

Postgraduate research degree programmes in English universities- costs and revenues

Tom Sastry

This briefing paper draws extensively upon original research undertaken by JM Consulting for HEFCE. JM have also offered helpful comments on an earlier draft for which we are grateful. The analysis contained in the paper is the sole responsibility of the author.

1. The Higher Education Funding Council for England (HEFCE) has just published JM Consulting's report into the costs of training and supervising postgraduate research students (PGRs)¹. The study has thus far attracted little attention - which is somewhat surprising given the nature of its findings which as JM note in their report "will probably be an unwelcome surprise to many in the sector."
2. The study indicates that the costs associated with the provision of research degree programmes are much greater than previously thought². At the same time, changes to the HEFCE funding formula reduce the revenue associated with research students (for technical reasons rather than because of a reduction in funding).
3. This paper is concerned with the mismatch between costs and revenues and its implications. It shows that this mismatch is considerable and in doing so demonstrates the value which institutions must place upon the non-financial benefits of research degree provision if the supply of places is not to fall. On the assumption that economic considerations influence behaviour even if they are not its sole determinant, it predicts an erosion of the distinction between postgraduate researchers and salaried employees as institutions are increasingly obliged to see in research students a source of labour as well as funding. It suggests that this may make for quite dramatic changes in cases where the research of postgraduate students is largely independent of the research effort of the host department. It also suggests that the number of postgraduate places may reduce over time, and fee levels may increase (and fee waivers reduce). It does not address the desirability of these developments or the case for and against intervention to prevent or mitigate them.

¹ http://www.hefce.ac.uk/pubs/rdreports/2005/rd01_05/rd01_05.doc

² This does not mean that the finances of the HE sector are in a worse condition than was previously thought. It does mean, however, that a proportion of the losses attributed in the past to research activity are in fact attributable to the provision made for research students.

Costs

4. The JM study was commissioned primarily to help HEFCE make two decisions:
- The balance of its research budget that should follow research students and research activity respectively
 - What the relative rates of funding should be for postgraduate research students in different subjects³
5. The JM study uses the TRAC (transparent approach to costing) approach to estimate the full costs of training and supervision for postgraduate research students (PGRs)⁴. It is based upon research in a sample of higher education institutions⁵, and gives a headline cost for an entire programme.

Table 1: Net institutional costs

£ per FTE student	Band A	Band B	Band C
2003/04			
Total programme cost	87,317	71,446	52,383
As a percentage of band C	167 per cent	136 per cent	100 per cent

Source: JM Consulting: Costs of training and supervising postgraduate research students

6. This figure does not represent a marginal cost which could be saved by recruiting fewer students. It is best understood as the long term cost to which an institution is committing itself at the point that it decides to create new capacity with the aim of training more PGRs.
7. The cost figures discount costs met directly by project funders (eg. the provision of consumables included in a research council grant). If such a discount were not made, the overall costs would be higher and the differential between laboratory and non-laboratory based subjects would be greater. Support provided for student maintenance is also excluded (this exclusion covers institution funded bursaries as well as stipends provided by external funders).

³ For the purposes of funding research and postgraduate research degree programmes, HEFCE divides academic subjects into three cost bands which, with some exceptions, correspond to clinical and laboratory based subjects (band A), part-laboratory based subjects (band B) and library based subjects (band C).

⁴ The full economic cost includes the cost of the student's use of the university's infrastructure and services as well as direct costs such as staff time.

⁵ The sample was weighted towards the research intensive institutions which train most of England's postgraduate researchers meaning that the results may discount any additional costs of appropriate provision in less research intensive environments

Benefits

Non-financial benefits

8. HEIs do, of course, derive significant non-financial as well as financial benefits from the presence of postgraduate researchers which can be offset against these costs. A full discussion of these benefits is included in the JM report. PGRs contribute to the research effort of the institution through their work; they contribute to the research and intellectual environment of the institution by their presence even where their research does not directly contribute to the work of others and they often perform teaching and other duties. Where an institution has played a significant part in training new researchers in a field there will also be a lingering effect upon the prestige both of the institution and the individual academics involved. It is extremely difficult to place a financial value on these contributions - but, in the light of the costing data, institutions will need to decide whether these are sufficient to outweigh the costs they incur in order to obtain them.

Indirect financial benefits

9. The benefits discussed have the potential to translate ultimately into revenue generation. If the work of PGRs contributes to research which improves an institution's research assessment outcomes or helps to secure other revenue or if their contribution frees up others to undertake revenue generating activities there may be a financial benefit as well as an academic one. On the other hand, as the total available to universities for research from most major sources is fixed there may be little net financial benefit across all institutions.

Direct financial benefits

10. There are, in addition, revenues which are directly linked to PGR registrations, which are summarised at Annex B. They may include revenue from HEFCE PGR supervisions payments, income from the Science Research Infrastructure Fund (SRIF) and fee payments. It should be noted that the net amount paid by HEFCE related to PGR students will reduce substantially (as grant paid in regard to academic staff increases), which will mean that, for top-rated departments in particular, the recruitment of staff eligible for the next Research Assessment Exercise will be more attractive than hitherto and the recruitment of postgraduate research students less so.

The net financial cost of research degree provision

11. Income and costs vary enormously. We have, however, attempted to illustrate the costs and revenues associated with four typical students over the three years for which funding arrangements typically last. The exemplifications address the cases of:

- an international student paying full fees (assumed to be £12,000 pa in laboratory subjects, £10,000 in part-laboratory subjects and (£9,000 in library based subjects)
- a home student who attracts funding both from HEFCE through supervision payments, has fees paid by a research council and also attracts a research training support grant and bench fees

- a home student who attracts HEFCE funding but has no other support and has fees waived by the institution⁶
- a home student with no source of funding except his or her own fee payments (very typical of students in departments rated below 4 in the 2001 Research Assessment Exercise).

12. These illustrations are intended to establish the general point that in most conceivable circumstances the costs of research degree programmes (as measured by JM) will be much greater than the revenues consequent upon their registration. They are not precise measurements of the size of that deficit, and should not be used as such. It is indeed possible that the assumptions made about revenue are so conservative as to invalidate the general conclusion, although this is highly unlikely. Stipends are excluded from revenues as JM have excluded maintenance from their analysis of costs.

Table 2a: Cost recovery for typical PGR in laboratory based subject

	Non EU full fee paid	HEFCE funded and Research Council grant	HEFCE funded no grant, fees waived	No HEFCE or other external funding
Fees	36	9		9
Bench fees	3			
Research training support grant		3		
HEFCE supervision payment		21	21	
Assumed future SRIF income @25 per cent of HEFCE income		5	5	
Total	39	38	26	9
Costs	87	87	87	87
Shortfall	48	49	61	78

⁶ See Table 31 of HEPI report "Postgraduate Education in the United Kingdom", where 15.9 per cent of home and EU research students are shown as having their fees waived.

Table 2b: Cost recovery for typical PGR in part-laboratory based subject

	Non EU full fee paid	HEFCE funded and Research Council grant	HEFCE funded no grant, fees waived	No HEFCE or other external funding
Fees	30	9		9
Bench fees				
Research training support grant		3		
HEFCE supervision payment		17	17	
Assumed future SRIF income @25 per cent of HEFCE income		4	4	
Total	30	33	21	9
Costs	71	71	71	71
Shortfall	41	38	50	62

Table 2c: Cost recovery for typical PGR in library based subject

	Non EU full fee paid	HEFCE funded and Research Council grant	HEFCE funded no grant, fees waived	No HEFCE or other external funding
Fees	27	9		9
Bench fees				
Research training support grant		3		
HEFCE supervision payment		13	13	
Assumed future SRIF income @25 per cent of HEFCE income		3	3	
Total	27	28	16	9
Costs	52	52	52	52
Shortfall	25	24	36	43

Issues raised

Possible impacts upon institutional behaviour

13. Attempting to estimate levels of cost recovery on PGRs is a highly imprecise science. This analysis does, however, support JM consulting's conclusion that: "*Current funding for each student varies considerably, but is well below the levels of cost, leading to significant levels of under-recovery of costs, almost without exception*". The very real and important benefits (discussed in paragraphs 8-9) which the presence of PGRs brings to institutions need to be set against the financial burden of supporting them, but it is nevertheless important to note that those costs are very considerable. That said, abrupt changes are not to be expected: where facilities are already in place there is unlikely to be any profit in leaving them idle.

14. It is also important to remember that any reduction in the supply of places is extremely unlikely to affect the most desirable students⁷. Research students will continue to be cheaper to employ than salaried staff - who make use of the same infrastructure and support services whilst also carrying much higher salary and associated costs. Therefore, where the primary motivation for recruiting postgraduate research students is to benefit from their contribution to an institution's teaching or research we do not anticipate any change in behaviour because there is no more economic way of securing this contribution. In other cases, though, institutions may well respond – in due course if not immediately – by reducing the supply of places and increasing fee rates.

15. Given the costs that have been identified, the logic of this analysis is that institutions will increasingly look to understand better the non-financial benefits associated with PGRs and to give preference to students who deliver these benefits over those who do not. This suggests a future for postgraduate research degree programmes in which research students are expected to make a practical contribution to the work of their host institution; in which their research topics are chosen with an eye to this need and in which they increasingly resemble salaried employees. It also suggests that opportunities to study for research degrees part-time, by distance learning or indeed by pursuing independent research largely unconnected to the research effort of the department may be curtailed. In disciplines where the 'lone scholar' model predominates, the implications may prove more serious than in those where the most able PGRs are already well-integrated into the research effort of the research teams in which they are based because it will be harder to demonstrate the contribution of the student to the work of academic staff.

⁷ The most desirable students are those who pay high fees whilst at the same time making a real contribution both to the revenue generating activities of the institution and to its research culture. From this perspective, a brilliant student from outside the EU with perfect English and familiarity with UK HE, who comes on a full government scholarship to work on a project for which the university expects to attract large revenues would be ideal. Students will be less desirable to the extent that they lack any or all of the characteristics of this ideal PGR. In most cases students with support from major grant funders such as the research councils and major research charities will be among the most desirable and it is unlikely therefore that any diminution in the supply of places will affect these prestige funders.

Will fee levels rise?

16. On the face of it, the JM study provides institutions with a strong case to raise fee levels. It will be interesting to see if research councils and other grant funders are prepared to increase the level of their support and whether self-funding students can be persuaded to pay more.

Future of institution-funded studentships

17. It is also probable that the study will make institutions more reluctant to waive fee payments. In 2003, 15 per cent of home and EU domiciled students had their fee payments met by the institution⁸. It would be surprising if this figure did not fall.

Will the costing information lead to a reduction in PGR provision?

18. It is likely that the figures in the JM report will give rise to serious discussions within institutions concerning the costs of postgraduate research training and supervision. Where there is a mismatch between costs and revenues institutions will have to be satisfied that the non-financial benefits associated with the presence of postgraduate researchers are of sufficient value to offset the financial losses. It may be that they are and that institutional behaviour is largely unaffected by the considerations highlighted in this paper. The transparency provided by the JM study and the simplified HEFCE funding policy are entirely new. What is more, the value of a PGR to an institution consists not just of direct revenues but also non-financial contributions to the institution's work and reputation – and there has been no systematic attempt to place a value on these. Given these uncertainties, predicting the impact of the information summarised in this report upon the behaviour of universities and colleges is equally uncertain.

19. What is certain is that the non-financial benefits associated with the presence of postgraduate researchers will be closely scrutinised by institutions. If the result is a better understanding of the contribution made by PGRs this may be a good thing; but a consequence of this may be that opportunities for more independent study are limited.

Issues for national policymakers

Is the burden equitable?

20. There are four beneficiaries of research degree programmes:

- the student,
- the institution (which receives the benefit of the student's contribution to its research and to the academic environment more generally),
- the higher education sector more broadly (which receives a supply of people qualified to work in academic roles)
- the wider community

⁸ Postgraduate Education in the UK (HEPI 2004)

21. Under the present system it is clear that a very high proportion of the costs are borne by the institution. It is worth asking whether the way in which costs are shared reflects the distribution of benefits.

Will HEFCE further enhance its funding for PGR training and supervision

22. It needs to be borne in mind that HEFCE has it within its gift to make provision for PGRs more attractive by increasing the rate of funding (at the expense of funding for other activities). It is HEFCE that decides how much to provide in supervision payments and how to structure the funding system. If, following these revelations, universities cut back the number of postgraduate research students, it would be open to HEFCE to adjust the funding arrangements to reduce the losses they incur on these. It has to be said, however, that the apparent losses are so large that it is unlikely that the HEFCE figures can be adjusted to such an extent that these are offset entirely. Universities will therefore still have to make judgements about whether the non-financial benefits outweigh the direct costs.

23. Nor is it clear that HEFCE will wish – or ought – to take steps to maintain PGR output. Indeed, there has been very little systematic thinking about appropriate levels of research degree provision. Policymakers will want firm evidence both that the supply of trained researchers is inadequate (either in a specific area or across the board) and that this is the result of supply side problems rather than inadequate demand before committing scarce resources. At present that evidence is lacking. The propensity of UK domiciled students with firsts and upper seconds to enter research study is declining but there is no evidence that this is the result of a lack of places and equally there is no evidence that current levels are problematic. This is an area that warrants further study.

24. The data show clearly that the cost for those institutions that do not receive HEFCE funding are very substantially greater than for those that do, and this is likely to lead to even more pressure on such institutions to reconsider whether to pull out of PGR provision. The question then arises whether this matters: it would be consistent with the HEFCE policy to concentrate research training where the research quality is highest, and PGR provision would become even more concentrated than at present. If that policy is well-founded then such consequences would be acceptable; if they are not, then they would not.

Annex A

Changes in the funding of postgraduate research students

25. The publication of the JM study coincides with changes in the way in which HEFCE funds institutions for training and supervising postgraduate research students. From 2005-6 HEFCE will make a single payment to institutions based solely on the weighted⁹ number of qualifying¹⁰ home and EU resident PGRs in each institution.

26. Previously funding was provided through three separate routes.

27. First year full time (and equivalent part-time) students were funded through the HEFCE teaching model. The model is constructed in such a way that there was no 'rate per student' although the impact upon grant levels was low because the model assumes receipt of a fee and discounts this from the grant calculation. Assumed fees for postgraduate students are much higher than for undergraduates, reflecting the gap between the (now abolished) up-front undergraduate tuition fee and the typical postgraduate fee.

28. Home and EU second and third year full time (and equivalent part-time) students attracted a supervision payment at a level considerably lower than that payable from 2005-6. Only those in departments rated 3a and above in the most recent Research Assessment Exercise were eligible.

29. The sum of these two elements came to considerably less than the £183m which HEFCE will pay out in supervision payments in 2005-6. Funding for training and supervision has therefore been increased.

30. Under the old system, however, numbers of qualifying students (including non-EU students) also affected institutions' core research grant. In effect, research student numbers were being used as a proxy for overall research capacity¹¹ - which drives core funding allocations - as well as being fundable in their own right. Under the new system this is no longer the case. It is important to recognise that this does not represent a cut in funding - in fact the overall level of core research grant has also risen considerably as has the funding intended to support the training and supervision of research students. All

⁹ PGRs in part-laboratory based subjects (band b) attract a weighting of 1.3; those in laboratory based and clinical subjects attract a weighting of 1.6

¹⁰ Students qualify if they are in departments rated 4, 5 or 5* in the 2001 Research Assessment Exercise and are in their first second or third years (if full-time) and first through sixth years (if part time). No student is allowed to attract more than the equivalent of three years full-time funding which means that some part time students in years 4-6 who have previously been full-time and would otherwise qualify may not do so.

¹¹ HEFCE uses the term 'volume' or 'the volume measure' to refer to its proxy measure of research capacity, which, along with RAE ratings determines funding allocations. Staff entered in the previous Research Assessment Exercise are much the largest element in the volume measure. Postgraduate researchers used to be the second largest element until they were removed from the calculation for the 2005-6 funding round. The other elements are research fellows, research assistants and research funding from charities.

that has happened is that core research grant is now allocated on a basis which does not take account of research student numbers.

31. In consequence, whilst the amount set aside for training and supervision under the old system was less than under the new, the value of each student could be much higher, especially to institutions with higher RAE ratings. The net effect of the changes will be to reduce the value of the funding dependent upon research student numbers from £303m in 2004-5 to £183m¹² in 2005-6 even though the funding intended to support the costs of training and supervision will actually increase. The balance will (in effect) contribute towards an increase in the rate at which research active staff are funded.

¹² HEFCE will pay out £183m through the new supervision fund in 2005-6. In addition £4m is being provided to bolster the capability fund which supports lower rated departments in vulnerable subjects to recognise the costs of providing research training in these departments. A further sum has been allocated to provide transitional funding for other 3a rated department which were eligible for supervision funding under the old system but not under the new.

Annex B

Income associated with PGR Students

Revenue from HEFCE PGR supervision payments

32. HEFCE will from 2005-6 make a single flat-rate payment related to UK and EU research student numbers in departments rated 4 or above in the 2001 Research Assessment Exercise (students from outside the EU and students in lower rated departments will attract no funding). Institutions will be funded at a rate yet to be determined but estimated by HEFCE at:

Clinical and laboratory based subjects	: £7,000 per FTE ¹³ student per annum
Part-laboratory based subjects	: £5,700 per FTE student per annum
Library based subjects	: £4,400 per FTE student per annum

Source: HEFCE website

33. This funding is provided for a maximum of three years, giving a HEFCE contribution to programme costs of:

Clinical and laboratory based subjects	: £21,000 per FTE student
Part-laboratory based subjects	: £17,100 per FTE student
Library based subjects	: £13,200 per FTE student

34. This represents a significant increase upon the level of direct funding previously available from HEFCE. However from 2005-6 postgraduate research students will no longer influence the allocation of mainstream HEFCE research (QR) funding. JM report that the total funding driven by PGR training and supervision in 2004-5 (under the old system) was £303 million¹⁴. In 2005-6 that will fall to £183 million with the balance used to increase the rate of funding for research active staff. This reduction in the funding linked to PGR numbers means that, for top-rated departments in particular, the recruitment of staff eligible for the next Research Assessment Exercise will be more attractive than hitherto and the recruitment of postgraduate research students less so.

SRIF funding

35. The JM headline costs include a figure reflecting the value of the student's use of the research infrastructure. The UK government funds HEIs to provide an appropriate research infrastructure through the Science Research Investment Fund (SRIF). It is appropriate, therefore, that research student numbers have an impact upon SRIF allocations, which depend upon the level of research funding each institution receives.

36. The funding formula for the upcoming round of SRIF is designed in such a way that just over two thirds of each allocation depends upon an institution's HEFCE research

¹³ Full time equivalent

¹⁴ This figure is quoted in the JM report. HEPI understands that HEFCE is the ultimate source for this figure.

funding (including PGR funding)¹⁵. The remainder depends upon other research income. It is therefore reasonable for institutions to assume that each pound received in HEFCE supervision payments will be followed some years later by some additional SRIF money and that research student fees paid by other funders will attract another (still smaller) dividend.

37. For the purposes of the illustration provided below in table 2, it is assumed that each pound of HEFCE supervision funding has a value (in terms of subsequent SRIF funding) of 25 pence. This figure - a 'best guess' rather than an estimate - is based upon the relative value of SRIF and QR¹⁶. It should be remembered, however, that there is no guarantee that there will be a future round of SRIF extending beyond 2007-8 and that there is also no guarantee that any future round will use a formula which produces this kind of result.

Fee payments

38. The DfES sets a recommended fee level for postgraduate research students, which, whilst not mandatory, is widely observed by institutions. In 2004-5 this was set at £2,940 per annum, representing an income of just under £9,000 over three years. Some research council¹⁷ funded students attract an additional £1,000 per annum research training support grant (RTSG) which pays for skills training for the PGR. International (non-EU) students generally pay higher fees (sometimes as high as £12,000 pa) and bench fees of around £1,000 per annum but do not attract HEFCE supervision payments. Students funded as part of a research council project grant attract higher rates of funding (because they currently attract a 46 per cent overhead and their use of consumables is covered in the project grant). Moves towards funding on the basis of full economic costs, however, cast doubt upon the future of this method of funding PGRs.

¹⁵ Although SRIF is a UK wide scheme, the allocations are made on a different basis in Scotland Wales and Northern Ireland

¹⁶ SRIF in England will be worth a total of £903m in 2006-7 and 2007-8; QR will be worth £2688m over the same period making SRIF worth 33.5 per cent of the value of QR. Given that QR allocations drive two thirds of SRIF this means that each pound of QR should be worth 22p of future SRIF funding. HEFCE supervision payments are a part of QR for this purpose and therefore attract the same 'SRIF dividend'. This has been rounded up to 25p so as not to understate the effect. The impact of other (non-HEFCE) external funding for PGRs upon SRIF allocations is likely to be negligible.

¹⁷ Where PGR places are supported through a doctoral training account it is the responsibility of the institution to determine how many students it will support with the available funding and to account for the use of funds. There is, of course, an inverse relationship between the number of students and the funding per student.