
Support for Postgraduate Study

Institute of Physics response to
a Department for Business,
Innovation and Skills call for
evidence

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29 May 2015

IOP Institute of Physics

29 May 2015

Postgraduate Consultation
Abbey 1, 5th Floor
1 Victoria Street
London
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Dear Sir/Madam,

Submission to the Consultation on Support for Postgraduate Study

The Institute of Physics is a leading scientific society. We are a charitable organisation with a worldwide membership of more than 50,000, working together to advance physics education, research and application. We engage with policymakers and the general public to develop awareness and understanding of the value of physics and, through IOP Publishing, we are world leaders in professional scientific communications.

The IOP welcomes the opportunity to contribute to the Department for Business, Innovation and Skills' consultation on support for postgraduate study. Our response to the questions listed in the consultation documentation is presented below.

Yours faithfully,

A handwritten signature in blue ink, appearing to read 'Julian Jones', written in a cursive style.

Prof Julian Jones OBE, FRSE, FOSA, FInstP
Honorary Treasurer, Institute of Physics

Postgraduate taught Master's

Q1 Do you believe that access to finance is a significant barrier to progression into postgraduate taught Master's study?

Yes

Please provide evidence to support your response.

There are currently relatively few taught Master's courses in UK physics departments and those that do exist tend to be focused on areas where there are prescribed career paths such as medical physics. This may be in part related to the existence of four-year enhanced bachelor's courses which now act as the primary route into post-graduate study. Over the past decade the number of students taking these courses has nearly doubled, and the proportion of students taking them against a three-year bachelor's degree has increased significantly. Nearly 6 in 10 students studying physics are now on enhanced bachelor's courses¹. These undergraduate degrees allow most students that wish to pursue a master's-level qualification to do so within the existing loans and fees system.

However, there will be some students for whom this path was either unavailable, or who were not able to continue along it and wish to return. There are a small number of taught Master's courses in areas such as photonics that can enable those returning to the subject, whether from a career-break or time in a different field, to gain the required qualification for a particular specialist employment or to take on e.g. a PhD. Currently little grant funding is available for most physics Master's courses, whether for fees or living expenses. Professional and career development loans (PCDL), with only short-term security from higher rates of interest, are potentially unattractive or inaccessible for many. As such, the proposed loan may have the positive effect of enabling those interested in developing specialist careers but who are unable to access other sources of funding. This may have a particularly beneficial effect on groups that are more likely to have taken a career break or those with caring responsibilities.

The current low levels of grant funding and degree provision may also mask an unmet demand that could be revealed by a loan funding structure. There may be more existing unmet demand for taught Master's from students who have come from a different subject area or for more specialised courses, but which have few existing grant funding options. Taught Master's programmes may be helpful in interdisciplinary areas of 'conversion' where a student may be looking to move between or across disciplines, such as biophysics and medical physics. These interdisciplinary fields are typically critical in current technological, business or social opportunities and challenges for the UK. But with insufficient studentship funding of these areas for taught Master's, few students are able to pursue their interest in these fields unless they take an existing PCDL.

The current system also incentivises students to remain on the same path and provides disincentives to moves in a different direction – e.g. to a particular specialism or on to a different but related path, which may benefit students who change their mind during their undergraduate degree or find a particular niche they want to explore in more detail. With a four-year enhanced bachelor's course, a student has access to funding for a Master's degree under the existing loans system. To change to a one-year taught Master's degree after an undergraduate degree, a student must find their own funding. The proposed loans system could help to reduce this apparent inconsistency between the enhanced bachelor's degree and the postgraduate Master's degree.

Q2. Are there other barriers, other than access to finance, which in your view prohibits progression into postgraduate taught Master's study?

Yes

¹ HESA data: <http://www.hesa.ac.uk/>

Please provide reasons/ evidence to support your response.

Additional barriers include childcare and caring responsibilities, which may be particularly burdensome for mature students². As such, it is particularly important that funding is available for part-time students. This might also stimulate universities to offer a part-time option for their postgraduate programmes, which currently are often only available full-time and are therefore less accessible for certain groups.

Q4. Do you think £10,000 is the right amount to support individuals in undertaking study, while ensuring they have a stake in deciding whether studying a Master's degree is the right path for them?

No

If no, what do you think the maximum loan amount should be and why?

Currently, fees for taught Master's courses in physics are of the order of £10,000 and in many universities higher still. If the loan is not able to cover them in full then it may be insufficient to break down students' actual or perceived financial barriers.

Additionally, whether it fully covers course fees or not, the loan will leave very little in even the best case for living expenses. This is still a significant cost burden on students, particularly those studying at universities in London. Whilst there is also a need to provide further studentship funding that can more accurately cover students' living costs, if loans for taught Master's are provided, then these too should also have a higher maximum level to better cover students' living costs.

Q11. Which groups of individuals, in your view, experience finance as the main barrier to pursuing postgraduate taught Master's study? How best might they be defined and/or identified? Are the proposed eligibility criteria appropriate or should they be refined? Please provide reasons/ evidence to support your response.

The main groups who experience finance as a barrier include those who wish to specialise (i.e., undertake a particular postgraduate Master's degree rather than an enhanced bachelor's degree), who have taken a career-break, or who may be of more mature age and who have acquired financial responsibilities.

As an example, the restriction of loans on the basis of age is likely to deter or lock-out people who are seeking a return to education, a career change, or who work in industry and are looking to take CPD activities leading to a master's qualification. This will continue to hold back efforts to link people in academia and industry and contradicts the goals set out in the 2014 BIS National Strategy for Access and Student Success in Higher Education³.

With this in mind, loans should also be available for students wishing to study part-time courses, as the flexibility of part-time courses allows for people from a wider range of backgrounds to gain access, such as those working in industry or with caring responsibilities.

Support for postgraduate research students

Q1. How can we broaden and strengthen support for postgraduate research students and excellent postgraduate research? Please give specific examples and evidence where possible.

² National Union of Students - *Meet the Parents* (2009):
http://www.nus.org.uk/global/nus_sp_report_web.pdf/

³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299689/bis-14-516-national-strategy-for-access-and-student-success.pdf

The most significant thing that can be done to broaden and strengthen support for postgraduate research students is to provide guaranteed and sustainable postgraduate funding for both fees and living costs. Any introduction of loans for PhD students must follow from this, although a more effective approach would be to increase the number of studentships available.

Currently, there exist many different types of studentships and bursaries for the partial or complete support of PhD students, and from many different sources. Both maintenance costs and fees are covered by this system, but the extent of the support offered varies by institution, subject and studentship. Displacing any of this funding by access to loans however would probably lead to the opposite effect on demand than the policy intends, as PhD students will have to either take on debts where previously they wouldn't, or self-fund more of their living costs outside their PhD.

Student experience

Currently, some students struggle to pay their living expenses using the stipends they receive. In a recent IOP commissioned report, 40% of students in physics report struggling financially⁴. Studentships and bursaries for PhDs are usually for a period of 3 – 3.5 years, but programmes often take longer. Some students may find access to a postgraduate loan as an addition to their budgets helpful to support their maintenance costs.

Any system should be designed to provide the best possible support for students from underrepresented backgrounds, giving students choice and control. Maintaining the current stipend system, at least at current levels, is an essential part of this, but loan funding may be able to complement existing provision.

Research excellence

If loans for PhD students are in addition to current stipend funding, it follows that those students that take up loans will largely be self-funding their studies. **As a guiding principle, any funding system for PhDs should be driven by research excellence, in terms of the importance of the project and quality of the student,** rather than the ability and willingness to pay—which might militate against the value of loans as a means of funding. Safeguards and oversight would therefore need to be built into a loans system, perhaps within universities or research councils, which would act to approve a student or project as eligible for a loan. This loan could then be in addition to an already awarded scholarship or perhaps *in extremis* to make up part funding offered by universities or research councils.

Collaborative work

There is also an important role for industry in broadening support for postgraduate research. Increasing collaborations with industry will be beneficial both for pioneering new and interesting areas of science and also in gaining more funding for students to study. The publication of the Dowling Review into university-business collaboration will ideally make recommendations in this area and it will be useful to follow up and implement those that will actively support more funding for studentships. This will not be the case for all areas of physics as some areas have more obvious and direct connections with industry than others, but those areas that can do so should embrace industry support.

⁴ Institute of Physics – *Survey of Physics and Astronomy Doctoral Research Students' Experiences and Career Intentions* (2015): http://www.iop.org/publications/iop/2015/file_65623.pdf

An element of good practice developed in the UK recently is represented by the EPSRC Centres for Doctoral Training (CDTs)⁵. These are strongly vocationally-oriented at the doctoral level, while still delivering excellent core science research and being uniformly collaborative with industry. They typically contain Master's-level material that is currently under-used for the alternative career paths that might build on it.

Q2. Is there unmet demand for postgraduate research skills and qualifications amongst employers and potential students? If so, please provide evidence.

There is evidence in physics that there is a high demand for PhD places that may outstrip available studentships. In the sciences in particular, more students on average than in the overall student population go on to further study, with around 35% doing so in physics⁶. However, this does not necessarily mean that this additional demand should be catered for. **PhDs should be primarily driven by research need and research excellence.** Furthermore, there are existing funding limitations which need to be taken account of if there are going to be more students taking PhDs, with the nature of postgraduate study in physics in particular having higher costs than many other subjects due to the need for well-resourced laboratories and equipment⁷.

There is certainly demand among employers for the skills and abilities that PhD students develop and possess. An RCUK study of employers for example found doctoral students made a large contribution to innovation within their businesses and provided essential specialised expertise⁸. There is a STEM skills shortage, in particular UK's industrial sector is expected to need around 1.28 million STEM professionals and technicians by 2020, and more highly qualified PhD students will meet some of this need⁹. But, as with demand for PhD places, demand for specifically PhD skills has never been effectively quantified. Students who possess a PhD in physical sciences, for example, do tend to earn more than those with only a Bachelor's or Master's degree¹⁰, suggesting that there is an economic argument to be made that demand exists. However, there are confounding factors – for example, those pursuing a PhD tend to be higher achievers and perhaps have more to offer employers more generally.

Q3. How can we attract and retain top research talent in the UK? What is the impact of the availability and level of individual stipends, and other factors such as postdoctoral opportunities? Does this vary across subjects? Please provide evidence.

The best way to attract and retain top research talent to the UK is to have the best facilities, the best research environment, and a strong support system for postgraduates. The UK currently has world-class facilities. In physics, the Research Excellence Framework (REF) showed that 85% of departmental environments were rated as 'world-leading' or 'internationally excellent'¹¹. Maintaining and improving this level of quality will be essential to

⁵ <https://www.epsrc.ac.uk/skills/students/centres/>

⁶ HECSU – *What do graduates do?* (2014):

http://www.hecsu.ac.uk/assets/assets/documents/wdgd_september_2014.pdf

⁷ Institute of Physics and Royal Society of Chemistry - *The Finances of Chemistry and Physics Departments in UK Universities: third review* (2015)

⁸ RCUK – *The impact of doctoral careers* (2014): <http://www.rcuk.ac.uk/RCUK-prod/assets/documents/skills/timodcfullreport.pdf>

⁹ <http://www.raeng.org.uk/news/news-releases/2013/September/engineering-diversity-concordat>

¹⁰ RCUK - *The Impact of Doctoral Researcher: Physical Science and Engineering Doctoral Graduates* (2014):

http://www.rcuk.ac.uk/RCUK-prod/assets/documents/skills/timodc_sb_psaedg.pdf

¹¹ <http://results.ref.ac.uk/Results/ByUoa/9/Environment>

continue to attract the best talent from abroad, and to retain the best UK talent. This will require strong and sustained investment both in research excellence and capital.

There is also a need to invest in more entry-level postdoctoral opportunities, including working more with industry. If researchers are looking to remain in an academic environment, then a lack of UK opportunities may see the best researchers either move abroad to take these opportunities or move out of academia altogether.

Q4. How could the Government further develop partnerships with industrial and charitable partners to leverage public sector funding to support postgraduate research? Please give specific examples and evidence where possible.

Greater integration with industry is necessary to create new funding options and provide careers support and opportunities for experience for students. In the IOP's submission to the Dowling Review, to be published later this year, we highlighted the need to incentivise the creation of long-term relationships between business and academia, and to provide the right environment for partnerships to grow. For example, the Government could set aside a pool of funds for match-funding to encourage both industry and charities to increase their involvement and investment in PhD studentships. For example, this is used with some success through the EPSRC CDT in Soft Matter and Functional Interfaces, which uses EPSRC funding to match industrial funding at 50%¹². This is more attractive to industry than requesting 100% studentship funding, due to the appropriately generic nature of PhD research, even when tailored to the underpinning science of a particular business.

Q5. How could the Government link with existing funding mechanisms and finance platforms and/or support new or innovative approaches? Please give specific examples.

No comment.

Q6. Would the availability of a £25,000 loan influence a student's decision to pursue postgraduate research study or the location of study? Please give your views on the loan amount and any other factors that may influence a student's decision.

Stipends via studentships should be the primary support mechanism supplied for PhD students, particularly in the sciences where there is a clear economic benefit from STEM skills. It is essential that the introduction of a loan system does not set in motion the expectation that at some future point, PhDs would be funded by loans rather than scholarships; such a development would risk drastically reducing the uptake of higher and research training.

The availability of a loan, even at a level to cover full tuition and living costs, in and of itself may not be sufficient to encourage students into PhDs. Students will have already accrued years of debt through their undergraduate studies, and adding to this debt burden will likely be part of a number of calculations as to the benefit of a PhD, particularly if they are unable to secure access to funding studentship. Loans may have more of an effect on those that are returning to a career in academia and may struggle to receive a studentship.

Existing stipends are often not enough for students to live on; the minimum stipend for 2014/15 is £13,863. As such, the maximum proposed loan of £25,000 (across three years) is around 30% lower than the minimum current stipend across the same period of time. There is a strong argument that this alone will not be enough for students to pursue a PhD.

¹² <https://www.dur.ac.uk/soft.matter/soficdt/>

Q7. Should we prioritise specific subjects where the scientific and economic case is strongest, or instead provide broad support to all subjects, even if this means capping the total number of loans or offering them on less generous terms? If we prioritise certain subjects, how should we go about it?

Within the sciences, most PhDs are funded through research council support, and this should continue. If additional loan funding were to complement this, **the system would need to ensure that excellent research was resulting and that this was not displacing existing funding for studentships.** Whilst STEM subjects should be a priority due to their importance to the economy and the increasing skills gap employers report for STEM skills, broad funding makes sense as fits in with current models. Outside of STEM, it is likely that a loan system could operate in a similar manner to existing undergraduate loans, with students choosing to gravitate to more popular or beneficial areas.

Q8. How can we ensure loans complement existing funding mechanisms, maintaining a focus on the most excellent research and on linking with external funding?

Loans should only be in addition to existing funding mechanisms and their introduction should not seek to replace, but only complement, the existing studentship provision.

As described in answer to question 6, the £25k loan would not be sufficient to cover the full costs of a PhD on their own. As such, they may achieve most as a top up to existing PhD scholarships or matched funding from universities. This would need to be a regulated system, with universities or research councils ensuring that loans funding is adequate to support a student and is aligned to the priorities of universities or funding agencies.

Q9. How can we minimise complexity for Higher Education Institutions and for employers?

The Loans funding should be as closely aligned with other funding processes as possible. Giving funders or universities a gatekeeper role in allocating loans would enable them to be processed through existing mechanisms, and would not introduce the additional complexity of having many self-funded PhD students.

Q10. Is there anything else we should take into consideration? Please provide evidence.

It would be useful to ensure that, allowing for the huge variation in the cost of different research areas themselves, **students are given as transparent and equitable treatment as possible in terms of the benefits they receive on their PhD** – including career opportunities and support, travel allowances or teaching obligations. This is important as any introduction of loans will add another dimension of difference between PhD students. **Students funded either in part by loans or by studentships should not be undervalued compared to the other.** Part of this will involve making sure that neither is made to feel at a disadvantage in terms of the support or benefits received or in their treatment.