

# **Using metrics to allocate research funds: initial response to the Government's consultation proposals**

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## **Section 1: Introduction**

1. In his Budget speech in March, the Chancellor of the Exchequer announced major reforms to the way research is assessed and funded. He announced that the Research Assessment Exercise (RAE) would be discontinued, and in an associated document ('Science and Innovation Investment Framework: Next Steps', referred to here as 'Next Steps') a consultation was promised on the Government's preferred option: replacing the RAE with performance indicators based on research funding ('metrics').
2. In April HEPI published a report on the Government's proposals ('Using Metrics To Allocate Research Funds', referred to here as 'Using Metrics'). Three months after 'Next Steps', the Government has now published its consultation proposals under the title 'Reform of Higher Education Research Assessment and Funding' (referred to here as 'the consultation document').
3. The first thing to be said about the consultation document is that it contains just 25 pages, fewer than 10 of which are devoted to discussion of the proposals. It contains no analysis of the problems associated with the RAE or the metrics alternatives, and provides no basis for policy decisions. It asks which of 5 metrics-based models is preferred, but as will be discussed below all suffer from similar flaws and there is no basis in the document for making a judgement between metrics and peer review.
4. Despite that, the consultation document represents a welcome advance on 'Next Steps', in that many of the concerns raised regarding the original proposals have been recognised if not addressed. However, the absence of any discussion of the likely behavioural impacts of the proposals is a serious omission. Before metrics can be responsibly introduced there needs to be reasonable confidence that their more damaging effects can be contained.
5. It is not so long since the Treasury insisted on five tests in considering the viability of UK membership of the Euro. Given the centrality of the Treasury to the decision to replace peer review with metrics, here are five tests that they – and the consultation document – should have applied in relation to the proposal to replace the RAE with metrics.

## Section 2: Five tests

### The behaviour test

6. Some of the main behavioural consequences of a metrics-based assessment and funding system were identified in 'Using Metrics':

- Academics would struggle to finance research in fields which are, perhaps temporarily, unfashionable, or whose conclusions are likely to be unwelcome to funders of research
- Even if funding was available, research which is hostile to the interests of major research funders would be discouraged because universities would fear the consequences of alienating major funders
- Even more grant applications would be made, driving down the success rate even lower than the present level of under 30 per cent<sup>1</sup>. And consequently an even higher proportion of the funding available for university research would be swallowed by the cost of grant applications
- University managers would limit research opportunities to high performers and in some cases where student demand is low (mainly in the sciences) separate research from teaching departments entirely, leading to the conversion of such departments into research-only institutes
- There would be a major impact on recruitment policies. Staff with a track record of winning research grants would become increasingly in demand, and others (in particular young staff or those returning from a career break) increasingly unattractive.

7. Universities will follow the money. If one activity brings in revenue and another does not, they will tend to do more of the former than the latter. In 'Using Metrics', HEPI observed that metrics would tend to lead to the neglect of research for which there was no paying customer, a greater concern with winning funding than with delivering high quality research, and a tendency to release successful researchers from teaching duties.

8. The consultation document goes further than 'Next Steps' in recognising these concerns. It accepts that metrics will create a new set of incentives and behavioural effects and acknowledges that more needs to be done to investigate these. It specifically offers respondents the opportunity to comment on the potential behavioural consequences of

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<sup>1</sup> Unless success rates were boosted by penalising institutions with poor success rates. The downsides of this option are discussed in paragraphs 9-11.

metrics. It nevertheless persists in its commitment to introduce metrics even in the absence of such analysis.

9. In one respect the document goes further than 'Next Steps', raising the prospect of a new set of behavioural distortions not consequent upon the original proposals. It suggests that success rates in research council competitions may be used as a metric. This is a device to prevent research councils being overwhelmed by speculative applications if metrics are introduced and to massage success rates to give the appearance of a well-functioning system.

10. However, penalising low success rates is a bad solution to a self-inflicted problem. It will force each institution to develop an internal review process for research proposals before they are submitted. These 'internal' peer review processes will consume massive resources – at least as much as the present 'shadow RAEs' and similar exercises that many institutions conduct. If the cost of a failed grant application is that the institution will not only be denied QR income, but that in addition it will be penalised, then any well-managed institution is likely both to encourage its staff to try and win more grants and contracts, and also to insist that all grant applications go through an internal peer review process before they are submitted. Yet despite these efforts the present failure rate of 70 per cent is likely to increase hugely as more grant applications are submitted – and they are likely to be better submissions.

11. The penalising of unsuccessful research council grant applications will also make publicly funded research less attractive than other sources because of the penalty associated with unsuccessful applications. There is no reason to think that other (especially industrial) providers of research grants will inform the Government of who has been successful and who has not (if they did so it would make their funding less attractive, which is not in their interests). Some will applaud this incentive to prefer private research contracts, but it is not an obviously beneficial conclusion.

Q1 Are you satisfied that the behavioural impact of metrics will be less deleterious than the present arrangements?
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### **The cost test**

12. 'Next Steps' argued that the costs of the RAE (which it put at £45m) were unjustifiable. It made no mention of the costs associated with metrics. Nor does the consultation document.

13. Metrics represent a less direct measurement of research quality than the RAE, and therefore offer greater scope for universities to attempt to improve their results by means other than the production of better

research. The most obvious way of doing this is by diverting resources from the conduct of research itself to the making of proposals. The incentive to do this will be greatly intensified when all (rather than a portion) of available research funding is determined by the success of grant applications, and the assessment of completed work provided by the RAE is removed.

14. In April HEPI showed that, by linking QR funding to research grants and contracts, metrics would encourage universities to spend more money on seeking funding and force funders to spend more money on processing applications. We estimated that the additional cost could be up to £817m over seven years – nearly 20 times more than the Government's estimate of the RAE cost (£45m). This is not surprising when it is considered that:

- The RAE takes place only once every few years, but each research grant application carries a cost
- Metrics provide an enormous incentive to apply for research grants and contracts, driving up the resources wasted on applications
- By providing a subsidy, a metrics scheme will provide incentives for grant providers to increase the number of grants they give
- The overhead for research council grant processes is 10 per cent or more – whereas the RAE overhead is less than 1 per cent.

15. The consultation document recognises the need to ensure that metrics do not increase the transaction costs associated with research funding and says that this will be taken into account when a new system is evaluated. That is excellent.

16. Unfortunately, there is no analysis of the costs of metrics in the consultation document, nor is there any indication of the way the Government hopes to control them. The preface written by the Minister for Higher Education speaks of the 'savings of time and effort' created by exchanging metrics for the RAE. The lack of any evidence to support the existence of such savings is a major flaw in the consultation document. In fact such savings do not exist – on the contrary, given the cost of the process of winning grants and contracts, the cost of metrics will be very much higher. But, as with the RAE, the cost will be borne largely in universities.

17. 'Using Metrics' pointed out that if the main concern of the Government was to save money and academic effort, then the most effective way of doing so would be to transfer the research councils' response mode funding to the funding councils for allocation as QR.

18. Response mode funding exists to enable researchers to bid for funds to undertake research on subjects of their own choosing. Funding does

not depend upon the strategic importance of the research to the UK but solely on the quality of the research proposal. The funding councils, however, already have a much cheaper system for funding on the basis of quality alone: QR based upon the RAE.

19. There would be a significant cost saving to the sector if response mode funding was transferred to the funding councils: for every £100m of funding transferred, roughly £9m would be saved in administrative costs. This is a serious proposal that needs to be addressed seriously.

Q2 Are you satisfied that the additional cost of a system based on metrics is outweighed by the benefits?
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### **The distinctiveness test**

20. QR funding is not at present intended to reward or recognise the full range of research activities. It is intended to fund underlying infrastructure, some salary costs and research for which there is no paying customer. The way money is allocated will to a large extent determine how it is used because universities will need to comply in order to keep the money coming in. Therefore, if it is allocated on the basis of universities' success in winning other sources of funding it will no longer play a distinctive role. In April, HEPI pointed out that this issue was not considered in 'Next Steps'.

21. The consultation document recognises that QR plays a distinctive role which needs to be preserved. In the words of the document: "QR must continue to support research capacity and capability; it should support strategic, long-term research; and it should enable speculative research".

22. Unfortunately, the document does not address the concern that metrics, by removing any incentive to undertake 'unfunded' research – indeed by providing disincentives for such research – will make it impossible for QR to play the role the Government wants it to play. One of the strengths of our research funding arrangements – as a result of the dual support system – is that it contains multiple channels of funding, driven by multiple decisions about the allocation of those funds. That will be at risk when all funding is driven by one set of decisions.

Q3 Do metrics ensure that QR will remain a distinctive stream, which will provide funding for infrastructure, some salary costs and research for which there is no paying customer?
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## The reliability test

23. In 'Next Steps', the Government suggested that very high observed correlations between institutions' share of RAE-driven QR and other sources of research funding prove that metrics can assess quality with similar results to – and therefore as reliably as – the RAE.

24. In April, HEPI pointed out that the correlations presented by the Government made no allowance for the fact that universities are of different sizes and types. The largest are by most measures a hundred times larger than the smallest. This means that it is not only other sources of research income which are highly correlated with QR: the amount of tea drunk in each institution would also be highly correlated, for a simple reason – more activity of all sorts takes place in bigger universities.

25. The consultation document shows that the Government now understands this. It states that "the quality measures generated by [the metrics models suggested in the document] are not very highly correlated with individual RAE ratings" and that consequently "we should not rely on these models to offer quality assessments at subject level"<sup>2</sup>.

26. It is worth noting, however, that two of the models put up for consultation (models B and D) *do* depend on using metrics to offer quality assessments at subject level – which the consultation document explicitly rules out. If these models use unreliable indicators, they should not be used. Moreover, even if funding councils and government do not themselves use metrics at the level of individuals, that is precisely how they will be used by university managers – to identify which staff are 'profitable' and which are not.

Q4 How can we prevent metrics being used for purposes for which the Government believes they are 'unreliable'?

27. It is also worth noting in passing that even at institutional level allocations based on all the metrics variants offered in the consultation document will mean large shifts in research income compared to the present. That is not an argument against them. There is nothing inherently right about the present distribution, but for many institutions the change will mean significant reductions in income. But each of the models has quite different effects, and the document provides no rationale for any of them. As a result, many are likely to argue,

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<sup>2</sup> Consultation document, Paragraph 5.2. There is of course no reason to suppose that metrics are 'wrong' if they fail to replicate the existing QR distribution but, of course, there is not reason to suppose that they are an accurate reflection of quality either. Unlike the RAE they do not have a track record of producing results which are generally regarded as credible.

depending on their self interest, for or against one particular model, as they are invited to do by the consultation document. However, the most serious problems with metrics are almost all applicable equally to all the proposed models.

### **The research capacity test**

28. The Government's laudable intention, stated many times, is to build up the UK research base both within and beyond the HE sector and to place university research on a sustainable basis.

29. Metrics-based QR will make these goals much harder (and more expensive) to achieve. In April, HEPI warned that the use of metrics based upon research funding would create a 'subsidy model' in which funding which previously supported university research infrastructure and independent research became, in effect, a back-door subsidy for companies and others for whom universities conduct research.

30. If each pound of grant or contract income is directly associated with a known sum of QR<sup>3</sup>, then QR funding, which currently pays for university infrastructure will effectively become a subsidy for research funders. Past experience tells us that universities are willing to undertake research at less than 100% cost recovery, so if undertaking research at less than cost will generate additional QR income, the prices funders need to pay for research will fall. That fall in price would represent a *de facto* transfer of public funding for research in universities to charities, business and government departments. This is wholly at odds with the Government's ambition to create a research base that is more sustainable in the long term.

31. There is no reason to suppose that the beneficiaries will spend the money on research or innovation. In fact, the reforms will have the effect of making it harder for the in-house research facilities of companies and government agencies to compete with universities on price. They will have the same effect upon commercial providers of research services. Therefore, the use of existing QR funding to create a *de facto* subsidy for research funders is unlikely to help the UK to enhance its research capability. Quite the opposite.

Q5 Will metrics be consistent with the Government's policy of enhancing the capacity of the UK's research base?

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<sup>3</sup> Under model A, the simplest of the five models in the consultation, each pound of external research income attracts a uniform 44 pence of QR. Under the other models, the mean subsidy level is 44 pence but subsidies vary by subject and/or institution.

### **Section 3: The RAE, metrics and the third option**

32. The Government's case in favour of metrics is essentially a case against the RAE. There is little, either in 'Next Steps' or in the consultation document, to suggest that even the Government itself believes that metrics have any virtue beyond that of not being the RAE. There is no suggestion that metrics are actually preferable or more robust than peer review as a basis for judging the quality of, and funding, research.

33. This then raises the key question that ought to be at the heart of this consultation, and is not even asked. Is a system of assessment and funding based on metrics sounder – and will it have fewer drawbacks – than one based on peer review?

34. The Government's case against the RAE is somewhat diffuse, based as it is upon repeating (but not examining) concerns that have been raised about the exercise almost since its inception. The lack of analysis is an extraordinary omission, and matters because it is almost certainly the case that some of the concerns arise not from the RAE process itself, but from the highly competitive and selective nature of research funding, and that others are specific to the RAE process in its current form rather than common to all forms of peer review.

35. The main concerns raised with the RAE in 'Next Steps' are:

- That it is too expensive
- That it disadvantages user-driven and interdisciplinary research
- That it distorts behaviour (most notably recruitment, publication and the nature of research conducted).

36. This report does not assess the problems with the RAE, nor is it a defence of the RAE – if there are viable alternatives then they should certainly be considered. But as far as metrics are concerned as an alternative, the discussion in this report suggests that they would have far greater disadvantages. The only one of the above areas of concern where metrics score better than the RAE is in respect of user-focussed research; and as has been suggested, in this respect they go to the other extreme, by providing public subsidy– and considerable incentives – for undertaking commercial research, whilst undermining the curiosity driven research for which QR was previously intended.

#### **Effects of competition**

37. The highly selective funding of research in this country – together with the RAE – create intense competition for funding and reputation. This highly competitive environment is the reason for many of the behaviours that give cause for concern. If it did not matter so much



there would be no need to spend so much effort on what are essentially tactical decisions (who to submit, how to describe research strategy and so on). It is not the RAE as a process that is the problem (in fact as a process it is relatively straightforward and cheap and consumes only between 5 per cent and 10 per cent of the total cost). It is the anxiety and the fevered activity that occurs as institutions try to place themselves in a better position to score highly that causes problems.

38. If competition is the reason why the RAE is controversial, it is important to recognise that metrics do not promise a lessening of that competitive pressure. They will intensify competition, because they encourage a focus upon individual – as opposed to departmental – performance: metrics will make it easier to identify *individuals* who are successful at winning QR.

39. That is partly because they are more transparent (making individual contributions more visible) but also because they remove the checks the RAE places on the impact a single individual can have on funding levels. If metrics are used, a single individual can be worth dozens of times more money than an average researcher if they are much more successful at attracting external income. Furthermore, under some metrics systems, the number of staff identified as research active will no longer influence funding with the result that there will no longer be any incentive to attempt to lift research performance across the board (as opposed to focussing upon exceptional individuals).

40. This complete transparency gives rise to one of the most potentially radical consequence of metrics. Even if funding is calculated and provided at institutional level, it will be easy to find out which departments and which researchers have 'earned' it – far more so than with the RAE, which is transparent only at the level of the submission. It would be very surprising if vice-chancellors do not give researchers who bring in a lot of 'metrics points' more research time and resources than those who do not. This means that metrics will have an effect on which individuals and departments get to do research; and they will affect which research agendas are pursued and which are not.

41. At present most institutions review the research status of their staff when preparing their RAE returns (this is one of the reasons why the RAE is so disliked by some). With the current arrangements, success in obtaining grants determines whether a researcher is able to carry out a particular piece of research; inclusion in the RAE dictates what type of academic (s)he is deemed to be. If QR is based upon metrics, success in obtaining grants and contracts will determine not only the ability to carry out particular pieces of research but the professional status of the academic. Academics will be competing for their professional status every time they make a grant application. It is hard to imagine that competition for grants and contracts will not intensify as a result.

42. Competition for research funding and reputation does not just affect research: it affects the priority given to other academic activities, particularly teaching. It will not be possible to make teaching as competitive as research because it is not possible to concentrate rewards on a small elite without collapsing the system. If research is more competitive than teaching it follows that research performance will be more critical than teaching performance to universities and that teaching will be the poor relation. This state of affairs is not new, but metrics, by intensifying competition in research, will exacerbate the situation.

43. The Government, to its credit, has not made the case for metrics on the basis of their capacity to intensify competitive pressures. A further question for anyone inclined to make such a case is this:

Q6 Is it really worth destabilising institutions, incurring massive transaction costs, creating a subsidy model with all its disadvantages and undermining university teaching in order to ratchet up the competition between researchers a little further?

### **Research assessment and funding in the future: an improved peer review process**

44. The choice is between assessment and funding driven by metrics on the one hand – based fundamentally on the amount of grant and contract income won – and on the other hand a system based on peer review. The peer review system does not have to be the RAE. There is scope to use metrics as a part of an improved peer review system. But there is an enormous difference between a system based on metrics, and one where metrics informs peer review.

45. In non-STEM (Science, Engineering, Technology and Mathematics) subjects (i.e. more than half the total), where the consultation document accepts that metrics may not work, it indicates that a peer review process might be appropriate, but says that it would have to be less intensive than the RAE. So long as it is possible to devise a streamlined process which enjoys the confidence of those being assessed, this seems entirely right; but, there is no reason why any such a streamlined peer review should not be an option in STEM subjects too. It would be intolerable if staff in STEM subjects were subjected to the pressures and distortions that metrics would bring while their colleagues in other subjects were enjoying the more balanced environment of a peer-review regime. The differences would be substantial – one would be a system that assessed the quality of what people had done, the other would measure how much money had been generated.

46. However, metrics of all sorts including funding, citation and some of the others mentioned in the consultation document, could have a role in

a streamlined peer review process. There are two main ways they can contribute:

- a. By triggering a peer review assessment where they showed that an institution's relative research performance had changed. The existence of such a trigger mechanism would mean that it was no longer necessary to assess institutions whose performance had not changed.
- b. By informing peer review panels. RAE panels already make extensive use of input metrics (including research income) as evidence of research quality. The consultation proposes that some panels could make more use of such information in 2008. It may be that it is possible to reduce the workload of panels by providing enough information to enable them to review a smaller sample of the work submitted – or indeed take their own sample of the work of an institution – without compromising the rigour of the assessment. In any case it is entirely right that panels should be encouraged to use metrics to help them judge the quality of research, if appropriate metrics are available for that purpose.

47. So here is a final question that the Government should have asked:

Q7 Do you agree that QR funding should be informed by a system that uses metrics only, or one where peer review is informed by metrics?

## **Section 4: Conclusion**

48. The argument over metrics is about means rather than ends. The Government, and particularly the Treasury, have distinguished themselves by showing an unprecedented recognition of the value of the UK research base and a willingness to support it with investment – and with the promise that 2.5 per cent of GDP will be devoted to research within 10 years. They have also taken steps to encourage businesses to renew their own investments in research and innovation. All of this deserves the support of those concerned with Higher Education and with the contribution research makes to the economy and society.

49. If the government is putting unprecedented sums of public money into HE research it is entitled – or rather obliged – to take a close interest in how it is spent.

50. The Government was also right to note that many criticisms have been made of the RAE – some of which are undoubtedly valid and others of which are not. Where it is wrong is to take the partisan case made by entrenched opponents of the RAE and, on the basis of that case, assume

that metrics – and specifically funding metrics – must be an improvement on the present system.

51. That is not the case. These proposals risk – on the basis of no proper assessment of the problems with the current arrangements or the likely effect of the changes proposed – to do great damage to our research base, which has developed into a world class asset over many years. In summary, they would:

- a. Provide an incentive to undertake contract and grant funded research over curiosity-driven research that does not have a customer
- b. Divert QR funding to provide an effective subsidy to private providers of research funds
- c. Drive down the prices charged for contract and grant research, undermining the sustainability of the UK's research base
- d. Provide incentives to universities to focus on staff with a track record of bringing in grant and contract income, at the expense of others
- e. Greatly increase the transaction costs of securing research funds
- f. Greatly increase competition in the already highly competitive research environment
- g. Further separate teaching from research.

52. An alternative is available – not the continuation of the RAE, but a system based on both peer review and metrics. That was not offered for consultation, but would be far preferable to any of the five options offered by the Government – options that are basically the same in concept, and which share the same damaging defects.