doctoral and contract researchers’ earnings are generally substantially lower than other academic staff. Additionally, we know that researchers, particularly those from abroad are likely to work in capital cities – see Appendix 1 for a representation of the number of Marie Curie post-doctoral fellowships in the UK where clustering in some of the most expensive areas of the UK the ‘golden triangle’ of London, Oxford and Cambridge and Edinburgh and Glasgow is evident.

<table>
<thead>
<tr>
<th>Gross Salary</th>
<th>Nominal Total</th>
<th>Nominal Men</th>
<th>Nominal Women</th>
<th>Real Total</th>
<th>Real Men</th>
<th>Real Women</th>
<th>$W_e/W_o$</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>31,640</td>
<td>35,775</td>
<td>25,886</td>
<td>31,959</td>
<td>36,136</td>
<td>26,147</td>
<td>1.30</td>
</tr>
<tr>
<td>UK</td>
<td>29,183</td>
<td>31,210</td>
<td>25,964</td>
<td>29,183</td>
<td>31,210</td>
<td>25,964</td>
<td>1.60</td>
</tr>
<tr>
<td>Denmark</td>
<td>34,518</td>
<td>37,932</td>
<td>29,871</td>
<td>29,123</td>
<td>32,004</td>
<td>25,203</td>
<td>1.20</td>
</tr>
<tr>
<td>Canada*</td>
<td>24,458</td>
<td>26,319</td>
<td>21,485</td>
<td>28,860</td>
<td>31,056</td>
<td>25,352</td>
<td>1.22</td>
</tr>
<tr>
<td>Japan</td>
<td>34,358</td>
<td></td>
<td></td>
<td>25,079</td>
<td>†</td>
<td>†</td>
<td>1.31</td>
</tr>
<tr>
<td>Sweden</td>
<td>25,015</td>
<td>26,677</td>
<td>22,708</td>
<td>22,756</td>
<td>24,268</td>
<td>20,657</td>
<td>1.13</td>
</tr>
<tr>
<td>Australia</td>
<td>18,068</td>
<td>19,655</td>
<td>15,847</td>
<td>24,751</td>
<td>26,924</td>
<td>21,708</td>
<td>1.44</td>
</tr>
<tr>
<td>NZ</td>
<td>17,925</td>
<td>20,393</td>
<td>15,279</td>
<td>22,777</td>
<td>25,912</td>
<td>19,414</td>
<td>1.32</td>
</tr>
</tbody>
</table>

*Net Salary*  
| UK           | 19,605        | 21,088      | 17,475        | 19,605     | 21,088  | 17,475    | 1.59      |
| France       | 16,749        | 18,237      | 14,542        | 19,475     | 21,206  | 16,909    | 1.44      |

- Nominal salaries are converted using the current exchange rates  
- Data for Canada, France, UK and US relate to both teaching and research staff in higher education. In the other countries they refer to university lecturers and teaching staff only.  
- Real salaries are converted using PPP rates from OECD Main Economic Indicators  
- Final column ($W_e/W_o$) refers to wages of academics relative to rest of economy.  
- † Data not available.

(Source: Metcalf, et al., 2005, p.71)

The following sections describe, from the perspective of doctoral and contract researchers how important pay is in the decision to come to the UK and on their future plans.

**DOCTORAL RESEARCHERS: COMPARATIVE STIPEND LEVELS**

Internationally there is concern that low levels of stipends are off-putting to students considering undertaking a higher degree. Funding opportunities vary widely, and indeed the ability to augment stipends depends not only on contractual status (whether doctoral candidates are viewed as students or employees) but on whether other
funds are available either from supplementary paid work (either linked to studies such as a graduate teaching assistantship or on unrelated part-time employment) or from loans or familial support. Commentators often speak about the unattractive image of life during the doctoral period:

All over the world, graduate students stretch their take-home pay to cover daily living expenses. To make ends meet, students forgo or share cars, limit shopping to sales and take advantage of free campus activities. The low income leaves little room for savings or an extravagant lifestyle. While college friends may go on to high-paying 'real' jobs, graduate students face five years or more of living hand to mouth (Powell, 2004)

For prospective doctoral researchers finding financial support for fees—and where possible a maintenance award—can be crucial in decisions about when, and where, to undertake a PhD. In summary, EU students are now eligible for fees only awards from UK research councils unless they have home student status. This means that EU (and overseas students) have found a variety of means to support both their fees and maintenance, although availability of funding is somewhat limited and haphazard. Examples of funding that researchers have used to fund PhDs in the UK are: institutional studentships offered as overseas awards, Marie Curie individual PhD awards and more recently visits to host training sites, and studentships linked to UK research council projects. While some studentships were relatively straightforward, others had been funded by a variety of sources and finances had been much harder to organize. An Irish doctoral candidate interviewed for the RCUK project who was being funded by an EPSRC project studentship underlined how important funding was for him coming to the UK,

“I was quite happy to get it because it gave me maintenance so I was quite happy to get the funding. If I hadn’t have got it I would have stayed in Ireland…I wouldn’t have taken it if I couldn’t have got the funding” [PhD, EPSRC]

However, for another Irish doctoral candidate who completed the questionnaire the experience of financing her PhD had been far different:

“The topic looked really interesting and it is linked to an excellent longitudinal study so it was a great opportunity. I was awarded an ESRC CASE Scholarship. However, I had not been resident in UK more than 3 years at the time (I am an Irish citizen resident in UK since September 2002) so they would not give me the maintenance award, they only pay my fees… I have had to work two part-time jobs while doing my PhD full-time in order to get by financially and it is still a struggle…I receive £1,200 from non-academic partner. I am very frustrated with the fact that the ESRC will not pay my maintenance award and feel it is unfair given freedom of movement within Ireland and the UK and EU member states” [PhD, ESRC, Questionnaire]

In a project about science mobility from Eastern to Western Europe (MOBEX2) significant differences are apparent in the level of stipends between countries, which cannot be explained by cost of living alone (Table 5). Doctoral researchers have told us that in some European countries the level of stipend is simply not enough to live on, meaning that they have to find other sources of income which has implications for the length of time it takes to complete a doctorate. Our research has found that for some prospective European students, PhDs with maintenance awards are very attractive in the UK as they are perceived to be relatively well-funded covering basic living costs.

Table 4.5: Typical PhD Scholarship Levels in the MOBEX Case Study Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Typical Scholarship per month</th>
<th>€ per month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>250 leva</td>
<td>€127.00 per month</td>
</tr>
<tr>
<td>UK</td>
<td>£1000 sterling</td>
<td>€1481.00 per month</td>
</tr>
<tr>
<td>Germany</td>
<td>€975.00</td>
<td>€975.00 per month</td>
</tr>
</tbody>
</table>

5 The situation of fees and eligibility to maintenance awards for foreign doctoral candidates in the UK is available as a separate fact sheet from the CSLPE
6 There are a significant amount of organisations that fund doctoral research in Germany and there does not seem to be an agreed level of stipend. The pay for doctoral researcher employed by institutions is comparable to the scholarship level
Poland | 1500PLN | €400 per month

**KEY FINDING**
The importance of stipends with maintenance to decisions about whether to pursue doctoral research in the UK and indeed at all.

**COMPARISON OF PAY**

As with doctoral candidates, research staff in some countries have to undertake multiple employments in order to make ends meet. In the empirical work for the RCUK project we did not find any cases where post-doctoral researchers were doing more than one job because of poor salary. Some post-doctoral researchers did do more than one job, but it was often related work which was strategically being undertaken to broaden their skills and experience. This does not mean that researchers were not being stretched; it just signifies that salaries met basic needs. This does not mean, however, that mobile researchers working in the UK think post-doctoral pay is good - rather they often set it against what they would command elsewhere (along with what the job would offer) and as such the UK can seem comparatively better as the following quotes highlight:

“For me coming from Central European bloc it is definitely much more attractive offer than back at home but again I’m prepared to live over cheap supermarket and I don’t find buying discounted stuff in an evening from the shop repulsive to do. So I can live half price and I enjoy what I do so it might be unfair comparison towards people who want to have normal lives in a western context. I do understand concerns of English born people who find the career not rewarding enough or not permanent enough as you are changing your job every 2 to 3 years. Being re-assessed with potential of losing your job is definitely not a good thing. Although I have been going around industry jobs as well and actually research seems to be much safer occupation than a company job where there is absolutely no job security” [MOBEX2, M11UK, PDRA]

“[Q: Okay, when you decided to take these positions how important was pay in terms of deciding to stay within academic research?] It was quite important but I was comparing it to France so it was always quite advantageous anyway, London is a bit more expensive so as long as it was reasonable because as I had a lot of experience I was hoping that they won’t put me at the start of the scale which they didn’t but it was reasonable; it was not over my experience” [PDRA, EPSRC].

“I wouldn’t go back to Italy at all just to go back there and have a job that doesn't allow me to buy a house or a decent life there because I think I’ve got used to a good standard now and I won't go back” [MOBEX, PhD Student and Research Assistant]

However, this process can work in two ways and the UK can look unfavourable in other contexts. Although wages are variable in the US it is often held up as the gold standard for researchers pay and conditions. In the site visits staff told us that they were conscious that they were competing with more ‘attractive’ options in the US:

“We face competition from the US departments that can offer very good graduate stipends to students” [HoS, ESRC]

“A few people I know have gone to the States for the money which is a lot better there and people think of you differently there - the PhD is more respected - and its cheaper to live there” [PhD, BBSRC]

“[Q: Have you lost any researchers to the States?] We don’t regard it as lost - we regard it as career development for them so I’ve exported loads of research fellows to the US. I would like people to do what’s best for them and those deals are better deals and that’s why the US get lots of highly qualified people because they pay for them” [PI, EPSRC]

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7 Information on scholarship levels in Poland also showed varying figures which ranged from as little as just over 1000PLN per month to nearly 3000PLN per month.
“There does appear to be a particular ‘threat’ from the USA in relation to our Business graduates. AACSB International - the Association to Advance Collegiate School of Business based in Florida - has instigated a strong marketing strategy aimed at luring graduates to AACSB-credited institutions to take on doctoral studies. In their material, they highlight the financial benefits of a research career within US institutions – with a starting salary for a PhD often exceeding $100,000 in the U.S. and can range higher, depending on your speciality” [PG Research, ESRC]

KEY FINDING
Migrant researchers often compare salary to that which they could command elsewhere but this does not always place the UK in a position of competitive advantage

HIGHER PAY AND RETENTION

An interesting issue - relevant to UK research council’s enhanced stipends and salaries schemes - is that the relatively good conditions of pay under the Marie Curie fellowship scheme can often lead to the prospects of a drop in salary afterwards if the researcher should return home:

“[Referring to Poland] After the PhD you can be employed by the university but no it’s really impossible, even if you are very good because they don’t have enough money to pay the salary and this is my big problem because of course I keep thinking that can go into the industry and that is another option but I love working with young people and I like writing papers and I like doing experiments” [IMPAFEL, Marie Curie Fellow]

“[Q: What’s your salary going to be like when you get back to Spain? Is it going to be as good as this fellowship?] No, working hours I will work the same. In personal terms of course because I’m married and my wife is there so that’s a huge difference. Now I think my salary with the Marie Curie fellowship here is higher than the salary I will have when I go back which makes no sense in my opinion” [IMPAFEL, Marie Curie Fellow]

This is a difficult issue to manage as it can lead to some discontent. Not only for the researchers themselves but also for employers and research managers who may be unable to match or meet future expectations. This issue is further developed in the main RCUK report.

KEY FINDING
Enhanced pay on some existing schemes has led to subsequent pay drops – this can pose difficulties for researchers and employers.

POSTDOCTORAL RESEARCHERS’ SATISFACTION WITH PAY IN THE UK

To get a general impression of what researchers think about pay levels in the UK former Marie Curie fellows now working in UK universities were asked to rate how sufficient their income was for the cost of the country they were living in – the majority felt that their pay was either adequate or good across all age groups (Table 4.6 below). The highest proportion of researchers that rated their pay as below adequate were aged 20-29.8

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8 It is interesting to note that from the total sample of former Marie Curie Fellows across Europe, those now working for large industry or international organisations reported the most satisfaction with the adequacy of their wages (Van de Sande, Ackers and Gill, 2005)
Table 4.6: Attitudes towards Pay from Former Marie Curie Fellows now working in UK Universities

<table>
<thead>
<tr>
<th>Former fellows Age-Group</th>
<th>Do you consider your income sufficient for the UK?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>insufficient</td>
</tr>
<tr>
<td>20-29</td>
<td>11%</td>
</tr>
<tr>
<td>30-34</td>
<td>6%</td>
</tr>
<tr>
<td>35-39</td>
<td>3%</td>
</tr>
<tr>
<td>40-44</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
</tbody>
</table>

**KEY FINDING**
Former Marie Curie Fellows now working in UK universities generally rated their pay as adequate or good. Overall, researchers aged between 20 and 29 were least satisfied by their salary.

**CONCLUSIONS**

The evidence from this study leads us to agree with the sentiments of Bekhradnia and Sastry, ‘Overall the growing significance of international mobility poses opportunities and challenges for academic research in the UK.’ (Bekhradnia and Sastry, 2005, p.12)

The UK has been and continues to be a very attractive host country to potential migrant researchers for a number of reasons including: academic reputation, number of opportunities for work and study, language and by providing an EU alternative to the US as a native English speaking country. Staff involved in recruitment tell us that they are increasingly receiving applications from all over the globe – although this is sometimes putting more pressure on employers in their recruitment practices and the ability to evaluate overseas applications. Principal investigators and supervisors, particularly in some disciplines, believe that international recruitment is making up for a shortfall in UK applicants to doctoral or research positions and in some ways is acting as a crutch for UK academic research. The reasons why UK students are not continuing into research careers can be explained in part by pay and the relative attractiveness of research careers (see main report and annex on pay). International research staff often look favourably upon UK pay - as it is often better that that which they would receive in their own country or alternatively they see their stay in the UK as short-term and thus are acceptant of pay that just meets their basic needs.

The fact that the UK attracts so many international applicants does not mean policy-makers can afford to be complacent, as the Roberts Review cautions: ‘The flow of scientists and engineers from overseas is an elastic source of labour; migrant labour flows are highly sensitive to changes in demand for certain professions.’ (Roberts, 2002, p.186). Particularly in areas where international recruitment is extremely high it is important to plan for a sustainable workforce in the future. This is an extremely complex area and there are no easy solutions, however, a more detailed review of the recruitment, whereabouts and career paths of international researchers would go some way to helping us understand better the role of this important group of researchers.

**REFERENCES**


Abstract
Recent years have witnessed increasing concern over the emergence of recruitment and retention problems in science careers. This has led to a research focus on the factors affecting the career decision-making in order to improve the attractiveness of scientific research. One key factor that emerges, at least in the UK context, is the prevalence of contractual insecurity. The category ‘fixed-term contract’ masks a significant and increasing degree of diversity. In practice it is the quality of positions and the place of them in the career trajectory that shapes impact. In some situations, fixed-term positions operate as a highly attractive ‘career boosting platform’ enabling scientists to focus on research and generate significant research outputs. The growth in fixed-term positions has also developed to be an important indicator of the vitality and competitiveness of research. Over the years various ‘soft law’ measures have been introduced in the UK in response to the growth in fixed-term contracts largely focused on improving career guidance and the quality of positions rather than their temporality. The implementation of the European Directive on Fixed-term Work (Council Directive 99/70/EC), represents a significant development with important implications both for the quality of positions and their longevity. Arguably the Directive seeks to reconcile the twin objectives of promoting security and flexibility or ‘flexicurity’.

Drawing on a cluster of recent, mainly policy oriented studies; this paper considers the relative merits and disadvantages of the use of fixed-term contracts and the potential impact of the new legislation on the ability to attract and retain high quality researchers and sustain a vibrant and competitive research system. It concludes that fixed-term contracts are not of themselves the ‘problem’ but rather the extent to which the type of posts offered on a fixed-term basis within this context can contribute to a predictable and ‘plannable’ career path.

Note: This article does not represent the opinion of the individual funding bodies mentioned in is not responsible for any use that might be made of data appearing therein

Introduction: the promise of flexicurity
From the 1980s there has been a significant increase in the proportion of positions in UK universities offered on a temporary or fixed-term basis. It is clear both from our research with scientists across a number of studies (1) and parallel work by other commentators that the growth in this form of employment is a critical factor shaping attitudes towards entering and remaining within academic research. In practice, however, contractual status is only one of a wide range of inter-related variables affecting the career decision–making of researchers. Furthermore, the category of ‘contract researcher’ or post-doc masks an enormous and increasing diversity of situations.

The level of diversity in the positions themselves and the complexity of the relationship between contractual status and other dynamics of career decision making suggest the need for an equally subtle and sensitive policy response. According to the European Commission, the Fixed-term Directive ‘implies a major re-think of the structure and future of postdoctoral fellowships and contract research in the different European countries’ (Commission Communication, ‘Researchers in the European Research Area: One Profession, Multiple Careers’, Brussels, COM 2003).

In the UK, where fixed-term work had not previously been regulated, the transposition of the Directive into UK law via the Fixed-term Employees (Prevention of Less Favourable Treatment) Regulations (2002) has introduced a limitation on the use of successive contracts (McColgan, 2003, :199). According to the UK legislation (a) if an employee is employed on a fixed-term contract that has previously been renewed or (b) the
The fixed-term legislation sets out the general principles and minimum requirements for fixed-term employment contracts and relationships. Its purpose is both to improve the quality of fixed-term work by ensuring the application of the principle of non-discrimination and also to establish a framework to prevent abuse arising from the use of successive fixed-term employment contracts.

At face value, the legislation embodies the European Union’s specific approach to employment law and its attempt to reconcile the twin objectives of promoting security and flexibility. The Directive describes the objective as ‘increasing the employment intensiveness of growth, in particular by a more flexible organisation of work in a way that fulfils both the wishes of employees and the requirements of competition’ (para 5). The concept of ‘flexicurity’ has been used for some time now to describe this approach to employment law and policy. For Fredman, the ambitious goal of seeking to maximise both flexibility and security in employment to deliver ‘the best of both worlds’ has eluded policy makers. In practice, she argues, ‘the real life experience is very different. Flexibility proceeds apace, but security remains a rhetorical gesture.’ (2004: 299). For Barnard too, the rhetoric of flexibility has been used as a smoke screen to conceal the progressive reduction in employment protection enabling employers to ‘vary labour inputs according to fluctuation in demand’ (2000: 198). In principle, at least, the Fixed-Term provisions and the initial policy response to them on the part of UK universities indicates a more complex scenario with many institutions contemplating serious policy shifts in response both to the non-discrimination clause and the issue of permanency.

The Fixed-Term provisions apply across all employment sectors although some flexibility in the manner in which the legal measures are introduced is envisaged to take account of the ‘needs of specific sectors and/or categories of workers.’ (2). In the light of the specific characteristics of employment in the UK university sector and the increasing diversity in the quality of fixed-term positions, this paper considers the potential impact of this new ‘generic’ legislation, insensitive as it is to the nuance of specific employment contexts, on research careers and the UK research system. Understanding the impact of any form of legislative intervention demands attention to context. Labour markets are highly diverse and the quality and role of fixed-term contracts varies enormously in different employment sectors. In this paper we examine the role of fixed-term contracts in the specific case of academic science careers. Science careers can be distinguished from other career areas in many respects. To name a few, they require a very high level of specialist skill; they are relatively poorly remunerated; they demand high levels of mobility (at inter-institutional or international level) and they permit a high level of autonomy within an increasingly output-oriented promotions system. Institutional contexts also vary. The new legislation bites on typically very large and complex, hierarchical, institutions shaping employment relationships. Although the employee has a contract with the university, as employer, in practice many other intermediaries exist. In such situations, as Fredman suggests, the employment function is fragmented; the ‘personal and bilateral view of the contractual relationship is outdated and artificial’ (p.311).

In a university context it is difficult to characterise employment relationships (and responsibilities or obligations) as existing in a simple linear fashion between someone on a fixed-term contract and the employing institution (the University). A whole series of relationships exist with different bodies depending on the specific organisational structure. In practice the historical approach to mentoring and supervision now reinforced by the implications of financial devolution and full economic costing place a great deal of emphasis on more local and personal relationships between the supervisor or grant holder (PI) and the contract researcher. Both of these parties are in fact employees seeking to progress in an academic career negotiating common, if at times contradictory, performance criteria. Indeed, if we consider the European Court’s definition of worker as someone who ‘performs services for and under the direction of another person for which he receives remuneration’ (3) it is clear that this definition best describes the relationship that exists between a PI and a contract researcher. Although nominally an employee of the University, the PI is primarily responsible for generating the external income that underwrites the contract researcher’s salary and the researcher works under the immediate direction of the PI. To the extent that reciprocity and responsibility exists, for practical purposes it does so at this level. A respondent to our most recent research project (4) ‘AIRR’ describes the situation within their institution

The trouble is that the place where the decisions are made is right down at the departmental level and at a research group level and there first of all you don’t have that financial flow and what you’re looking for is someone with very specific skills for that one purpose
In that context, we are not talking about combining ‘flexibility at the level of the firm with security for workers’ but rather managing a range of actors and a complex set of interdependencies and mutual obligations. Rather than assuming a polarity of interests then (with the PI or employer exclusively interested in ‘flexibility’ and the contract researcher exclusively interested in ‘security’) the remainder of the paper considers the relationship between flexibility and security from the perspective of researchers and the research system. It opens with a discussion of the increase in the prevalence and diversity of positions.

### The prevalence of fixed-term contracts and increasing diversity of positions

Many, but not all, of the positions from which an ‘early career’ researcher may access an academic career will involve at least a period of time on a fixed or temporary contract. In an increasing number of situations researchers will find themselves negotiating various forms of teaching-intense contracts either as graduate teaching assistants, hourly paid lecturers, technicians, demonstrators or on fixed-term teaching fellowships and lectureships. In other situations, particularly but not exclusively in the sciences, the career will take the form of a fixed-term research-intensive position including doctoral scholarships, contract research positions and research fellowships. What these positions have in common is the fixed-term nature of the employment. But this is where the commonalities end. Assessing the impact of these positions on the ability to attract and retain high quality researchers demands attention to a diversity of situations and their respective merits and limitations. In particular, we need to consider the extent to which fixed-term positions promote or restrict excellence through their relationship with mobility; their impact on workload and the ability to focus on research; on the autonomy and status of researchers and on the degree of flexibility and incentives in the research system as a whole.

Despite considerable overall growth in employment in the UK academic sector, there has been a **relative decline** in the proportion of permanent academic positions (the overwhelming majority of which can be described as ‘lectureships’). Bryson describes the growth in fixed-term appointments as a ‘major feature of academic employment in the UK’ (2004: 188). The proportion of staff on fixed-term contracts varies significantly by discipline, sector and employment function. Employment status is closely linked to employment function. Table 1 shows the concentration of fixed-term appointments in research-only functions. This area of employment has witnessed marked increases in the last decade. The number of academics employed on a research-only basis rose by 24 percent between 1995/6 and 2002/3 (Court, 2004). The overwhelming majority (93 percent) of these positions are now of a fixed-term nature. This rise in the number of contract research positions has led one author to describe the situation as ‘a monster out of control’ (Balter, 1999).

### [INSERT TABLE 1 ABOUT HERE]

As Table 2 illustrates the concentration of fixed-term positions in research-intensive posts maps onto marked disciplinary diversity with particularly high levels evident in the natural sciences and biology:

### [INSERT TABLE 2 ABOUT HERE]

The use of fixed-term contracts also shows significant **institutional** variation. Of particular interest is the very clear relationship between research esteem or intensity and the proportion of staff on fixed-term contracts (Table 3). Research intense institutions have the largest share of staff on fixed-term contracts. In these institutions the overwhelming majority of positions are research-intense. Less research-intensive institutions (including the new universities) have markedly fewer fixed-term positions and, where they do exist, these are more likely to be temporary lectureships (combining research and teaching):

### [INSERT TABLE 3 ABOUT HERE]

Responses to the expansion in student numbers have increased both the number of permanent academic staff and the use of temporary lectureships, teaching fellowships and casual teaching-only contracts. Despite the diversity in these new forms of employment, the Research Assessment Exercise (RAE) has increased the emphasis on research output in recruitment practices, promotion and individual career progression. This emphasis has, in turn, stimulated further expansion to support research growth. On the one hand, it has increased the demand for teaching cover for those staff taking sabbaticals or study leave and to ‘buy-in’ teaching replacement for staff working on externally funded research projects and fellowships. On the other, it has increased demand for research-only positions to work on externally funded projects. The changes described above are systemic but the quality of fixed-term positions varies across disciplines and institutions. In practice,
the growth in fixed-term positions can be loosely grouped into three main types; namely contact research positions; research fellowships and teaching-only positions (6).

**Contract research positions and ‘post-docs’**
Perceived skills shortages in science and engineering has focused the attention of UK science policy on the specific situation of contract research staff. Contract research positions are typically generated through externally funded research projects. In many situations, a PI, usually a permanent member of academic staff (indeed this is a requirement of the majority of research councils) will have applied for project funding prior to the appointment and will then advertise a fixed-term position to support a particular component of the work. In other cases, the PI may name a specific researcher in an application or apply in conjunction with a named researcher as co-applicant. These different approaches shape the quality of the position (see below).
Entry to a contract research position might be prior to, during or following a doctoral degree (when such positions are generally referred to in the natural sciences as ‘post-docs’). Recent years have seen a significant growth in these kinds of positions, largely in response to funding pressures and the RAE. Singer (2004: 232) describes the ‘smouldering postdoc problem’ in the US as a ‘systems problem which has evolved over time but without any planning’ and questions ‘how well the current situation serves science and the education of new generations of scientists’. The UK’s Research Careers Initiative makes very similar reference to the unplanned nature of these changes suggesting that ‘neither funders nor employers set out to create the current widespread pattern of contract research’ (RCI, Careers Management Working Group, 1998: 2).

**Research fellowships**
Research fellowships can be distinguished from contract research positions to the extent that the incumbent typically manages their own project (7). Research fellowships have been specifically encouraged at institutional and national level and are recognised as a highly prestigious and privileged pathway into a research career, combining a period of concentrated research activity with a higher level of autonomy. Once again, they are more common in the natural sciences but the model is being transposed elsewhere. The Concordat recognises fellowships rather than contract research positions as the principle route into more permanent jobs:

Research fellowships offer a good stepping-stone, after an initial period of postdoctoral work, to a more permanent academic post or a research post, which may be in academia, industry, commerce, or the wider public sector. (The Committee of Vice-Chancellors and Principals, 1996: para. 30),

Research fellowships are funded by a variety of bodies including the European Commission (under the Marie Curie Fellowship scheme) and the Wellcome Trust. The Roberts Review (Roberts, 2002) also supported the development of an ‘Academic Fellowship Scheme’ designed to address the career progression of contract research staff. This has resulted in the creation of 1,000 new academic fellowships over 5 years. This scheme, together with a range of other similar initiatives supported by various funding bodies and by some institutions themselves, represents the development of a more prestigious and privileged ‘fast track’ into permanent and, in some cases, senior, academic positions.

**Teaching-intensive positions**
Pressures to expand teaching and increase the research productivity of existing lecturing staff (through sabbaticals, study leave and research ‘buy-outs’) have spawned a growth in teaching-intense positions. It is also interesting to note that a 1993 White Paper advocated greater use of teaching cover as a means to reduce the number of contract researchers through PIs working on their own research contracts (Chancellor of the Duchy of Lancaster, 1993: 64). These may be casual or hourly paid positions which people access after completing their undergraduate or Masters Degree, or during or after their doctorate. One variant of this can be seen in the growth in graduate teaching assistant (GTA) positions, where teaching is combined with doctoral research (8). This group also includes temporary lectureships and teaching fellowships. It is very important not to confuse the balance of work-load in these positions with the career intentions of the incumbent. Many of these people identify themselves as researchers and have plans to progress in a research career. In practice, the emphasis on teaching in their contracts may restrict the amount of time they can devote to their research.

It is clear from this discussion that the nature of positions varies considerably and that the category ‘fixed-term staff’ masks important diversity in the quality of positions and their role in the career trajectory. The following section considers the relative attraction of these positions from the perspective of the actors involved.
The ‘risks’: status and insecurity

Notwithstanding the potential benefits of temporary research-only positions, for many researchers the insecurity associated with such positions is an important factor reducing the attractiveness of research careers. A recent report by EUROCADRES illustrates these concerns:

Ensuring continuity in career paths is a crucial point in developing the attractiveness of research careers. It is absolutely necessary to counteract the development in most European countries, of uncoordinated short-term and fixed-term research contracts in the first years of activity (2004: 3).

A survey of academic researchers in Scotland concluded that, whilst the majority of researchers found academic research intellectually rewarding, the uncertainty associated with fixed-term contracts presented a barrier to job satisfaction (Warwick Institute for Employment Research, 1999). In a further survey, around a quarter of HE institutions identified the fixed-term nature of research positions as an important factor shaping their ability to recruit and retain academic staff (Thewlis, 2003: 62). These findings certainly echo the concerns of many of our own respondents (Ackers, 2003; 2005).

From the perspective of researchers there are two key areas of concern. Both of these relate to aspects of ‘status’. The first group of issues concern the relationship between temporary contracts and personal social status or quality of life. Contractual insecurity generates personal financial instability, limiting both access to credit (and mortgage finance in particular) and entitlement to employment-related benefits (such as pensions and forms of leave entitlement). Academic positions are not highly remunerated and evidence suggests that, to some degree, the greater level of social protection afforded by permanent academic positions partially compensates for lower levels of real pay (9). The following comments by two of our MOBISC respondents are typical:

The problem is that if you want to have a family, to buy a house and to do all these things you have to ask the bank, then what security do you give to the bank? You have to give a permanent contract.

You can’t buy a house, you don’t know...[the permanent position] really gave me huge peace of mind in terms of I feel secure, I feel much more secure. I feel I can sort of plan my life a bit more.

The second group of concerns reflects the ‘Cinderella’ status that many contract researchers experience within the employing institution. Researchers commonly identify examples of differential treatment which apparently contradict the Concordat (The Committee of Vice-Chancellors and Principals, 1996), the European Charter for Researchers (Commission Recommendation of 11 March 2005) and the principle of non-discrimination enshrined in the European Commission’s Directive. This, often institutionalised, inferior status may take various forms and affect the researcher both psychologically (in terms of work satisfaction and identity) and in terms of their ability to work effectively and generate career enhancing outputs. Contract researchers often experience differential treatment in the following areas:

- Accommodation and access to facilities;
- General inclusion, participation and integration within the life of parent departments.
- Access to training budgets, conference funding and related occupational ‘perks’.
- Representation on email networks, websites and publicity material.
- Opportunities for promotion and progression (and the pay linked to these)

Research has shown that differential treatment in these respects has implications for the morale, efficiency and occupational identity of fixed-term employees. Allen-Collinson’s (2004) study of social science researchers found that symbolic as well as material indicators of inferior status had impacted on feelings of value at work. Thus exclusion from social events or the lack of a staff mail tray served to marginalise fixed-term employees. They also found evidence of a reluctance on the part of permanent staff to engage intellectually and socially with contract researchers due to their temporary status. Isolation from the wider academic community precludes access to useful information, networks and experiences. The following MOBISC respondent, a researcher ‘stuck’ in a teaching-intense position, describes his situation as having more in common with a doctoral candidate on a scholarship:

At this moment I’m also teaching, but...I don’t belong to the board I’m just with a contract as a Teacher Assistant. It’s a contract renewed every year and at this time it’s not even full time … so I don’t belong to the board. So my situation remains with a scholarship status, basically (10).
Such findings were associated with frustration, demoralization and a lack of commitment to the organization. Kidd (2006) argues that individuals' experiences of institutional marginalization encourage them to develop a professional commitment to a discipline or area of study rather than to their employing organization. Allen-Collinson identifies inferior accommodation as ‘perhaps the most potent symbolic and material indicator’ of inferior status (2004: 320). Researchers on temporary contracts are often allocated inferior accommodation, sometimes in a peripheral location and typically experience a much higher rate of ‘multi-occupancy’ if they have any dedicated accommodation at all. They may also have limited access to telephones and other forms of communication. In one case, a senior manager refused to identify research-only staff on temporary contracts on the departmental website on the grounds that doing so would ‘clutter up the website with marginal helpers’. Clearly denying early career researchers access to such forms of representation restricts their ability to network effectively and develop their personal academic profile.

Contract researchers often have more limited access to resources connected with training and staff development. Although the Research Careers Initiative has focused on the development of specific [generic] training courses targeted at contract research staff, (11) access to mainstream training and staff development resources is often patchy. Most institutions hold budgets for training including not only courses but access to forms of study leave and funds to support conference participation. Decisions about the level and allocation of these forms of funding are often devolved to resource centres. In many cases, contract research staff do not have full access to these resources. Booth et al (2002) suggest that this situation reflects implicit assumptions about commitment and longevity made by employers, in relation to fixed-term employees, which lead to a lower investment in their ‘human capital.’

A specific ‘occupation perk’ which has developed in recent years and constitutes a very valuable resource in terms of career progression concerns the incentives for members of academic staff to register for a doctorate. In some institutions this might take the form of fees-waivers and reduced working hours to support staff engaged in a conventional doctorate or, more recently, specific support for staff to undertake a PhD by publication. Although practices vary, these opportunities are typically not open to contract researchers. It remains to be seen whether such practices stand up to the requirements of the new legislation.

The serial quality of fixed-term positions

The implications of being employed as an academic on a temporary basis in the HE sector must be considered in the context of career paths. If a researcher has followed a linear career path through higher education they are likely to spend three to five years studying for an undergraduate degree, possibly a further year studying for a Masters level qualification (12) and then a minimum of three years studying for a PhD. Many researchers will be in their early thirties by the time they complete their doctorates. According to Bebbington, the average age of completion of doctorates in the UK was 33.2 years for males and 38.3 years for females (2001: 10). Thus, while researchers graduating from a doctorate, and particularly female graduates, may be defined as ‘junior’ in terms of their academic career, the majority will be developing complex personal lives, building partnerships, starting families and assuming other responsibilities. At the same time their status as ‘student’ will have precluded many of them from accruing entitlement to contributory benefits. Whilst the prospect of one or perhaps two temporary positions, at this point in their lives, may be viewed with cautious optimism (if it gives them access to prime research groups, facilities or research time and the opportunities for accelerated career progression) the serial nature of many situations and the mobility this implies, at both national and international scale, acts as a serious deterrent to many prospective researchers (and women in particular). A respondent in our AIRR study describes the career path in his discipline

To become a lecturer you’ve usually got to have done at least a 3 years post-doc plus, have a fellowship which is another 5 years; so you’re 8 years down the line (and you’re the equivalent of a top lecturer) by the time you get a permanent post.

The response to fixed-term contracts does not derive in any simple fashion from the short term nature of any specific post, but rather their place in the longer term career path. Of particular concern is the position of those contract researchers who have experienced serial temporary contracts over many years. Rothwell describes these ‘career post-docs’ or ‘bench scientists’ as people who ‘move from one short-term contract to another, sometimes into middle age, with little or no security’ (2002: 74). The rise in the proportion of staff in contract research positions, according to the AUT, undermines the perception that such positions form a ‘stepping stone’ to a permanent academic job (2002). The Athena Survey of Science Engineering and Technology in Higher Education (2004) provides evidence that large proportions of contract researchers are aged over 36. Table 4 shows that over 41 percent of respondents to that survey were over 36 years
One of our MOBISC respondents was aged 58 and had made multiple moves between several European countries, on various postdoctoral research contracts. Although he had moved many times he had never had a permanent job. He had endured periods of unemployment and attributed the failure of his first marriage to the pressure to move as a result of contractual insecurity. As he put it, ‘I’ve always been on temporary contracts, all my life’.

Where one or two temporary positions in different contexts may represent an important and indeed career boosting means of gaining new knowledge, contacts and experience without committing the kind of institutional responsibility and engagement associated with permanent posts, career paths characterised by a series of temporary contracts with little prospect of a permanent position create a very different dynamic. The following respondent within the pay project (AIRR) draws attention to a specific ‘Catch 22’ facing scientists who seek to progress along a contract research trajectory but effectively price themselves out of a job:

It’s so much cheaper to get a 2nd time post-doc. I don’t see myself getting another grant unless it is a really big project where they need someone with experience to run it. It was already difficult on this grant but it was technically quite demanding and required a lot of experience so it couldn’t have been done by someone who had just got their PhD and we had a lot of preliminary results showing we could do this – you’d have to make a strong case.

The issue of pay reflects the wider systemic nature of research funding and the difficulty PIs find in costing research staff into competitive projects at a higher level. Indeed a Research Careers Initiative report noted that grant applicants and contract researchers appeared to be unaware of provision that had been made for the Research Councils to consider funding unnamed contract staff at higher spine points (Research Careers Initiative, 1998: 6). Our interviews with scientists as part of our current work on academic pay reveal similar examples suggesting that this is a very common experience linking contractual insecurity with pay to reduce quite significantly the attractiveness of academic research careers. Indeed, many respondents talk of how, in the private sector, contractual security is often associated with much higher rates of pay as a form of ‘compensation’ (13).

The above respondent’s point about experience is also important. Many scientists refer to the in-built limitations of contract research posts that do not permit the post-holder to either apply for funding in their own right or to supervise doctoral candidates limiting their opportunities to secure permanent academic positions and gain the credit for their own endeavours.

The ‘opportunities’: a ‘career boosting platform’?
The willingness of career entrants to ‘tolerate’ contractual insecurity reflects not only the length of contract but also the potential that specific positions offer them as a form of personal investment in terms of research experience and productivity. Fixed-term positions may play a very important role in the development of a researcher’s career trajectory and research portfolio and should not be considered as inherently negative or exploitative. We have already described the range of positions. Researchers on fixed-term teaching-intensive positions are probably in the weakest position although the access to teaching experience that such positions provide may make them attractive at some point in the career path. Contract researchers employed to work on externally-funded research projects find themselves in a diversity of situations. The length of contracts will vary enormously and so too will the nature of the work. Very often PIs will have requested funding to provide research assistance for a specific component of the overall project, often with aspects of data collection and analysis and the researcher will be employed for that phase of the project. The opportunity to play a role in project design and definition and, critically, in project writing-up and dissemination in such situations may be seriously limited. The contract researcher may play the role of a ‘dutiful data gatherer’ with limited opportunity to exercise autonomy (in research terms) and publish the results. To a large extent this reflects the nature of research funding and not simply the attitude of principal investigators (although this will of course vary). In practice it is difficult to secure external funding for long enough to support research assistants in the final stages of research projects. In other situations, a research assistant may have established a relationship with the PI prior to project commencement and may have played a significant role in project definition and design. They may have been named in the proposal. In such situations their level of autonomy and the credit they can draw from the work could be much greater.

Research fellowships typically offer the most privileged fixed-term contexts often enabling the post-holder to define their own project, undertake independent research and publish their own results. They are often held for
longer durations (3-5 years) and increasingly lead into longer term positions. Importantly they carry a certain inherent prestige.

One of the key benefits associated with fixed-term research positions and fellowships in particular, which does not apply to teaching-intense positions, lies in the opportunities they offer for researchers to focus on their research and avoid the kinds of multi-tasking that characterises junior lectureships. In these situations fixed-term positions offer researchers the opportunity to generate the kind of CV enhancing research outputs which are privileged in terms of academic appointments and progression. As part of our work with Marie Curie Fellows, researchers were invited to identify the main impact of their fellowship (Van de Sande, Ackers and Gill, 2005). The following statements were typical:

The possibility of dedicating 100 percent of your time to research after writing the PhD had a huge impact on my research profile and expertise.

Having a 2 years full-time research position immediately after my PhD allows for many publications. Without [fellowships] much of very valuable work would get lost since people would need to take up teaching positions.

The ability to do research without being bogged down by lots of teaching and other duties.

Linked to this ability to focus on research outputs, fixed-term research-only positions and the mobility associated with them are recognised by researchers as providing access to key research centres, research ‘stars’ and academic networks. The value attached to accessing centres of excellence and exercising autonomy in research are evident in the following two Marie Curie fellows’ comments:

It gave me access to an institution with the highest reputation. This has dramatically changed my career prospects.

Independence and autonomy: it is a good chance to go away from your thesis supervisor and start to be a proper scientist.

The experience gained and networks established in the process of moving between research institutions and supervisors is central to the process of knowledge generation and transfer. The Marie Curie fellowship scheme offers particular, international, opportunities in this respect as fellows are able to select their favored host institution from across Europe and beyond. After mobility (which is a specific feature of the scheme requiring fellows to make an international move), the most important benefit of the fellowship, according to the fellows, lay in the access to academic networks. Over 76 percent of former Marie Curie fellows said that their fellowship resulted in the development of networks that were influential in shaping their career progression. The ‘main impact’ of the fellowship was described by two ex-fellows as follows:

Developing a European wide network of research contacts at an early stage of one's academic career.

The possibility to make connections with people in other institutions, and to increase the probability to be successful in finding a job also in a foreign country.

Of course the level of flexibility associated with mobility and the opportunities it represents might be experienced differently by employers and grant holders. On the one hand, the volume of temporary contracts and the openness associated with the UK system represents an important means of drawing in ‘new blood’ and ideas. Just as early career researchers seek to attach themselves to prestigious supervisors and research groups, established researchers and groups seek out the best researchers. Flexibility in this important sense optimizes the 'matching’ process drawing human capital and research infrastructure together to form centres or peaks of excellence (Van de Sande, Ackers and Gill, 2005).

The ‘opportunities’ include the flexibility associated with these positions. PIs are usually working under very tight deadlines and specific competitive budgetary limitations. The ability to engage the ‘best’ person, with the most appropriate skills, for the right post as and when they are needed is of critical importance to the success of research projects. It enables PIs to match skills to positions effectively in areas of research that often demand very specific forms of expertise. It also enables them to draw in new blood from other institutions and from abroad injecting new ideas and enthusiasm into research groups. The value of international exchange and knowledge transfer was raised repeatedly by supervisors in the course of the Marie Curie Impact Assessment.
Linked to this issue of excellence and competition, the use of fixed-term contracts provides a critical mechanism for dealing with poor performance and reducing risk. In these circumstances an ‘unofficial’ approach to poor performance has developed, it is relatively easy for the PI to refuse to renew the contract or to make the decision not to name that particular researcher in a subsequent application (14). Once staff are made permanent, universities are notoriously weak at dealing with poor performance (at least once probation criteria have been realised) and it is very rare indeed for a permanent member of staff to lose their position on the grounds of poor performance. Analysis of institutional human resource strategies as part of our research for HEFCE identified the management of poor performance as a critical issue facing many universities.

The level of circulation and relative openness of the UK system lies at the core of its research success and to a large extent reflects the growth in contract research positions and the relatively lower level of employment stagnation and ‘position-blocking’ witnessed in other countries. It is interesting to note that HEIs in other countries are advocating the increased use of fixed-term positions as a means of overcoming patronage and increasing circulation. The rector of the University of Tartu refers to the success of this policy in Estonia ‘in introducing dynamism and competition into a previously rigid and stagnating system’ (15). A Bulgarian professor interviewed as part of our research on brain drain post-enlargement (MOBEX2 project) similarly referred to the need to reduce the amount of ‘dead wood’ in the Bulgarian system, where academics all hold permanent contracts, in order to inject new blood and incentives into the research system.

Linked to this issue of mobility and directly concerned with the goal of attracting the ‘best’ young talent in an open and meritocratic system is the issue of internationalization. The Roberts Review acknowledged the important relationship between fixed-term contracts and mobility arguing that, ‘The national and international mobility encouraged by the range of short term positions on offer facilitates cross-fertilization of ideas and the development of innovative approaches and team working skills’. (2002: 146)

The pressure to reduce the proportion of fixed-term posts raises two concerns. Firstly, it might increase the risks associated with mobility (at national and international level) restricting circulation and resulting in a more static labour force. Secondly, it might create a more ‘closed’ national labour market reducing the attractiveness of the UK to foreign researchers.

We have already noted the importance of mobility to career progression, particularly in science careers where international mobility is a ‘normal’ expectation (Ackers and Gill, 2005). Rothwell (2002: 75) underlines the importance of mobility in her guide to career progression in science:

Great emphasis is now placed on varied experiences in science – variations in labs, projects, techniques, location and collaborations. This often means that a period in another lab, another country and on another project will help your career.

The emphasis on the ‘expectation of mobility’ shows marked disciplinary variation but is generally on the increase. From an international perspective, the UK already lags behind many other countries in this respect. Developments in European research policy under the ERA will place an increasing emphasis on the value of mobility at all levels – international, inter-institutional, inter-sectoral and inter-disciplinary. It is important that any changes to the structure of research careers in the UK do not dampen mobility in general.

In addition to the general benefits of circulation to knowledge generation and exchange, the UK relies increasingly and markedly upon foreign researchers, particularly to fill research-only positions (Ackers and Gill 2005). Any policy seeking to improve the security of existing researchers must take into account the potential consequences for international recruitment. The relative attractiveness of the UK in the global academic market depends on a number of factors. These include its international reputation. UK institutions and, in particular, its centres of excellence continue to act as a magnet to foreign researchers. The attraction of such institutions does not simply reflect research excellence, however, but the relationship between this and the relative openness, fluidity and transparency of recruitment. In the early stage of research careers, the UK is perceived to be a country with a large number of positions which are accessible via open and transparent competition. This view is echoed by Balter (1999: 2), who describes the UK as ‘a postdoc paradise’. This derives from and supports a high degree of circulation. The international character of its centres of excellence is also an important draw to foreign researchers who interpret this both as evidence of circulation and excellence but also as a positive multicultural environment in which to work and live.

In this context, the measures developing in response to the fixed-term legislation pose a degree of ‘risk’. Proposals to reduce the number of positions involving fixed-term contracts coupled with measures to promote continuity of contract through the use of ‘bridging’ and re-deployment mechanisms will undoubtedly reduce the overall number of positions and the level of circulation. They may also have an impact on the nature of
recruitment processes which may be interpreted as subverting the principles of transparency and merit. As such, they may contravene the European Commission’s Charter and Code of Conduct for the recruitment of researchers which specifically refers to the importance of encouraging greater transparency, openness and equality in recruitment and selection (2005/251/EC, Annex 1, Section 2).

By definition, these measures, if they bite at all, may encourage a more in-house or ‘closed’ approach to recruitment which may have consequences in terms of the proportion of new blood coming into the system and, importantly the perception of the openness of the UK to foreign researchers. The extent to which this perception maps onto reality and reduces the emphasis on merit or performance in recruitment will also depend on whether the increased security that such measures aim to achieve generates difficulties in terms of how institutions handle poor performance. The debate about contractual insecurity cannot be seen in isolation from these wider debates around excellence and reputation.

On the other hand, the very same flexibility makes it difficult for many PIs to retain their best researchers and continue to benefit from the social investment they embody. The problems of staff leaving prematurely as researchers are lured by new opportunities or forced to search out new contracts before their positions come to an end compounds the problem of dealing with high turnover. Thewlis (2003) suggests that fixed-term contracts reduce researchers’ productivity leading them to invest time in finding further employment rather than focusing on their current work (p.62). They may also be distracted by the need to continually prepare and submit new proposals ‘squeezing’ or ‘stealing’ time from existing projects (Allen-Collinson, 2004: 323).

Conclusions and policy implications
This paper has described the increasing prevalence of fixed-term contracts in the UK academic system and especially in research-only positions. It has also shown the diversity in the ‘quality’ of these positions. It is clear from our research that individuals do not make career decisions on the basis of their current or next position but rather make an informed view based on their perception of the advantages and disadvantages of alternative career paths. Many early career researchers are prepared to tolerate very low rates of pay and/or contractual insecurity in the short term in order to achieve a level of personal investment for the future. Such positions often enable people to manage their workload effectively in order to maximise their profile and also to gain experience through mobility. The ability to tolerate such situations is of course not random but shaped by personal and family circumstances. The prospect of taking one or possibly two fixed-term research-only contracts is not a critical factor shaping attitudes towards research careers for the majority. The ‘problem’ arises when individuals are faced with the uncertain prospect of on-going insecurity coupled with limited opportunities for increased pay and autonomy (due to the nature of research funding). The quality of posts is also a serious concern. Staff on fixed-term contracts are frequently treated as marginal, second class, citizens in UK universities. Their permanent academic peers and senior managers often equate their fixed-term status with commitment and are reluctant to invest scarce resources in training and staff development. They are typically offered inferior accommodation, have more limited access to facilities and are denied the opportunity to integrate fully in academic life and, importantly, to progress. From a policy perspective, the non-discrimination principle enshrined in the Fixed-term Employees (Prevention of Less Favourable Treatment) Regulations (2002) represents a powerful vehicle to augment existing ‘soft law’ approaches such as the Concordat and the Researcher’s Charter. This is because the law has placed upon the universities, as the employers of fixed term workers, the responsibility of dealing with the issue of unequal treatment. The risk of litigation finally provides a tangible incentive to act.

There can be no justification for the inferior treatment of staff in terms of accommodation, representation and integration within parent departments or from research and staff development opportunities. Mechanisms should also be in place to ensure that staff in contract research positions can ‘progress’ and realize the same kind of salary enhancement as their peers. This might mean some changes to research council and funding body rules governing the status of PIs so that staff on fixed-term contracts can apply for funding in their own right (this is already the case with some research councils but not others). It might also imply a more explicit encouragement on the part of the funding bodies to supporting the salaries of more experienced researchers in funding applications so that high quality researchers are not effectively ‘priced’ out of applications (16).

That said, the potential impact of the new legislation, in terms of the pressure to reduce the number of fixed-term opportunities and transfer existing positions onto HE-style permanent contracts could have some adverse consequences for the supply and quality of career entrants. When viewed in the specific context of research careers, the simple notion of a bilateral and static contradiction between the demand for security on the part of ‘employees’ and flexibility on the part of ‘the firm’ appears something of a caricature. In some contexts, the flexibility inherent in the UK contract research system delivers important benefits to would-be early career
researchers seeking entry to the research system and a level of agency in terms of accessing different resources and building their personal research profile.

The growth in the use of fixed-term research contracts in the UK is part and parcel of the UK’s research reputation and success and its attractiveness to prospective researchers. Relatively speaking it results in a higher volume of positions and greater levels of circulation leaving the initial tier of the system (i.e. early career positions) more ‘open’ and competitive. We have already noted the direct relationship that exists between research intensity and the proportion of staff on fixed-term contracts. Recent research in the US shows a marked decline in the proportion of postdoc positions funded through more traditional fellowships with virtually all recent growth arising from income generation; by 2001, 80 percent of post-docs in the US were funded by research grants (Singer, 2004). Similar trends in the UK are indicated by the increasing proportion of contract researchers employed in the most research intense institutions. This income and the employment opportunities it creates for early career researchers is a direct function of the success of principal investigators in winning research contracts. Research is highly specialist and constantly evolving. Circulation provides a way of supporting the effective ‘matching’ of human capital and infrastructure, over time and space, as new research agenda emerge in a fast-moving competitive global environment. It is also directly linked to the high level of internationalisation which makes the UK so attractive to researchers from abroad (Ackers and Gill, 2005). Many countries view the UK with some envy seeking to replicate its system through the introduction of measures to increase the volume and openness of positions, promote circulation, attract researchers from abroad and reduce ‘position-blocking’ and employment stagnation.

On the other hand, high levels of circulation also imply risks both to the post-holder and the PI and institution. In many situations serious retention problems exist resulting in wasted investment and inefficiency as productive time is expended in recruiting and training new staff. Repeated experience of precarious positions and the growing sense that the ability to achieve some kind of financial and contractual security in the medium to long term may bear no direct relationship with merit and performance doubtless results in a haemorrhaging of high quality researchers from the academic sector.

So, how can flexicurity be achieved in the context of research careers? Of course this is a complex and sensitive question. On the one hand, universities should ensure that they are not discriminatory in their approach to employment conditions and the ‘quality’ of posts. More controversial perhaps is the issue of permanency. The ultimate problem lies in the interpretation of permanency in the context of academic posts. Whilst the concept of ‘flexibility’ can be used to describe the growth in some forms types of academic appointments (and contract research situations in particular) it does not describe the ‘core’ or mainstream of academic positions. On the contrary, traditional academic appointments in the form of permanent ‘lectureships’ are characterised by a high degree of rigidity. Although progression is closely and increasingly related to performance (17), in practice, permanency in such situations, once probation is achieved, nearly always means a ‘job for life’ at a time when income streams are less predictable. This stark contrast between the temporality of contract research positions and the security of ‘lectureships’ lies at the heart of the problem. The prospect of moving large numbers of research staff onto ‘HE-style permanency’ is a serious concern for PIs, institutions and the research system as a whole. As one PI we interviewed within the AIRR project states

“You can’t give permanency to everyone because you can’t afford it. (the new legislation) is an attempt to make it a real career structure but at the moment there isn’t one – one of the real problems with science is that there isn’t a career structure in it until you hit your mid 30s and get your own lab”

Rather than contemplating such a shift and the risk it implies in terms of stagnation and the loss of opportunity it might make more sense to address the ‘culture’ of permanency in a wider sense. As Barnard suggests (albeit in a different context), ‘the desire to achieve flexibility can lead to both uniformity and rigidity’ (Barnard, 2000). The UK approach to the ‘lectureship’ represents an attempt to forge an effective relationship between research and teaching that has eluded other academic systems – and in particular those based on a marked distinction between research institutes (or academies) and universities. It also reflects the UK’s specific historic approach to the funding of the HE sector. In the past the majority of staff in UK HEIs held or could reasonably aspire to hold a lectureship. This is no longer the case and we have witnessed a mushrooming of diverse positions running in parallel to the lectureship. These positions are often characterised as teaching-only or research-only when in practice the incumbents often share a common goal – to achieve a stable academic position and combine, to some degree at least, an interest in teaching and research. Arguably the time has come to break down the artificial distinction between these positions (and the pay and status differentials they represent) and develop a more fluid and flexible model based on a continuum of roles ranging from teaching-intense positions at one end of the scale to research-intense positions at the other. Individuals could then move along the continuum in either direction at various points in their careers according to their skills and institutional needs. Research is implicit at
all levels but might vary according to the role of the person at any pointing time; someone in a teaching intense end of the spectrum would need a level of research competence to deliver effective teaching (depending on the level of engagement) and people at the research end might be given the kinds of opportunity to teach or supervise postgraduate and doctoral candidates that eludes many contract researchers at the present time. The current sharp distinction between temporary and permanent contracts could be blurred to match the kind of situation scientists have witnessed outside of the HE sector where positions are nominally permanent (and more highly paid) but responsive, in common with most labour markets, to fluctuations in demand as the academic system evolves and the demand for skills changes. According to this approach, institutions could identify appropriate functional resource units according to the nature of their activity (18) and invite them to develop a business plan detailing research and teaching objectives. The relevant units could then identify their own particular approach to human resource management which might include a variety of different kinds of teaching and research intense positions. It is interesting to note a recently advertised Professorship post in sociology at the University of Bremen, Germany the job advertisement states “Contract terms are flexible and based upon performance and the university’s needs” suggesting a more flexible approach has already become accepted as appropriate in some contexts (Times Higher Education Supplement, 2005: 38)

If certain activities ‘dry up’ - be they teaching activities designed to support international recruitment drives or research agenda then opportunities for redeployment can be considered. When considering the appropriateness of different forms of contract, it is perhaps worth remembering that the Directive distinguishes fixed-term contracts from ‘open-ended contracts’ (para 3). It also identifies a specific derogation where ‘objective reasons justifying the renewal of such contracts or relationships’ (19). JNCHES guidelines suggest that limited funding can be used as an objective justification in narrowly defined circumstances ‘where there is no reasonably foreseeable prospect of short-term funding being renewed nor other external or internal funding being or becoming available (2002, paragraph 9f). Careful and well-publicized guidance on the legal implications of open-ended contracts and the use of the objective justification derogation would greatly enhance the endeavors of institutions to respond to the legislation.

Ultimately the system of the funding and delivery of teaching and research within universities will need to evolve to accept the logic of redundancy in hopefully limited situations where skills fail to match opportunities. We are aware that many readers (and especially those in lecturing positions) will not find this an acceptable way forward. It is nevertheless the reality facing many of the country’s top research talent at the current time and arguably presents a potential solution to the tension that lies not simply between flexibility and security but the more complex relationship between flexibility, security and equality of opportunity or dare we suggest, ‘flexsecquality.’

Notes

1) This paper draws on the findings of a number of related projects based in the Centre for the Study of Law and Policy in Europe including a study commissioned by the Higher Education Funding Council on the supply of early career researchers, an RCUK funded impact assessment of enhanced research council doctoral stipends and salaries, an impact assessment of the European Commission’s Marie Curie Fellowship scheme (the IMPAFEL study reported in Van de Sande, Ackers and Gill, 2005), an ESRC funded study of international recruitment (MOBEX2) and a European Commission funded study on the progression of women in science careers (MOBISC). The studies have involved questionnaire work and qualitative interviews with researchers mainly in the natural sciences. Further details of all of these projects and the methodologies associated with them can be found on the CSLPE website (www.law.leeds.ac.uk/cslpe). Note: This article does not represent the opinion of the individual funding bodies mentioned above, they are not responsible for any use that might be made of data appearing herein

2) Clause 5 of the ETUC-UNICE-CEEP Framework Agreement on Fixed-term work annexed to the Directive

3) This definition has been used in relation to both the Equal Pay legislation (Article 141) and the Free Movement of Persons Provisions (Articles 39-48EC).

4) The CSLPE team is currently undertaking research for the UK Research Councils on the specific issue of pay. The project Assesses the Impact of the Roberts Review on Salaries and Stipends and is referred to as AIRR For more details please see www.law.leeds.ac.uk/cslpe

5) While the policy agenda has tended to focus on the latter category - contract research positions - growth in the proportion of teaching-intense positions is also of significance. Many of the people occupying these nominally ‘teaching’ positions can also be defined as ‘early career’ researchers who use these opportunities as a means of supporting their research and securing a first position in a university.
6) Our own research has not focused on the technician category but we are aware that this group merits further attention.

7) The title of Research Fellow may be given to someone on a more senior contract research position, usually with a doctorate, but working to an externally funded project and under the management of a PI.

8) Sometimes these posts are offered in the form of a scholarship with a student status where this is the case it is likely that the incumbent will fall outside of the scope of the fixed-term legislation.

9) See note 4.

10) Male MOBISC respondent [138]

11) Supported by the Joint Statement of the Research Councils'/AHRB'S Skills Training Requirements for Research Students in April 2001 and the Roberts Review.

12) This may rise to two if the Bologna recommendations are implemented.

13) See note 4.

14) This factor was considered an advantage of fixed term contracts within the House of Lords Select Committee On Science and Technology Report of 1995; the Royal College of general practitioners is cited within the report as suggesting that “a major advantage is that a research worker who goes off the boil or loses enthusiasm or skill can be easily removed without any contractual or redundancy problems” the Report goes on to state that some key actors have concluded that “the permanent contracts of academic staff possibly provide staff with too much security” (House of Lords 1995: 19)


16) This is precisely the objective of the Roberts Review salary enhancement scheme currently under evaluation (add reference please).

17) The practice of automatic incremental progression runs counter to this and is currently being challenged in some HEIs.

18) These will vary reflecting institutional objectives and disciplinary diversity.

19) Clause 5 of the ETUC-UNICE-CEEP Framework Agreement on Fixed-term work annexed to the Directive

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Legislation and Official Documents


The Fixed Term Employees (Prevention of Less Favourable Treatment) Regulations 2002


Table 1 Contractual status by employment function

<table>
<thead>
<tr>
<th>Contractual Status</th>
<th>Primary Employment Function</th>
<th>Teaching Only</th>
<th>Research Only</th>
<th>Teaching &amp; Research</th>
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<tbody>
<tr>
<td></td>
<td>Teaching Only</td>
<td>40.4%</td>
<td>6.6%</td>
<td>83.3%</td>
</tr>
<tr>
<td></td>
<td>Research Only</td>
<td>31.0%</td>
<td>93.2%</td>
<td>16.1%</td>
</tr>
<tr>
<td>Other (including hourly paid and/or casual staff)</td>
<td>28.6%</td>
<td>0.1%</td>
<td>0.6%</td>
<td></td>
</tr>
</tbody>
</table>

Source: HESA Individual Staff Record 2002-2003 (adapted from Court, 2004, p. 18)

Table 2 Contractual status by scientific discipline

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Proportion of staff employed on a fixed-term contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>All disciplines</td>
<td>42.21</td>
</tr>
<tr>
<td>Clinical medicine</td>
<td>61.65</td>
</tr>
<tr>
<td>Nursing</td>
<td>17.78</td>
</tr>
<tr>
<td>Biology</td>
<td>69.28</td>
</tr>
<tr>
<td>Physics</td>
<td>54.28</td>
</tr>
<tr>
<td>Chemistry</td>
<td>55.57</td>
</tr>
<tr>
<td>Mathematics</td>
<td>32.62</td>
</tr>
<tr>
<td>Computing science</td>
<td>37.49</td>
</tr>
<tr>
<td>General engineering</td>
<td>47.98</td>
</tr>
</tbody>
</table>

Source: HESA Individual Staff Record 2001-2002

Table 3 Research Intensity, contractual status and employment function

<table>
<thead>
<tr>
<th>Institution</th>
<th>Average RAE Score</th>
<th>Permanent Staff %</th>
<th>Primary Employment function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Teaching only</td>
</tr>
<tr>
<td>University of Cambridge</td>
<td>6.6</td>
<td>25.8</td>
<td>1.8%</td>
</tr>
<tr>
<td>University of Oxford</td>
<td>6.5</td>
<td>31.9</td>
<td>0.0%</td>
</tr>
<tr>
<td>Imperial College</td>
<td>6.4</td>
<td>28.3</td>
<td>0.7%</td>
</tr>
<tr>
<td>University College London</td>
<td>6.0</td>
<td>33.0</td>
<td>3.0%</td>
</tr>
<tr>
<td>Thames Valley</td>
<td>0.5</td>
<td>87.8</td>
<td>13.2%</td>
</tr>
<tr>
<td>University of Derby</td>
<td>1.5</td>
<td>89.3</td>
<td>29.9%</td>
</tr>
<tr>
<td>Anglia Polytechnic University</td>
<td>1.5</td>
<td>77.2</td>
<td>16.9%</td>
</tr>
<tr>
<td>Bolton Institute</td>
<td>1.5</td>
<td>93.7</td>
<td>4.9%</td>
</tr>
</tbody>
</table>

Source: Adapted by authors from the Times Higher Education Supplement League Tables (21 May 2004) and HESA Individual Staff Record 2002-2003 (Court, 2004, p48-51)
### Table 4 Age of contract research staff

<table>
<thead>
<tr>
<th>Age Group</th>
<th>No. Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤26</td>
<td>8</td>
<td>2.5</td>
</tr>
<tr>
<td>26-30</td>
<td>88</td>
<td>27.5</td>
</tr>
<tr>
<td>31-35</td>
<td>91</td>
<td>28.4</td>
</tr>
<tr>
<td>36-40</td>
<td>68</td>
<td>21.3</td>
</tr>
<tr>
<td>41-45</td>
<td>31</td>
<td>9.7</td>
</tr>
<tr>
<td>46-50</td>
<td>18</td>
<td>5.6</td>
</tr>
<tr>
<td>51 and over</td>
<td>16</td>
<td>5.0</td>
</tr>
<tr>
<td>Total</td>
<td>320</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: ASSET Survey, 2004 (excludes staff above Research Grade III)
RCUK Annex 6: Awareness and Uptake of the Roberts’ Review Enhanced Salaries and Stipends Scheme

AWARENESS OF THE SCHEME

In general the scheme was not widely known about or understood within the research community. It was clear that a high degree of confusion existed about how the scheme worked which limited the effectiveness of the approach.

Failure of Information to ‘Trickle Down’

Information about the scheme failed to ‘trickle down’ in an effective way from the research councils to institutions and within institutions (including the research councils themselves). In some cases, PIs and supervisors did not know that they could apply for enhancements and therefore missed out on the opportunity. In others, they were awarded enhancements without knowing that this was the case which on occasion meant that they were unable to advertise the position at a higher level. In these cases although the researcher was fortunate to get the higher stipend or salary they did not understand why they had received it and the PI had not always been in a position to use the higher salary to full effect to attract a stronger field of applicants (perhaps advertising the post at the lower rate):

Table 6.1: Questionnaire Responses to Awareness of the Scheme by Group

<table>
<thead>
<tr>
<th></th>
<th>Supervisors aware of Roberts funding for enhanced stipends</th>
<th>Principal Investigators aware of Roberts funding for enhanced salaries for contract researchers</th>
<th>Contract researchers aware of Roberts funding for enhanced salaries</th>
<th>PhDs aware of Roberts funding for enhanced stipends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>35%</td>
<td>16%</td>
<td>7%</td>
<td>6%</td>
</tr>
<tr>
<td>No</td>
<td>65%</td>
<td>77%</td>
<td>84%</td>
<td>88%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>8%</td>
<td>7%</td>
<td>10%</td>
<td>6%</td>
</tr>
<tr>
<td>Total %</td>
<td>99%</td>
<td>100%</td>
<td>101%</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>272</td>
<td>275</td>
<td>180</td>
<td>910</td>
</tr>
</tbody>
</table>

How the Research Community Heard about the Scheme

The research councils had taken some steps to increase awareness and understanding of the scheme encouraging institution to ensure that advertising material for the positions refers to the enhancement. Letters had also gone out to HEIs but it is not clear that this information filtered down to the appropriate level with many administrators and human resource respondents failing to understand the scheme (if they knew about it at all). Quite often the first the PI would know about the scheme was when the position for which they had applied was enhanced and they were told to ‘go away and recruit somebody using the enhanced funding’. In practice, very little active marketing of the scheme has taken place perhaps to avoid the kinds of tensions that differential pay generates (see below).

In the questionnaire Principal Investigators and Supervisors were asked how they heard about enhanced salary scheme:

- 14 had heard through their University (VC, Research director, Head of school, Research Support unit or Human Resources)
- 13 had heard through the research councils (8 BBRSC, 3 ESRC, 2EPSRC)
- 5 had heard personally (‘by accident it is not well publicized’ or through the ‘grapevine’)
- 4 had heard through the media (THES, Research Fortnight and a conference)
- 1 had heard from the Roberts review

Additionally they were asked how they heard about enhanced stipends in shortage areas:

- 28 had heard through their University (VC, Research director, Head of school, Research Support unit or Human Resources)
21 had heard through the research councils (9BBRSC, 7 EPSRC, 1ESRC)
7 had heard through the media (THES, Research Fortnight and on internet)
6 had heard personally (‘lunch in the senior common room’)
4 had heard from the Roberts review
2 could not recall

All this suggest that a key finding from our interviews and questionnaires is that awareness about the scheme is patchy at best and the vast majority of the research community had not heard about the scheme

Lack of Feedback to Research Councils on Interest or Uptake of the Scheme
The research councils were acutely aware of the ‘low visibility of the scheme’. As one research council respondent put it:

“We won’t know really how effective the enhanced salaries have been. A PI may have been given say an enhanced salary but the PI may not have been aware of the initiative or may have got confused or been told by their personnel office you have to employ at salary grade 6 so there might be a variety of reasons why these enhancements haven’t been taken up”

These scenarios were echoed in the site visits.

UPTAKE OF THE SCHEME

In receipt of Roberts enhancement:
- 1 contract researcher identified themselves as being in receipt of a Roberts enhanced salary, a further 30 stated that they did not know.
- 9 PhD students reported that they had a Roberts enhanced stipend; a further 144 stated they did not know.

Allocation of enhanced salaries and stipends:
- 19 Supervisors reported having doctoral candidates with enhanced stipends stemming from Roberts money, 14 did not know, it was not applicable to 31 respondents and 221 (76%) did not have students with enhancements from this scheme.
- Of the 277 Principal investigators who responded to whether they have any contract researchers with a Roberts enhanced salary 17 reported they did, 15 did not know and 245 (88%) replied that they did not.

Further analysis can be carried out here by research council and field – what is clear is that it a very small minority of the sample that we interviewed and surveyed that have been in receipt of these funds – and even where they may have a supplement there is confusion as to the funding mechanism supporting it.

The interviews revealed similar trends with most people either know knowing or not understanding the scheme. Most respondents had never heard of the scheme and equated Roberts with the training initiatives and to a lesser extent fellowships:

“I know nothing about this” [Res Admin, EPSRC, a]

“I’m not aware that… I was aware that I could get top-ups but I wasn’t actually aware that I could ask if I put in an application I could ask for an enhanced stipend to recruit a student I was not aware of that and I still don’t know very much about it either. If you say Roberts money to me what comes to mind is the enhanced training for graduate students and money being provided for that and not enhanced stipends” [PI, EPSRC, a]

“[Q: So had you heard of the Roberts review money that’s available to enhance stipends and salaries?] Peripherally I think is the answer to that questions. Some time ago. [Q: Can you remember how you heard about it?] No, I can’t remember. I think I heard of it when the Roberts review was done and we also have staff training and it also came up in one of these staff training workshops I went to recently on supervising PhD students” [PI, EPSRC, b]

“Yes, when you say Roberts, people think training” [HoS, EPSRC, b]
“Yes, I had heard of the scheme - but that was the absolute limit - if you’re ticking boxes put ‘vaguely aware” [HoS, ESRC, a]

“I’d heard that there was Roberts review money available for research training but I hadn’t heard that there was money specifically available for stipends and salaries” [Res Admin, ESRC, b]

In other cases they were not aware of the designated shortage areas:

“[Q: This Roberts money funding that’s available it’s not just available for postgraduates PhD students, it’s also available for contract researchers working on Research Council grants. Have you ever seen anyone applying through those grants or any enhanced salaries?] I’ve never seen that no. [Q: Do you know if any areas of research within your department have been designated by the Research Councils as shortage areas?] I don’t think any sections have been designated as shortage areas as far as I know. [HoS (2), EPSRC, a]

“Frankly applying for an extra bit of grant money on top of...you know without effectively telling the community what those shortage areas are it doesn’t seem to me likely to produce the outcome that the Roberts report was aiming for” [HoS (1), EPSRC, a]

“[Q: So you are not aware of anything under this scheme?] No, are we supposed to be a shortage area then?” [PG Research, BBSRC, a]

Respondents were often embarrassed to admit that they did not know about the scheme which made the interviews quite difficult at times:

 “[Q: Have you heard of the money that was made available following the Roberts Review to enhance salaries for contract researchers and stipends for PhD students?] I must be absolutely honest I hadn’t heard about it until [the administrator] who you’ve been dealing with asked me a couple of weeks ago if I prepared to meet with you so that was the first I’d heard about it. [Q: Don’t worry, that’s not unusual] That gives me some comfort” [HR, EPSRC, b]

In some cases the respondents had made conscious efforts in the days leading up to the site visits to inform themselves about the scheme. Even in these cases they had found it difficult to locate clear information:

“As I knew we were doing this I had a look at the Research Council sites just to see what there was and there isn’t anything, you can’t find…well they are difficult to follow at the best of times but to find anything specific on this is impossible” [HoS, BBSRC, b]

Many respondents did not know whether stipends and salaries had been awarded in their school (slightly greater awareness existed in relation to stipends):

“[Q: And you haven’t really been aware of this extra piece of funding that’s available to enhance salaries and stipends?] I hadn’t no. [Q: And you haven’t seen anyone applying through your role as managing research grant applications?] No, no-one’s applied to my knowledge” [HoS, EPSRC, a]

“[Q: You mentioned [PhD candidate] – I suspect she has the enhanced stipend?] We did wonder that. I got no paper work about money or anything from the BBSRC – you just get an announcement saying you got a student – nothing about their salary to me. I know nothing about what my students are paid. It would have been useful to know to be honest as I could have advertised that and it would have probably made a big difference to recruiting. My post doc might be on an enhancement too – I don’t know” [PI, BBSRC, a]

“[Q: Do you know if it’s linked to the RR money?] To be honest I don’t. I think it might be” [PhD, BBSRC, a]

It was also common for people in receipt of either enhanced salaries or stipends to not be fully aware that they were receiving it until after they had accepted the position. This meant that enhanced salaries or stipends were not impacting on decisions to take a PhD or to continue with a research career - the monies were arriving after the decision had been taken:
“When I applied for the PhD here I wasn’t really aware of the money. The money they were offering was not enhanced at that point and I knew that – I wasn’t even aware that I got enhanced, I found out in late summer… but I wasn’t in the UK at that particular time. And I don’t know when they sent the confirmation, I haven’t got the date, but they did send a letter saying it had been enhanced money. But I wasn’t in the UK so I got the news in late August” [PhD, ESRC, b]

This was also the case for a PI who submitted his grant and was awarded an enhanced salary for his PDRA:

“No, I didn’t know anything about them when I wrote the grant. It actually just came - the awarding letter – there was a bit at the bottom saying you’ve been awarded an enhanced salary because this is an area of skills shortages” [PI, BBSRC, c]

Where people were at least vaguely aware of the scheme they had heard about it mainly via the ‘letters’ that had been sent out; where institutions had received these letters the process of information trickle-down did not appear to have occurred effectively:

“I must say for me as Head of Department at this university the whole implementation of the Roberts Review is a bit obscure. No, I don’t know how they work – you can see my desk I get circulars all the time this circular came around and I didn’t understand the mechanism – I didn’t understand where the money was coming from and it would have taken too much of my time to get to the bottom of it to put an application in and be rejected” [HoS, BBSRC, a]

“[Q: And you’re not aware of anybody having got them?] No. I have to confess that I am unaware of all of this. The thing about the BBSRC is that they advertise these things on the website and they must think we sit browsing websites all the time! I only visit it when I have to. There are certain flows of information that don’t work well” [Res Admin, BBSRC, a]

It is worth noting that no-one knew about the scheme at the institution the quotes above are from and, on the day of the site visit, a representative of the BBSRC was there too and I suggested to them that they asked him about the scheme. I later received an email to say that the BBSRC visitor was not sure that their area fell within the scope of the scheme

Furthermore there was strong sense that the information was inadequate and more specific guidance was needed:

“When I first got the email from XXX in HR about this I actually had to go back and look for the original RCUK letters and I think they were probably sent by XXX on behalf of the Research Councils. I couldn’t actually put my hand on any policy documents which defined how we should be treating this. When she ‘swept’ within HR she came back with a similar conclusion that it wasn’t really clear to us what we were supposed to be acting to. In general I think universities give the head up on initial announcements like letters from RCUK chief execs, for example, and then we wait for the directive of further information and in my case the thing I would have been most closely involved in is the RCUK fellowships. In terms of my area of activity I head up research development. So large scale research proposals is specifically my remit. I have a number of people who work across different academic schools to support different disciplines and different technology areas. However, when a big one like the RCUK fellowships comes in I tend to grab hold of that and deal with it myself which is what I did with this one. So on the other element of increased salaries for PDRAs and RAs etc there hasn’t been any specific guidance and my feeling is it has crept into usage and it has been incorporated into research application but we don’t have anything solid to go on” [Res Admin, EPSRC, b]
RCUK Annex 7: How Attractive are Research Careers in UK Higher Education?

INTRODUCTION

Concerns that research careers in the UK (and Europe) were unattractive led to a number of initiatives aimed at improving the conditions of research personnel. Despite policy implementation in this area there is recognition that research positions have failed to significantly improve in practice. In 2003, Lord Sainsbury, Minister for Science remarked:

“National and institutional policies for research staff are unquestionably far clearer and stronger than ever they were five or six years ago. … in spite of all this, there is still some disappointment that improvements are not yet taking effect in all the areas we might like to see – in greater security of employment for more staff, greater clarity of career paths, and more take-up of the excellent provision that is available. Isolated from wider national and institutional developments, the day-to-day experience of many individual research staff has, too often, not changed substantially for the better” (DTI 2003:2)

These sentiments were recently echoed by MP Evan Harris who chastised the House of Commons Science and Technology Select Committee for the continuing poor prospects for researchers. In the Times Higher he reportedly contends that:

“Postdocs are the lost tribes of the scientific world. Despite improvements to their pay and conditions, British science is still tending to use abuse and lose them.”(Fazackerley, THES, 2006: 4)

Whilst pay is certainly one of the most well-recognised problem areas it is closely related to a number of other crucial issues such as contractual status, security, rights and job prospects that also call into question the attractiveness of research positions. This annex begins contextualising these ‘other factors’ in order to show that improvements to pay cannot single-handedly improve the standing of research careers - wider concerns about terms of employment and career progression must be taken into account. Data in this annex draws from a series of questions in the RCUK questionnaires that gauge doctoral researchers’ and contract researchers’ satisfaction with various aspects of their present position. The same groups, plus Principal Investigators and Research Supervisors, were also asked about their perceptions of the attractiveness of research careers in Higher Education in the UK.

DOCTORAL RESEARCHERS' SATISFACTION WITH CURRENT POSITION

778 UK doctoral candidates rated their satisfaction with different aspects of their current position. Most satisfaction was derived from flexible working. Three quarters were satisfied with the supervision they were receiving. Least satisfaction was exhibited with job prospects and pay. Although 63% of doctoral candidates reported satisfaction with their work environment this was also the factor with the largest level of dissatisfaction (17%).

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1 National actions can be charted from the introduction of the Researchers Concordat (1996) which was implemented through the Research Careers Initiative (1997-2002). Following the Roberts Review recommendations a number of initiatives have been introduced to improve the training, conditions and career prospects of doctoral and contract researchers. Developments are also being made on a European level.

2 The Fixed-term Employees (Prevention of Less Favourable Treatment) Regulations 2002


4 Fazackerley, A. (2006) Postdocs are the ‘lost tribes of the scientific world’ THES, 1725 13 January 2006 p.4


6 RCUK study by CSLPE for RCUK, 2006
Figure 7.1: UK Doctoral Researchers satisfaction with position

ARE UK ACADEMIC RESEARCH CAREERS ATTRACTIVE TO DOCTORAL RESEARCHERS?

Doctoral researchers were asked ‘Do you think that academic research careers in the UK are attractive in your field?’ (Table 7.2). Whilst the responses are not from a representative sample they provide trend data that concords with the qualitative data from the site visits and the views of Research supervisors and research staff—finding that UK academic research careers are more attractive to international researchers than to UK nationals.

- 31% of UK doctoral students thought UK academic research careers were attractive;
- 41% rated them neither attractive nor unattractive
- 29% rated them as unattractive.

This compares with nearly half of EU (53%) and overseas (48%) doctoral students rating of them as attractive.

Table 7.2: Doctoral Candidates rating of the attractiveness of UK academic research careers by nationality

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Unattractive</th>
<th>Neutral</th>
<th>Attractive</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>29%</td>
<td>41%</td>
<td>31%</td>
<td>781</td>
</tr>
<tr>
<td>EU</td>
<td>15%</td>
<td>32%</td>
<td>53%</td>
<td>98</td>
</tr>
<tr>
<td>Overseas</td>
<td>19%</td>
<td>33%</td>
<td>48%</td>
<td>21</td>
</tr>
</tbody>
</table>

Differences are also apparent depending on the disciplinary area in which doctoral students work. Students funded by the BBSRC rated UK academic research careers as less attractive than their contemporaries funded by the ESRC and EPSRC. The EPSRC had the largest proportion (39%) of doctoral researchers who thought UK academic careers were attractive in their field.
Table 7.3: Doctoral Candidates rating of the attractiveness of UK academic research careers by research council

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Unattractive</th>
<th>Neutral</th>
<th>Attractive</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESRC</td>
<td>26%</td>
<td>42%</td>
<td>32%</td>
<td>512</td>
</tr>
<tr>
<td>BBSRC</td>
<td>37%</td>
<td>33%</td>
<td>31%</td>
<td>85</td>
</tr>
<tr>
<td>EPSRC</td>
<td>27%</td>
<td>34%</td>
<td>39%</td>
<td>184</td>
</tr>
</tbody>
</table>

‘LOTS OF WORK, LITTLE MONEY’ – DOCTORAL RESEARCHERS’ PERCEPTIONS OF ACADEMIC CAREERS IN THE UK

The 2004 UK Grad survey on ‘What PhDs Do’ throws light on a number of motivating factors for undertaking a PhD. These include interest in the subject, the need for a PhD in certain subjects, the desire to accelerate progression (and get onto ‘fast tracks’ or higher tracks) or stand out from the crowd and for personal satisfaction. In the RCUK survey doctoral researchers were asked to explain the reasons they believed academic researcher’s careers to be attractive or not, the general perceptions follow.

Intellectual freedom and stimulating work

One of the most attractive elements of a research academic research career to doctoral candidates’ was the opportunity for a stimulating career, pursuing interesting lines of enquiry:

“I think the academic research careers which would potentially be open to me offer the right level of flexibility, rewards and satisfaction from completing your own research.”

“It's a trade-off because you have the benefits of doing something interesting, rewarding, intellectually demanding and tailor-made to your own interests rather than set by others; but on the other hand the working conditions are not so good”

“They can be satisfying, but not well-paid or secure”

Remuneration and contractual insecurity

It is clear that some doctoral researchers in the UK are opting not to pursue academic research purely because of low pay and the prevalence of fixed-term contracts:

“Got to balance the stimulating work, colleagues and working environment against the relatively poor pay, constant competition and lack of career structure/stability for researchers”

“It would be a nice career, but short term contracts and lack of job security prevent the concept of "settling-down”, buying house etc. Wages aren't reflective of those offered in the private sector”

“A series of short term post docs is not appealing. After my PhD I need to know I will have a job with a reasonable income for more than just a year or two at a time, and I would like to be assured that I can stay in the same city if I choose to.”

“It would be great to secure a permanent lectureship after the PhD but I'm aware that these are scarce and its more likely to be the case that I'll have to go from one fixed-term contract to another. Its this lack of job security that bothers me.”

Unrewarding pay

There was also a sense that academic salaries would not adequately reward them for being highly educated, nor allow them to attain a decent standard of living:

“The pay is not good: I am not likely to earn more than the average London salary, despite the fact that I will have spent eight years in higher education.”

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7 CF Annex 3 ‘Pay’ for a more detailed analysis of levels of pay and satisfaction
“I think the remuneration is poor in comparison with the private sector, and having already made economic sacrifices throughout my PhD I find it hard to justify an academic position.”

**Culture and environment**
Experiences during PhDs and the culture and environment of UK academic life were sometimes off-putting:

“I am not tempted to make my career in an environment characterized by govt micro-management, struggle for resources, uncertainty about the role of higher education, and uncompetitive salaries for long hours.”

“I now find the prospect of working in academia extremely unattractive due to my PhD experience, as opportunities mainly arise through connections and closed circles, and workplace bullying appears to be the norm.”

“Plus, academic/university environments have a reputation for bureaucracy and internal politics (although my dept. isn’t that bad). I think the trade-off for some people is prestige”

**Limited opportunities and international comparison**
A minority of UK national doctoral researchers made international comparisons (mostly unfavourable) and some respondents stated that they were considering going overseas (mostly to the US) to pursue a research career:

“Very few jobs in academia - Dead Mans Shoes!!!”

“The only other lab that does spectrophotometry and photosynthetic electron transport research is in Paris. I would have to go into another field to work any where else in Britain.”

“After comparing positions available within the UK to equivalents in the US and Europe, I have to say that the funding available for UK based research is appallin g-and therefore the level of research is sure to suffer.”

“They aren't as well paid as many other fields I could have chosen, but they're attractive because they offer the chance to work in an interesting and worthwhile field. I do intend to look seriously at job options in universities the US once I get my PhD”

**WHAT COMES NEXT FOR PHDS?**

Despite the misgivings of many doctoral researchers about the terms of research positions many respondents to the RCUK survey did intend to pursue a post-doctoral or academic position on completion of their doctorate. The UKGrad report found that nearly half of all graduates (48%) who were awarded a PhD the year before were still in the education sector and 83% of these were working in Higher Education or Universities (UK Grad, 2004, p. 16).

As with the UKGrad survey the RCUK survey also found most doctoral researchers were considering positions at a professional level (either in the public or private sector) – which would indicate most plan to obtain positions commensurate to their level of training and knowledge.

Without further evidence it is not possible to discern patterns of retention into research positions – by gender, discipline, nationality, institution, age or level of achievement - this is an area that would benefit greatly from further study.

**CONTRACT RESEARCHERS’ SATISFACTION WITH THEIR CURRENT POSITION**

Contract researchers were asked to rate on a scale of 1 to 5 their satisfaction with different aspects of their position. The results from the 194 respondents are shown in figure x. Least satisfaction was found with length of contracts – only 27% reported satisfaction and 47% reported dissatisfaction. As with doctoral candidates, low levels of satisfaction were reported with job prospects and pay. Most job satisfaction was gained through flexible working practices and the number of working hours. Most researchers were satisfied with their supervision.
Are UK Academic Research Careers Attractive to Contract Researchers?

Researchers funded by the UK research councils were asked to rate ‘Do you think that academic research careers in the UK are attractive in your field?’ Of the 188 responses:

- 39% responded that they were unattractive (including 12% ‘very unattractive’)
- 35% rated them neither attractive nor unattractive
- 26% rated them attractive (including 2% ‘very attractive’)

When looking at this breakdown by funding council different trends emerge – EPSRC researchers are more likely to have rated research careers in their field as attractive (Table 7.5). Over half of BBSRC researchers rated research careers in their field as unattractive (this relates to 22 respondents). Most ESRC researchers rated research careers in their field as neither attractive nor unattractive.

Table 7.5: Doctoral Candidates rating of the attractiveness of UK academic research careers by research council

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Unattractive</th>
<th>Neutral</th>
<th>Attractive</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESRC</td>
<td>28%</td>
<td>51%</td>
<td>21%</td>
<td>43</td>
</tr>
<tr>
<td>BBSRC</td>
<td>51%</td>
<td>35%</td>
<td>14%</td>
<td>43</td>
</tr>
<tr>
<td>EPSRC</td>
<td>33%</td>
<td>29%</td>
<td>38%</td>
<td>69</td>
</tr>
</tbody>
</table>

Trend evidence suggests that UK researchers view UK academic research careers as less attractive than their contemporaries from the EU or elsewhere overseas. Nearly half (47%) of UK researchers rated academic careers in their field at unattractive (this shows a poorer perception from those in post than those at doctoral level).
Table 7.6: Doctoral Candidates rating of the attractiveness of UK academic research careers by nationality

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Unattractive</th>
<th>Neutral</th>
<th>Attractive</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>47%</td>
<td>38%</td>
<td>15%</td>
<td>125</td>
</tr>
<tr>
<td>EU</td>
<td>23%</td>
<td>30%</td>
<td>47%</td>
<td>30</td>
</tr>
<tr>
<td>Overseas</td>
<td>23%</td>
<td>33%</td>
<td>43%</td>
<td>30</td>
</tr>
</tbody>
</table>

There was a statistically significant difference between male and female researchers rating of the attractiveness of research careers with only 15% of women rating them as attractive compared to 34% of men.

Table 7.7: Research council funded researchers’ rating of the attractiveness of UK academic research careers by gender

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Unattractive</th>
<th>Neutral</th>
<th>Attractive</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>45%</td>
<td>40%</td>
<td>15%</td>
<td>82</td>
</tr>
<tr>
<td>Male</td>
<td>35%</td>
<td>31%</td>
<td>34%</td>
<td>106</td>
</tr>
</tbody>
</table>

\( \text{Chi square p= .01} \)

'SHORT-TERMISM AND NO-MANS LAND’ – RESEARCH COUNCIL FUNDED RESEARCHERS’ PERCEPTIONS OF ACADEMIC CAREERS IN THE UK

Eligibility to apply for Research Funding

Ability to apply for research funding was raised as a key issue in its own right by around 66 respondents. The ineligibility of fixed term employees from applying for research funding was seen as a barrier to career progression, preventing the accumulation of an independent research portfolios (because of the need to apply under a permanent colleague). Of particular concern is the danger that permanent employees benefit from the work of fixed term employees:

"My contract specifies that I should undertake independent research, but on a temporary contract I am not eligible to apply for my own funding from most sources (e.g. research councils)."

"grant applications are difficult / impossible"

"Although I'm a lecturer, I'm still on a fixed term contract. As such I'm disadvantaged by not being able to make completely independent grant applications."

"This contract also exclude many of us from applying for funds in a research area which one is most interested in and had to depend on other permanent members of staff to fulfil the criteria of funding body."

"Inability to apply for some research grants inability to include own salary on research grants"

"Level of responsibility, e.g. managing own contract, bringing in work/money for work (must go on lecturers name even if it my reputation that brings in the work), applying for grants in own name, thus building own research reputation."

"Credit of intellectual output unfairly appropriated by academics with permanent positions"

Ability to Supervise Research Students

The issue of supervision was raised by 11 respondents in all. Many of these respondents were unable to supervise research students because of their contractual status, others felt that they were given lower levels of support or recognition than their colleagues with permanent lectureships.

"I would like to be able to supervise a PhD student alone rather than as an assistant supervisor."

"difficult to get DPhil students due to short term contracts"
“Often we are expected to supervise students, which is good, but without any of the authority that should come with that role.”

“I can not get graduate students because my fixed term contract has to have longer to run than the tenure of the student. This means that I get less research done per grant because post-docs are more expensive.”

**Workload**

Comments relating to different aspects of the workload were made by 49 respondents. Whilst research only positions were seen by some as a useful way to avoid the burdens of teaching and administration, the fixed term nature of the post was seen by many as the cause of much distraction from research particularly due to the time spent applying for new jobs or chasing research funding.

“Having lectured before there are very definite advantages to being a ‘researcher’: 1) Can concentrate on the research of my choosing 2) No extra-curricular duties (recruitment, committees, boards, etc.) 3) Fewer hours. 3) Better pay! I'm unsure as to why people are so keen to lecture as apart from the supposed extra 'prestige' there is little advantage - perhaps I am simply very fortunate with my current job.”

“Often short-term contract durations mean that you spend much time thinking what comes next instead of concentrating on current role.”

“Short term posts mean a lot of time is lost applying for jobs.”

“more time goes into prolonging or bridging gaps between contracts than investigating the topic”

“securing future contract is a distraction from current research and often have to move posts before completed projects.”

“My working conditions are better than those of lecturers because I don't need to waste my time on students”

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**SUPERVISOR AND PRINCIPAL INVESTIGATORS PERSPECTIVE ON ATTRACTIVENESS OF RESEARCH CAREERS IN UK**

276 Supervisor and PI’s responded to the question ‘Do you think that academic research careers in the UK are attractive to PhD and early career researchers in your field?’

- 52% rated them unattractive (including 17% who rated them as ‘very unattractive’);
- 33% thought they were neither attractive nor unattractive
- 15% thought they were attractive (including just 3% who rated them as ‘very attractive’).

The tide of feeling from senior researchers was that poor prospects, career structure, contractual insecurity and low salaries are deterrents to prospective researchers. It was accepted that these were relative and would not put off all researchers. Anecdotal evidence suggests however that these factors may be particularly prohibitive to people with greater debt or dependents. This would benefit from further study⁸. Favourable comments about UK academic careers were mostly related to competitive advantage not attractive prospects. Rather, research managers spoke of limited or poorer options elsewhere in Europe and the ability to recruit from an international pool.

**Pay levels**

Many supervisors comment on poor pay as an actual disincentive to early career researchers, but also point to long-term salary prospects as off-putting:

“people with a PhD earn less than some bus drivers. It is pathetic.”

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⁸ One of the limitations of the parameters of the RCUK study was that it only surveyed people who had chosen to pursue PhDs or research positions not those who had pursued alternatives.
“academic salaries have improved for those at the lower end, but I've seen my RAs finish contracts here and then move on to jobs at salaries over 30% higher than mine”

“I have supervised 13 research students and two post-docs. NONE have wanted to stay in research or have wanted to become lecturers. Starting salaries are so low that they cannot afford housing or a decent lifestyle etc at the start of their careers.”

Debt
The accumulation of student debt is also seen as a reason why home candidates are failing to pursue PhDs or research careers:

“Doctoral studies are very unattractive given the amount of debt students graduate with, the cost of living in this country and the unattractive salaries of academic careers. I find it difficult if not impossible to interest British students in Ph. D. studies”

“You need to love research to do it - many do and this is very important - but equally many are put off because they can't see how to repay their student loans and worry about their future. The do not see a path to the lifestyle they want, through research”

“it is simply not viable from a pure cost of living basis when other opportunities arise elsewhere. You are asking people with existing debt from their undergraduate degrees, debt from their MA and PhD degrees to enter a field in which they get paid less”

“Due to the increased level of student debt, the top graduates are increasingly choosing industry rather than selecting a PhD just to pay back some of the debt.”

Unattractive Positions
Although pay was seen as a critical issue, career structure and conditions were more often cited by research supervisors as the main reason why research careers were unappealing to early career researchers:

“Money is not usually the key issue. Getting a permanent post is. Scientists will accept a lower salary if they feel they have some job security. Lack of job security and career prospects make academics careers unattractive.”

“The lack of career structure, lack of security and requirement to move around are 3 very big disincentives. This is a major problem for women who need secure contracts to be able to even consider taking maternity leave. It is a major reason why women leave”

“There is still something attractive about being able to pursue personal interests. However, salaries are now out of line and workloads are very heavy.”

“Long term prospects are very poor. Grant funding is sporadic and unpredictable. Individuals are obliged to shift disciplines to follow the funding rather than build their own career.”

Poor role models
Research managers acknowledge that they themselves may act, albeit unwittingly, as a disincentive to prospective researchers:

“They see overworked, stressed underpaid academics”

“Low salary, low status, high stress, high workload. Students are heavily influenced by their perceptions of lecturers, job advertisements and contact with postdocs”

“Job insecurity, short-term contracts, incompatibility with raising families, poor pay, long working hours....”

“It's a pig of a job where you do no research, just manage people, teach and push paper.”

“Until your academics are happy with their job, how do you expect them to encourage others into the area?”
Throwing the net wide
When positive comments were made about the attractiveness of UK academia this was often in direct comparison with what is available in other European countries, other sectors or as appealing only to unexceptional candidates:

“We have no shortage of good (mostly overseas!) applicants for positions in Mathematics.”

“The pay in academia in not remotely comparable to what they can get in the City. Highly trained mathematics PhD's are highly desirable in the City -- almost every one of my PhD students has gone into such employment in the last ten years”

“The flexibility and availability in the UK of junior academic posts seems to ensure a flow of researchers from the EU.”

“The best graduates go into £25-£30k starting salaries in private sector. The best PhD students we attract are typically motivated but academically weaker graduates.”

“They are not very attractive to the calibre of person who we would wish to recruit. Able individuals are at a premium- many are put off by the lack of a clearly defined career structure.”
RCUK Annex 8: 
Feeder Routes and Recruitment Pools

INTRODUCTION

In terms of recruiting both PhD students and PDRS, feeder routes for shortage areas are shaped by the global labour market for research talent, market competition between departments and institutions within the UK and, perhaps more critically, the alleged declining quality of secondary schooling, A’ level provision and undergraduate courses.

Feeder routes – such as undergraduate and masters courses - are also subject to the very same trends and fashions that disciplines face (see Annex 2 on perceptions of skills shortages). Undoubtedly, this will impact upon the composition of the recruitment pool of PhD students and PDRS within skills shortage areas.

THE DECLINING SIZE OF THE RECRUITMENT POOL: THE ISSUE OF QUANTITY

For some respondents, concern about feeder routes and recruitment pools was focused on the perceived declining size of those pools:

“The pool of excellent UK candidates going into PhD studies has probably halved since the 1970s” [HoS, ESRC, b]

“[Q: Where does your pool of applicants come from then for PhD? Do you generate many from your own undergraduate population?] One or two a year, not many” [PG Research, ESRC, b]

“The volume of people applying is low” [Res Admin, ESRC, a]

“There is a crisis for us…if you went back 20 years the natural pool of people for our university to hire…would be people coming out of the other economics programmes in the UK and that flow of students has pretty much dried up” [PI, ESRC, b]

“If you talk to sociologists, the country’s overrun with sociologists who study identity but there aren’t exactly a load of sociologists who can cope with large datasets” [PG Research, ESRC, c]

“Sometimes there might only be one appointable candidate which is not really a good position to be in” [HoS, BBSRC, d]

The declining size of the recruitment pool was linked by one respondent to the diminishing numbers of school children and sixth-formers taking on the correct entry-level GCSEs and A’ levels for shortage areas:

“Given that these are areas where they’ve identified there’s a shortage of research students, how are they actually linking this into recruitment at undergraduate and A’ level levels? There’s not really a lot of point chasing a smaller and smaller number of potential research students if you’re not dealing with the actual group at the beginning… If they’re not actually doing anything to address the shortage of A’ level students and undergraduates in these areas but they’re just giving more money to the people who are doing PhDs, eventually they’re going to run out anyhow, so would it be better to use that to encourage people to undertake A’ levels in these subjects and get them interested at that level?” [Res Admin, EPSRC, b]

However, it should also be noted that a handful of respondents reported much vitality within the feeder routes for their disciplines. This was particularly true for the natural sciences where strong undergraduate and masters programmes present a valuable and strong recruitment pool:

“There’s certainly enough people at undergraduate level – the numbers are up and every year the number increases and the number of people doing these options is pretty much and always has been popular” [PG Research, EPSRC, c]
“Our pre-doctoral people are incredibly good at ecology – we never appoint anybody who hasn’t got a First” [PI, BBSRC, d]

THE DECLINING MERIT OF THE RECRUITMENT POOL: THE ISSUE OF QUALITY

Whilst some respondents did recognize the existence of natural feeder routes - such as undergraduate and masters courses - for finding PhD students or PDRS, they were also concerned that these routes were not providing the very best research talent:

“It’s difficult to find the really good people and that’s perhaps across the UK as a whole. We train too many slightly mediocre people and not enough really good ones which means that they drop out of the system later on and that’s a little bit unfair on them” [PI, BBSRC, d]

The CSLPE is currently putting together a research proposal that seeks to explore the meaning of ‘quality’ within the context of academic employment; it will particularly focus on the perceived changes in the quality of research candidates and the professed reasons for this. The new research may cast some explanatory light on the nature of this particular problem.

PROXIMAL DISCIPLINES

It was clear that many areas were tapping into their sister fields so they could boost their own recruitment pools at PhD and PDRS level. Proximal disciplines were very obvious feeder routes for some of the skills shortage areas:

“We also recruit people where we have an interesting idea, in immunology, for example, so we might get immunologists. Quite a few of our people have done degrees in vet-related subjects too, like equine science” [PG Research, BBSRC, a]

“There is still a pool who are very science motivated and we recruit some quite good people from that pool generally with science degrees from our institution and others” [PG Research, BBSRC, a]

Some of those who advocated the recruitment of PhD candidates or PDRS from proximal disciplines did also suggest that some additional training may be required for the ‘new blood’ to acquire a solid knowledge-base about the particular discipline:

“We get stunningly good PhD students in bio-chemistry and pathology but we won’t necessarily get those here. We get them occasionally but we don’t get the roll up of brilliant students into the vet school that they get. Vet medicine is perceived as the poor cousin of things like biochemistry” [HoS, BBSRC, a]

Yet in some fields, whilst there were proximal disciplines they could recruit from, the areas were still not as popular amongst the graduates of the proximal disciplines and so their recruitment pools were not significantly boosted by this:

“We get stunningly good PhD students in bio-chemistry and pathology but we won’t necessarily get those here. We get them occasionally but we don’t get the roll up of brilliant students into the vet school that they get. Vet medicine is perceived as the poor cousin of things like biochemistry” [HoS, BBSRC, a]

For some subject areas – most notably economics and business studies – recruiting from proximal disciplines was also seen as problematic:

“The economics people are pretty severe or rigorous in the way they see the training – they are even talking about having a 2 year Masters to take people into the PhD. In economics it tends to be cradle to grave – you’ve done an undergrad in economics, you do a Masters in economics and then you do a PhD. You can’t come in from some other discipline – you’ve got to be instilled in the way of economics all the way through” [PG Research, ESRC, a]
FEEDER ROUTES IN PRACTICE-BASED FIELDS

There were particular issues raised in relation to feeder routes for more practice-based subjects. This was especially the case for animal health research. Some respondents noted that the continued reliance upon ‘normal’ feeder routes - an undergraduate veterinary degree and then a PhD – for their PDRS was having a severe impact upon the size of the recruitment pool:

“The vets who do PhDs they do 6 years here to become a vet, they then go out to practice because that’s why they come to vet school in the first place – its vocational. Most students come here because they want to be vets, so most go into practice for another 2 or 3 years so now you’d have 9 years and your at least 27, even on the fastest track. Then, if you’re really good you need to do a residency to get your professional diploma and that’s another 3 years, so you are now 30 years old. And I come along and say ‘why don’t you do a PhD?’ and you say ‘well I’m 30, I’ve got years of student debt, I want to have a family and a life and you’re asking me to do another 3 years’. On the fastest possible route they come out of their PhD at 33 – and they are unemployable because of the wage for age thing in the pay scales. So if I get grant from the BBSRC or MRC and don’t have a named person they will give me a spine point 6 post which is for a 26 year old. There are 7 more points up the scale to pay a 33 year old so they are off the top of the scale and they are unemployable then at that age” [HoS, BBSRC, a]

Interestingly, and related to the discussion earlier about the perceptions of declining quality in feeder routes, one respondent noted that clinical staff - like vets - tended to lack the skills required for applied research:

“A lot of our clinical staff do not have good enough science training – these are structural problems – so that’s why they employ people like me: I am not a vet” [PG Research, BBSRC, a]

This raises the question as to the effectiveness of traditional feeder routes from practice-based fields. This is further supported by the following respondent who queries the quality of business studies degrees:

“I don’t agree with business studies as an undergraduate subject, I don’t think it should be taught as an undergraduate subject, at least in the form which it is currently, which is as a kind of equivalent of an MBA without the work experience. You need to come at it from a strong disciplinary base where you understand enough about research but you can then critique the research that’s been done like you would any other academic subject and be really academically driven…The methodological skills of a psychology graduate compared to a business studies graduate, you just can’t begin to compare and having taught both subjects I know that there is just no comparison” [PI, ESRC, a]

BROADER FEEDER ROUTES: ‘POACHING’ FROM OTHER HEIs

In an attempt to broaden the recruitment pool for PhD students, some respondents talked about how their departments were proactively marketing themselves to third-year students at other institutions:

“We do also try to promote ourselves actively to other decent universities so we advertise to final year undergraduates, that’s the main thing I think” [HoS, EPSRC, d]

EUROPEAN FEEDER ROUTES

There were suggestions by some respondents that recruitment problems in their particular fields were partially alleviated by geographically widening the search for suitable PhD candidates and PDRS to Europe (see also Annex 4 on the internationalization of UK higher education):

“We have also made an effort to start tapping into European vets and that’s been because we initially tried to get more UK vets to take an interest in science through setting up a summer school for clinical people in their last couple of years as an undergraduate and ask them to look again at research. In fact it has been hard to get UK vets to come onto that course but…as soon as put up the website and we discovered that in Northern Europe, in particular, there are many well trained people doing vet courses who realize they won’t get good positions because they train more than they need and they are very willing to look at vet science. We have been running this for 6 years and so those people first finish their vet course and some are now coming back into the UK system to do PhDs…This month we have heard that one has been taken on as a junior lecturer at the X HEI, so that’s positive, a German
Others have gone on to X HEI, X HEI, X HEI and X HEI so that may help with recruitment problems. Although we haven’t taken one here to do a PhD in this school, but we strengthened vet research in this country” [PG Research, BBSRC, a]

“Czech Republic and Slovakia are very high and Hungary’s very high; those three countries have very good educational standards traditional in many ways and I think this is why when we look at them now you can see people really are of a high standard who we would like to have more of…When we can’t get our own British students anyway, we should anchor towards some of those countries” [PG Research, EPSRC, c]

CONCLUSIONS

The above discussion does suggest that HEIs and RCUK need to work together to develop strategies to better improve the quality of, and quantity within feeder routes for skill shortage areas and other subjects and disciplines.