HEA | AN tÚDARÁS um ARD-OIDEACHAS
HIGHER EDUCATION AUTHORITY

Review of the Allocation Model for Funding Higher Education Institutions

Working Paper 8: Funding Research, Innovation and Enterprise Activity

Contents

1) Introduction

In the working papers produced to date, we have considered the existing situation in higher-education funding, key questions and issues emerging, the costs of higher education and the adequacy of the existing costing system, and the evolving role of the system performance framework in a funding context. This has provided a platform to look at the specific components of the future funding approach and to set out potential options for change based on the consultation and analysis undertaken to date.

The focus of this working paper is the funding treatment of research, innovation and enterprise activity in higher education. The *National Strategy for Higher Education to 2030* identified research as one of the core functions of higher education. Research support has been a key component of the university funding approach, but has not been built into the model for IoTs, other than in a higher weighting for postgraduate students. There is merit in looking at whether a wider, more metric-based approach should be adopted for allocating research funding and whether the current level of top-slicing is appropriate. The role of the IoTs in regional innovation and enterprise development also needs to be considered in the context of future funding and how this might be best reflected. Indeed, most HEIs are engaged in stimulating entrepreneurship, supporting innovative businesses and engaging in knowledge transfer. A consistent system which recognises the differentiated roles across this entire theme will be looked at by the review.

This paper, therefore, begins by attempting to define what is involved and what we expect from universities and IoTs in terms of their respective contributions to research, innovation and entrepreneurship. It also examines how the existing funding model rewards such contributions and concludes by exploring potential options for revising the model in future.

2) What do we mean by research, innovation and enterprise activity?

The starting point in considering how research, innovation and enterprise activity should be funded and supported within higher education institutions must be a clear understanding of what is expected from those institutions. In common with many other international systems (see Working Paper 4), research has been embedded within Ireland's recurrent grant allocation model (RGAM) for universities in acknowledgement that this is a core part their mission. This 'research based' allocation has predominantly been driven by numbers of postgraduate research degree completions, with some recognition for the university's ability to attract competitive research funding.

A. The Role of Universities

The HEA has been clear about the rationale for such a research-based allocation to universities, indicating that it is intended to offer a foundation investment to support research excellence across all disciplines. It allows core recurrent grant funding to be used to put central research support infrastructure in place, to fund permanent academic posts for Principal Investigators (PIs), and to facilitate engagement by academic staff in research activities, including the development and supervision of postgraduate researchers. It acknowledges that, in order to develop research capability, universities need this foundation investment which can then be used to attract competitive funding for projects and activities that will ultimately deliver impact. This enables the fulfilment of universities' very significant ambitions to develop global research reputations in specialist research areas and to develop, attract and retain leading research 'stars' who can further drive research performance and impact.

Innovation and knowledge transfer are recognised as important objectives for institutions, but performance in this regard has been addressed within the system performance framework rather than

via direct funding mechanisms. Universities also use this mechanism to demonstrate commitment to entrepreneurship and enterprise support, by means of the inclusion of entrepreneurship modules across provision or the operation of innovation or incubation centres linked to research and technology transfer activity.

There is broad consensus that the funding model should explicitly recognise the core university research mission, and there is acknowledgement (though not universally) that the metrics used to reflect research activity could evolve to greater reflect relative research performance. It has been emphasised, however, that a major part of this allocation must be driven by postgraduate student numbers, as these reflect research activity across all disciplines and provide the pipeline of skilled researchers that sustains and develops research capability and ultimately impacts on the economy, society and culture.

During the current review, feedback on university performance with regard to RDI was generally positive from both relevant state agencies and industry representative bodies. During the consultation phase, there has been some concern regarding the responsiveness of universities to the skills and innovation needs of industry, from indigenous SMEs to major multinational inward investors. This was matched by a desire for the funding model to incentivise more proactive engagement in this area, with a perception that the current system performance framework did not facilitate the requisite level of challenge to perform in this area.

Ultimately, we require a funding system that recognises the need for continued foundation investment in supporting research excellence across all disciplines, but which takes account of wider success in innovation and enterprise support and engagement. A balanced approach which links RGAM allocations with robust targets and monitoring within the system performance framework is required in order to reinforce these objectives. Options in this regard are considered later in this paper.

B. The Role of Institutes of Technology

The development path of Institutes of Technology (IoTs) began with their formation as regional technical colleges in 1970. From an initial foundation in technical training, the Institutes continued to build education and research offerings from certificate to undergraduate level, with the addition and expansion of Masters and PhD awards providing a full spectrum of technological provision. This was viewed as essential in providing a coordinated regional response to the emerging innovation needs of the small, open Irish economy in maintaining and building its global competitiveness. Some seed funding was provided by the then Department of Education and Science to build applied research capability in specialist areas, to develop a postgraduate pipeline and to strengthen regional enterprise support infrastructure via the Technological Sector Research (TSR) Fund (established in 2000). This has facilitated the development of niche areas of specialisms across IoTs, drawing on their close links with industry and greater flexibility in responding to smaller scale partnership opportunities with SMEs.

Levels of RDI activity and performance vary substantially across the IoT network, and the entire competitive research funding base (across 14 IoTs) is broadly equivalent to that of one of Ireland's universities. Nonetheless, areas of considerable success have emerged. Waterford Institute of Technology, for example, hosts the most successful Irish research centre in attracting EU FP7 funding. Five institutes (WIT, AIT, CIT, DIT and DKIT) are active participants within Science Foundation Ireland research centres, complementing university capability as part of a hub-and-spoke model.

Although of a different scale in competitive funding terms, much value is placed on the IoTs' role as a pivotal driver of regional innovation and growth. There has been widespread coverage of their success relative to the universities in relation to U-Multirank, which includes a number of regional-

engagement indicators.[1] Their agility and responsiveness to working on smaller applied research and consultancy projects that can bring indigenous SMEs into the innovation system for the first time is recognised, and there is widespread use of mechanisms such as the Enterprise Ireland Innovation Voucher scheme[2] to facilitate this engagement. An important step was also the development of a nationwide network of 15 Technology Gateways,[3] funded by Enterprise Ireland and delivered through the IoT network, which provide access to technology and applied research capability for SMEs. The origin of many of these funded gateways can be traced back to the seed investment in research capability and postgraduate provision via the TSR. There is concern that, without continued investment in a postgraduate pipeline and without wider research support infrastructure in these key areas of applied research capability, the sustainability of the industry impacts that have been generated will be under threat. A further legacy of the TSR is the presence of business incubation centres across all IoTs, aligned with responsibility for running Ireland's largest start-up programme, New Frontiers. This co-location with innovative enterprises is often held up as key attribute of the sector.

There is much debate about the appropriate role for IoTs within the Irish research and innovation system. Specifically, a number of concerns have been voiced: regarding the spread of limited research resources to institutions that lack the scale to deliver the potential impact fully; that postgraduate provision is of insufficient scale to ensure the critical mass of expertise and support infrastructure as defined in the *National Framework for Doctoral Education*;[4] and that resources may have been deployed in some cases to build research numbers in response to Technological University criteria at the expense of the teaching mission. Nonetheless, there is clear evidence of the value of IoTs in this wider space, and there is consensus that the IoTs must have a role (and be recognised for that role) in delivering core aspects of an effective research and innovation ecosystem. This role must include:

I. Delivery of relevant postgraduate research provision to provide a pipeline of skilled, innovative graduates to meet regional and national industry needs.
II. Provision of applied research expertise driven by industry engagement with a focus on stimulating regional SME innovation.
III. Driving new regional enterprise via entrepreneurship support and start-up facilities.

At present, the HEA funding model only recognises the first of these three attributes, and this is to a more limited extent than is the case with postgraduate provision in the universities. A key challenge for the current review will be to determine if and how this and the other objectives should be more fully reflected in how IoTs are supported and funded.

3) Allocations to support research and innovation activity

In the RGAM, funding in respect of research in higher education institutions is currently allocated in two ways:

[1] Niall Murray: 'Institutes of technology top of the class in third-level rankings', *Irish Examiner*, March 30 2017, http://www.irishexaminer.com/ireland/institutes-of-technology-top-of-the-class-in-third-level-rankings-446449.html

[2] This provides support of €5,000 to a company to undertake small research or innovation projects with a HEI focused on particular business problems or potential solutions and is often seen as a 'door opener' which allows trust to be built between industry and academic partners and more intense engagement to ensue.

[3] Further details here: https://www.technologygateway.ie/.

[4] Available here: http://www.hea.ie/sites/default/files/national_framework_for_doctoral_education_0.pdf.

- ✓ Weighted research student numbers (Universities and Institutes of Technology)
- ✓ Research top-slice (Universities only)

Each of these elements will next be discussed in turn.

A. Research Top-slice (Universities)

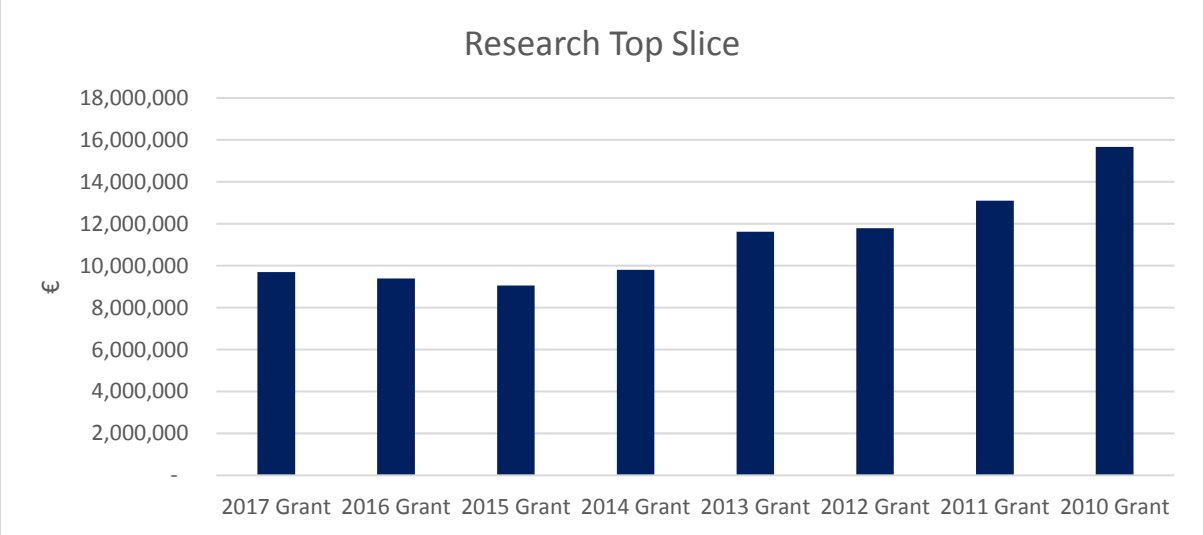
At present, a research top-slice of 5% is applied to the universities only.[5] This is allocated on the basis of research metrics as follows:

I. **75%** of the top-slice is allocated based on the university's output of research degrees (Masters and PhD) averaged over the three most recent years.
II. **25%** is based on competitively earned research income per academic staff member.

Thus, for example, 75% of the research top-slice for the 2017 Grant Allocation was allocated in accordance with the universities' share of the average of 2013, 2014 and 2015 Masters and PhD research graduates. The remaining 25% of the top-slice was distributed on the basis of universities' research income for 2014/15 per academic staff member as at 31st December 2015.[6] The latter data is collated and supplied by the IUA.

In recent years, the research top-slice has amounted to approximately €9m per annum. This is compared to €23.1m in 2009; the research top-slice has declined in line with cuts in the overall university core grant. See Figure 8.1 below for an overview of variations in the research top-slice.

Figure 8.1: Research Top-slice, 2017 & historical comparison



When all research elements of the RGAM are considered (top-slice and weighted student numbers, which are discussed in further detail below), this is a relatively simple approach, which centres principally on postgraduate research numbers and reflects research activity across all disciplines. Nonetheless, only the relatively small research top-slice could be defined as an outcome-focused approach, with its emphasis on graduate numbers and on research income levels achieved. There is a

[5] This is 5% of the universities' core grant less pensions in payment and pensions supplementation.
[6] The research income figure returned for RGAM purposes is the figure as reported in the universities' Funding Statements (Harmonised accounts) rather than in their consolidated accounts.

frequent misunderstanding among the IoTs that the top-slice represents an additional funding contribution for university research activity. In fact, it is a top-slice from the university 'pot' in recognition of the importance of their research mission and does not constitute extra funding.

B. Weighted Research Student Numbers (Universities & Institutes of Technology)

As previously stated, the universities receive funding in respect of research by means of both weighted research student numbers and a more output-oriented research top-slice; the IoTs receive funding in respect of research by means of weighted student numbers only. Working Paper 3 outlined that the allocation of the core grant is determined by a formula based on a standard per capita amount in respect of weighted student numbers across various subject price groups. Research students attract a multiple of the funding provided for undergraduate students: roughly 3 times an undergraduate student in the universities, and 2 times an undergraduate in the IoTs. Notably, about 20% of the universities' weighted student numbers are research student numbers versus only 3% in the IoTs.[7] The lower weighting for research students in the IoTs as compared to the universities is intended to reflect the actual cost differentials in the two sectors and is based on the general approach that the core grant reflects costs rather than incentives. The differences in weightings are also a product of very different systems. In this regard, as noted in Working Paper 6, a move to a common higher education costing system and a clear, shared understanding of the cost of provision is essential. There has been no consistent view from individual IoTs regarding the need to bring these weightings into line with university levels, particularly among those IoTs with less intensive levels of RDI activity. (See Appendix 1 for further details on weightings applied in both University and IoT sectors.)

A summary of the HEA research funding received by both sectors may be found in Tables 8.1 and 8.2 below. As Table 8.1 illustrates, the total research allocation for the universities has declined from approximately €58m in 2013 to €42m in 2017. The breakdown of this allocation is affected by fluctuations in weighted research student numbers and in the research top-slice (which is determined by completion of research degrees and research income per staff member), as well as changes in the overall funding available to the higher education sector. The research allocation is expressed below as a percentage of the university core grant after pensions have been removed. Thus, it is apparent that there has been an overall decline in the research allocation to universities and in the percentage of university grant that may be considered to be allocated to research.

Table 8.1: Research allocation for Universities, 2017 & historical comparison

	2017	**2016**	**2015**	**2014**	**2013**
Standard resource	€1,206	€1,247	€1,227	€1,321	€1,574
Standard resource x Research WFTEs	€31,864,123	€33,683,893	€31,315,844	€35,939,651	€46,645,965
Add in Research Top-slice	€9,694,187	€9,384,317	€9,058,129	€9,798,464	€11,618,064
Total Research	**€41,558,310**	**€43,068,210**	**€40,373,973**	**€45,738,115**	**€58,264,029**
University Core Grant	€227,012,781	€221,139,733	€216,873,246	€233,083,079	€268,654,007
Research as % Grant	**18.3%**	**19.5%**	**18.6%**	**19.6%**	**21.7%**
Total Grant (less pensions)	€193,883,746	€187,686,333	€181,162,588	€195,969,279	€232,361,288
Research as % Grant (less pensions)	**21.4%**	**22.9%**	**22.3%**	**23.3%**	**25.1%**

Table 8.2 illustrates changes in the research allocation to the IoT sector. As already stated, this is calculated on the basis of weighted research students only. It is noteworthy that, despite variation in

[7] Non-EU research students are included in both the university and IoT student number weightings. Non-EU taught students are excluded from both.

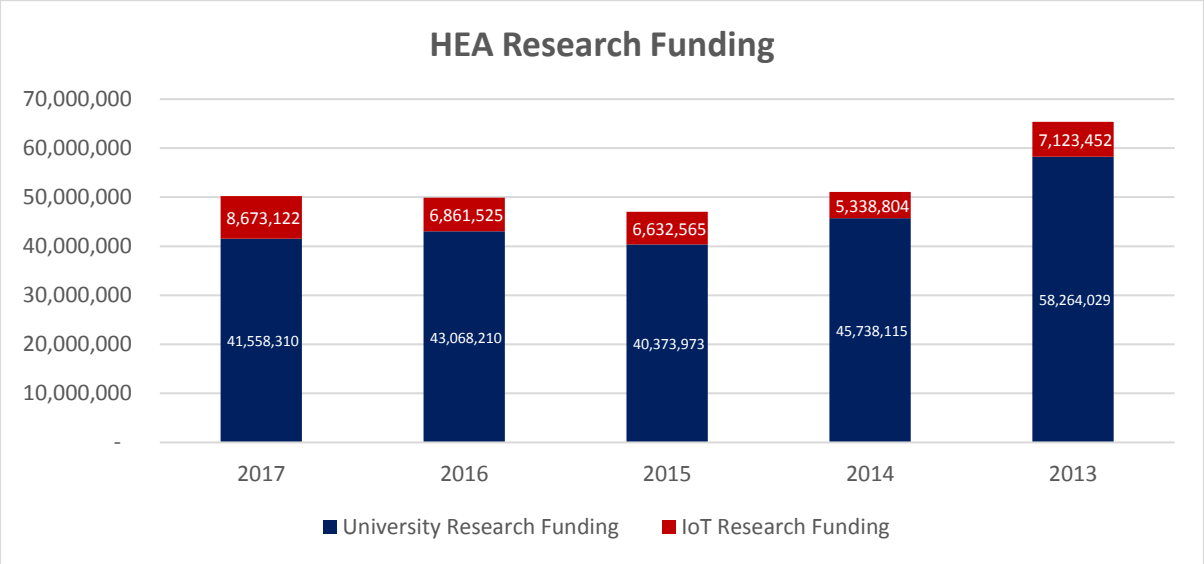
overall IoT core grant, the total research allocation has increased. Likewise, the percentage of grant that is allocated to IoT research has also increased.

Table 8.2: Research allocation for IoTs, 2017 & historical comparison

Research: IoTs	**2017**	**2016**	**2015**	**2014**	**2013**
Standard resource	€2,713	€2,515	€2,377	€2,361	€2,830
Standard resource x Research WFTEs	€8,673,122	€6,861,525	€6,632,565	€5,338,804	€7,123,452
Total Research	**€8,673,122**	**€6,861,525**	**€6,632,565**	**€5,338,804**	**€7,123,452**
IoT Core Grant	€288,820,211	€278,547,434	€261,195,053	€252,872,921	€299,504,463
Research as % Grant	**3.0%**	**2.5%**	**2.5%**	**2.1%**	**2.4%**

Lastly, Figure 8.2 below illustrates the changes in the overall HEA research allocation. In 2017, the total HEA research allocation to universities and IoTs is approximately €50m.

Figure 8.2: HEA research allocation, 2017 & historical comparison



4) The link between the HEA allocation and levels of RDI investment

An issue with the existing approach to funding universities is that, from the outside, it can appear that only the top-slice (which, as noted above, has rapidly declined in recent years) is directly allocated on the basis of research. Meanwhile, the postgraduate research weightings in the RGAM would seem only to cater for students. The reality is very different, as one would expect of any block grant funding system with institutional autonomy that aims to direct spend in the most effective manner across teaching and research.

This postgraduate research 'premium' contributes significantly to a wider state foundation investment in research excellence. The perceived transparency of HEA research funding is hampered because no exact figure for RDI investment can be provided, given the diffuse items that contribute to overall research investment over and above the more obvious elements of core grant that have already been outlined. We can, however, make a broad estimate of the HEA investment in RDI by validating the 'research driven' allocation against other expenditure data sources.

The main component of HEA research investment is via the core grant allocation to universities. It is estimated that, in 2016, around 19% of the recurrent grant was allocated on the basis of RDI activity.

If this rate is applied across the entire HEA block grant university allocation (including free fees) the estimated investment in such activity was approximately €126m in 2016.

Institutions are asked to declare the level of this grant that is allocated to research and innovation as part of the Higher Education Research and Development (HERD) survey; the latest published results in this regard refer to the period up to the academic year 2012/13. This shows general consistency with the 'research driven' proportion of the allocation model, particularly given declining overall levels of state funding. €149m of the 2012 block grant is recorded as being allocated by institutions to research and innovation.[8] HERD data provides insights regarding the importance of the HEA block grant for particular research disciplines. In 2012, the majority of RDI funding for social sciences was from the HEA block grant (48%), and a high proportion of block grant funding was also used to fund RDI in the Humanities (44%).

Alongside the university allocation, the allocation to IoTs in recognition of postgraduate research students amounts to approximately €8m per annum. Other HEA allocations include funding for the Irish Research e-Library (€10m) and a centre for high performance computing (€1.8m). This makes the total estimated HEA support for research and innovation approximately €145.8m for 2016.

5) Different ways of considering research, innovation and enterprise performance

Before moving to examine some relevant future options for allocating HEA funding to the universities and IoTs, it is worth considering some of the ways through which institutions' research, innovation and enterprise performance might be evaluated. Additional or alternative mechanisms might productively be used to align allocations more closely with perceived research performance. Of course, metrics that are suitable for monitoring institutional or system performance are not necessarily appropriate for use in block grant allocations. Furthermore, a number of research metrics feature in the institutions' Compacts as part of the system performance and strategic dialogue process. The core principles underpinning the future funding model require both a metric-oriented and outcome focus and a transparent and simple approach. Thus, targeting a small number of core metrics which clearly relate to research performance must be a key aim.

A. Research Graduates

The current university research top-slice measures research graduates (Masters and PhD) – rather than research student enrolments, for example – which embeds an outcome-oriented focus within the research allocation. Arguably, postgraduate provision must remain in some manner as a critical component in how funding is allocated. Currently, this represents the majority (75%) of the existing university research top-slice.

This metric could potentially be extended to encompass postdoctoral researchers who are employed in an institution at a particular census date. Given the nature of postdoctoral research, however, this would necessarily be a simple 'headcount' as opposed to involving measurement of outcomes such as graduation. Given that postdoctoral researchers are typically funded through competitively won research funding, the quantity thereof could represent a proxy for their respective institutions' success in this domain.

[8] DJEI: *Survey of Research & Development in the Higher Education Sector 2012/2013*, 2015 (p. 17), https://www.djei.ie/en/Publications/Publication-files/Survey-of-Research-and-Development-in-the-Higher-Education-Sector-2012-2013.pdf. Block grant data for the IoTs was omitted from the HERD data (p. 5).

Within the Irish context, these metrics would be appropriate to the policy environment, given that key actions of *Innovation 2020* are to increase enrolment of postgraduate researchers and the number of funded postdoctoral places.[9]

B. Research Income

The remaining 25% of the current university top-slice is allocated based on competitively earned research income per academic staff member. This is purposely designed to ensure that performance is not skewed by the scale of institution, which could occur if this were to be replaced by a metric such as percentage share of research grants obtained. Insofar as this metric rewards institutions for research income obtained, whilst protecting against issues of scale, this is an effective metric.

Whilst running the risk of overcomplicating metrics for grant-allocation purposes, an option would be to offer a particularly significant weighting for non-exchequer research funding won for research. In particular, this would include funding obtained from industry and under Horizon 2020. Notably, Ireland aims to secure €1.25bn from Horizon 2020 and to increase collaboration between enterprise and the public research system.[10] Such a weighting could potentially incentivise success in these target areas.

C. Research-Active Staff

Acknowledging the value of these two above-described components, it is worth considering whether the addition of a small number of additional indicators could synergise with them to offer a fuller reflection of research performance and impact. Measurement of research-active staff in an institution could provide a key link in building its specialist research capability which would ultimately deliver funding success. At present, no widespread, reliable metric is available to measure research-active staff, and such a component would warrant careful and precise definition. However, this could be an avenue that would warrant exploration in future in discussion with HEIs, given that some have already formulated their own institutionally specific definitions of research-active staff (TCD and DCU, for example).

D. Publications, Citations and Impact

Notably, the current research top-slice for the universities does not take account of institutions' success in the area of publication profiles, citations and impact. For this purpose, a 'basket' of research metrics could be used, including both bibliometrics and, potentially, altmetrics.[11] Bibliometric analysis could be employed as a means of demonstrating the impact of research undertaken by a university and provide an objective view on its relevance and excellence. Some relatively commonly used impact metrics are listed below, which could be taken as a starting point for discussion with the research community; it is by no means an exhaustive list.[12]

---

[9] *Innovation 2020*, p. 38-39.

[10] *Innovation 2020*, p. 21.

[11] Altmetrics complement traditional bibliometrics by tracking the early impact of your research outputs. For recent work in this area, see *Next-generation metrics: Responsible metrics and evaluation for open science Report of the European Commission Expert Group on Altmetrics*, 2017 http://ec.europa.eu/research/openscience/pdf/report.pdf#view=fit&pagemode=none

[12] The Category Normalized Citation Impact (CNCI) of a document is calculated by dividing the actual count of citing items by the expected citation rate for documents with the same document type, year of publication and subject area. When a document is assigned to more than one subject area an average of the ratios of the actual to expected citations is used. The CNCI of a set of documents (for example, the collected works of an institution) is the average of the CNCI values for all the documents in the set. See http://ipscience-help.thomsonreuters.com/inCites2Live/indicatorsGroup/aboutHandbook/usingCitationIndicatorsWisely/normalizedCitationImpact.html.

- ✓ Number of peer-reviewed publications
- ✓ Number of citations/average citations per publication
- ✓ Number/% highly cited publications
- ✓ Category Normalized Citation Impact (CNCI)
- ✓ Number of Papers with international co-author/% International collaborations

Various tools are available to generate bibliometric analyses, with Scopus (Elsevier) and Web of Science (Thomson Reuters) being among the most significant resources. Of course, it is often noted that such metrics inherently favour STEM outcomes, which would be to the detriment of institutions whose scholars' research strengths lie in the arts, humanities and social sciences. Evidently, this is an area that warrants significant investigation prior to the introduction of such metrics to the RGAM.

E. Knowledge Transfer and Innovation

It is apparent that a variety of external stakeholders wish to see a more tangible link between university research activity and its application by industry. It has been argued that knowledge transfer needs should be embedded as a core function of a HEI, alongside teaching and research.[13] Along these lines, research funders' submissions to this review's consultation process consistently highlighted the value of knowledge transfer metrics. Specifically, the level of engagement between universities and SMEs was an area of criticism emerging during the review consultation process. It would be challenging to develop a robust metric that accurately reflected research impact on this cohort, and the separation of different types of company in developing an allocation mechanisms could risk over-complexity. There is a case, however, to consider using an existing, established Knowledge Transfer Ireland (KTI) metric to take account of the application of innovation to industry.[14] Arguably, this is a less traditional approach than the current university research top-slice. There are flaws attached to this and indeed any metric type, but nonetheless its inclusion within a research top-slice is worthy of consideration. A number of potential metrics are suggested below:

- ✓ Number of collaborative/contract services/constancy agreements with industry
- ✓ Number of Invention Disclosures
- ✓ Number of Patents filed
- ✓ Number of Licenses, Options & Assignments (LOAs) executed
- ✓ Number of Spin-outs established/active
- ✓ Number of Companies Supported in Incubators

€34.5M in funding has been announced for the third phase of the Technology Transfer Strengthening Initiative (TTSI) to strengthen the knowledge transfer system in Ireland; adoption of such metrics would evidently be in line with national policy.[15]

In additional to KTI metrics, consideration may be given to the evaluation of institutions' success in obtaining related supports, such as under the Enterprise Ireland Innovation Voucher scheme. Assessing the quantity of vouchers that are redeemed by each institution would facilitate evaluating their success in initiating new engagement with enterprise, particularly with SMEs. Notably, a record

[13] Enterprise Ireland: *A Review of the Performance of the Irish Technology Transfer System 2007-2012*, May 2014 (p. 10).

[14] KTI: *Annual Review & Annual Knowledge Transfer Survey*, 2015.

[15] The programme, first introduced back in 2007 by Enterprise Ireland, is managed and administered by Knowledge Transfer Ireland (KTI). See https://www.enterprise-ireland.com/en/News/PressReleases/2017-Press-Releases/Minister-Halligan-announces-%E2%82%AC34-5M-in-funding-for-the-Technology-Transfer-Strengthening-Initiative.html.

number of 1,036 collaborative projects between companies and Irish HEIs were supported by Enterprise Ireland in 2016, and 594 Innovation Vouchers were redeemed.[16]

F. General Remarks

Clearly, to use all the metrics described above would lead to an overly complex model and would be unlikely to stimulate improved performance, although the links between the different indicators would help to mitigate such risks. While adding several new components of the core grant to support research would be an attractive proposition, its administration would be complex and costly to operate if they were to have the necessary level of transparency and fairness. Nonetheless, the foregoing analysis illustrates the range of metrics that could be deployed for this purpose.

To ensure sustainability and contribute to year-on-year consistency, an average performance over the preceding three years could be used for some or all the above-mentioned criteria. As previously noted, this is currently the case with the research-graduate metric in the current university research top-slice. This would protect against year-to-year movement that could make a material difference to grant allocations and thus could have an adverse impact on institutional behaviour.

Evidently, the adjustment or introduction of new metrics should be done in such a way as to avoid affecting any one institution to its sudden, significant benefit or detriment and should occur in a context of collaboration with the institutions to be affected. Nonetheless, moving towards a new model featuring the inclusion of more diverse research metrics, effectively broadening the definition of research performance, would be a worthwhile endeavour. However, the precise nature of these metrics and the importance assigned to each is a topic worthy of further consideration.

6) Options for consideration: Universities

In identifying options for consideration by the funding review, it is critical that any proposed way forward maintains institutional autonomy in determining how a block grant is spent to underpin delivery of its strategy and ensure responsiveness to a rapidly evolving environment. However, the future solution must also recognise the importance of research, innovation and enterprise engagement to the mission of our HEIs and reflect this this via the funding model.

For the universities, the solution should build on, rather than replace, the existing approach to reflecting the research mission within the block grant. There appear to be three main options:

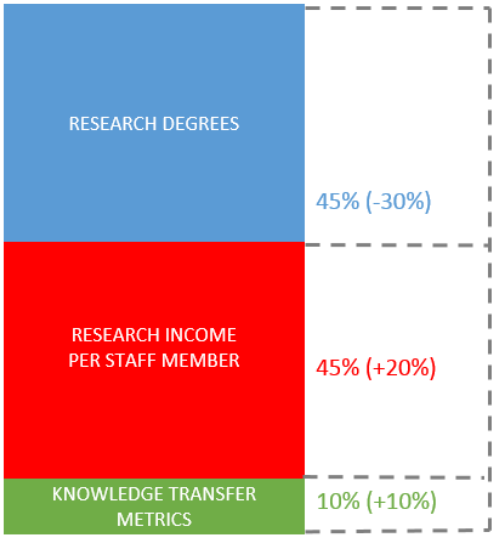
I. Continue with the current 5% research top-slice arrangement.
II. Increase the research top-slice.
III. Widen the metrics used to determine allocation of the research top-slice.

It should be acknowledged that the current research top-slice is successful insofar as it adopts an outcome-focused approach, with its emphasis on research graduate numbers and on research income levels achieved. Nonetheless, as previously outlined, it has been significantly reduced in line with a decreasing university core grant (of which it forms 5%). If the top-slice were to be increased at present, the standard resource would consequently decrease (as the balance available for core allocations would be reduced). The effect on overall grant allocations (i.e. total allocations including pensions, access, research, core) would to reward those institutions who attract proportionately more from the research top-slice than the core grant. Conversely, this would penalise those institutions that would attract less of the research top-slice in terms of their overall grant allocations.

[16] Enterprise Ireland: *End of Year Statement 2016*, p. 3.

Notably, in overall terms, the moderator would serve to reduce the impact of any increase or decrease of research top-slice funding for particular institutions, preventing 'shocks' to the system. As the level of top-slice funding can be increased without causing sudden changes to overall funding levels, it is proposed that this be phased in incrementally: over a 2-year period, the research top-slice would increase to 7% and then 10%. The moderator would ensure that there would be no sudden or negative impact on the sustainability of individual institutions. Clearly, any such top-slice increase would both reflect and incentivise research and enterprise engagement in the universities.

Consideration should also be given to evolving the method of allocating funding on the basis of research performance. The system performance framework has placed a major emphasis on setting of objectives and targets in this area. This could include the introduction of new metrics, alongside postgraduate research activity and competitive funding. Notably, elements of activity around innovation and enterprise development vary substantially in nature from institution to institution. There are difficulties in applying a robust core metric that would effectively recognise these nuances. The following breakdown is proposed for the 2019 allocation:



I. **45%** based on the university's output of research degrees (Masters and PhD) averaged over the three most recent years.
II. **45%** based on competitively earned research income per academic staff member.
III. **10%** based on a 'basket' of KTI & Enterprise Ireland Metrics.

Subject to agreement being reached, bibliometrics and indicators measuring research-active staff could subsequently be introduced.

Further work needs to be undertaken on the research overhead issue, as the current system does not seem to reflect the significant proportion of core resources required to service research funding won from competitive sources. The nature of the HEA foundation investment in research recognises that there should be some interconnection between the core capability and infrastructure that this supports and the delivery of important projects, outcomes and impacts that are financed by other external funding sources. Evidence suggests, however, that the contribution from core resources for this purpose is undermining wider sustainability and a means must be found in the wider funding model for higher education research to more closely align investment with the real cost of research overheads in institutions. Some further comments on this issue are in Appendix 2.

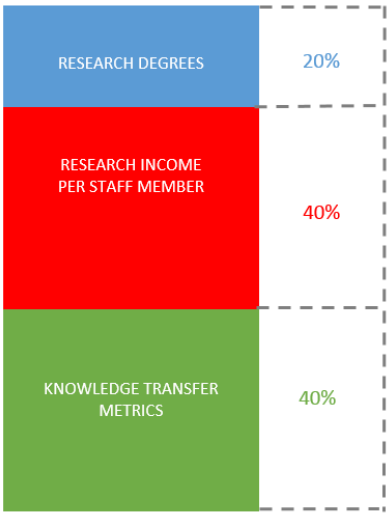
7) Options for consideration: Institutes of Technology

For Institutes of Technology, there has been limited recognition of their mission in driving regional innovation and enterprise growth within the RGAM to date. Notably, the achievement of academic excellence in research and support for the exploitation of intellectual property, technology and knowledge transfer are highlighted as criteria in the Technological Universities Bill, indicating their

relevance to those institutions that might be affected by future legislation of this kind.[17] To address this gap, several options are worthy of further evaluation.

I. Continue with the current weightings & no research top-slice for IoTs.
II. Introduce a research and enterprise engagement top-slice for IoTs.
III. Reconsider the weightings for research students in IoTs.

For the IoTs, there is no existing research allocation mechanism from which to build. Yet, the approach to rewarding research performance in IoTs could follow the same logic as for the universities, linking postgraduate research provision to institute research capability, which delivers externally funded projects and, ultimately, impact for industry. However, traditional research metrics more characteristic of a traditional university would not accurately reflect the IoT mission. If clear and objective measures of industry engagement or SME penetration could be articulated, then they clearly could have a place in such an approach. For the IoTs, there is also a case for considering their contribution to stimulating entrepreneurship and incubating start-ups. While the metrics to be used for the top-slice could potentially mirror those used in the university RGAM, their respective weighting could be adjusted to reflect and to support the distinctive roles of the IoTs in research, knowledge transfer, and enterprise and community engagement. Research undertaken in the IoTs tends to focus on realising regional or national impact rather than on publication or on recognition within the academic community, while also acknowledging the importance of such factors in underpinning good research. As a result of the significant financial pressures on IoTs at present, it should be considered whether such a top-slice should be phased in as additional funding becomes available. For a future 5% research top-slice, the following breakdown is proposed:



I. **20%** based on the university's output of research degrees (Masters and PhD) averaged over the three most recent years.
II. **40%** based on competitively earned research income per academic staff member.
III. **40%** based on a 'basket' of KTI & Enterprise Ireland Metrics.

This mechanism would recognise the most successful IoTs in research and innovation, and there is a case for rewarding them for this performance and acknowledging that there is a cost involved in this success that is currently unfunded. Care would need to be taken to ensure that, if a research allocation along these lines were introduced, it would be focused on additional funding which would not undermine the sustainability of the sector. This could potentially be harnessed as a way to provide additional support to emerging TUs; however, it is worth reiterating that additional funding would be required. In introducing enterprise-engagement metrics, particularly for the IoTs, it would be important for the full range of such agreements and partnerships to be recognised and rewarded in

[17] See https://www.education.ie/en/The-Education-System/Legislation/General-Scheme-Technological-Universities-Bill-2014.pdf.

order to foster growth. THEA would be well-placed to advise regarding the most appropriate indicators to be employed.

In addition, the postgraduate research student weightings that apply to universities and IoTs should be aligned. The current weightings create an impression of inequality across the system. Furthermore, because of the unique nature of IoTs' academic contracts, their dependence to date on external competitive research funding, their different types of innovation engagement with industry partners, a more in-depth examination of the funding of RDI activity in the IoTs needs to be undertaken, determining the extent to which unfunded overheads are incurred from this activity.

Appendix 1: Subject Price Group Weightings

University Sector:

	FTE	Taught Masters	Research	Non-Lab	Fieldwork	Lab	Clinical Medicine	Veterinary/ Dentistry
Undergraduate and Postgraduate Diplomas	1.00			1.00	1.30	1.70	2.30	4.00
Masters Taught (60 credits)	1.00	1.50		1.00	1.30	1.60		
Masters Taught (90 credits)	1.50	1.50		1.00	1.30	1.60*		
Research EU (60 credits)	1.00		3.00	1.00	1.30	1.60*		
Research Non-EU (60 credits)	1.00		2.00	1.00	1.30	1.60*		
Research EU (90 credits)	1.50		2.00	1.00	1.30	1.60*		
Research Non-EU (90 credits)	1.50		1.33	1.00	1.30	1.60*		

*maximum weighting allowed is 4.80

Institute of Technology Sector:

	FTE	Taught Masters	Research	Non-Lab	Fieldwork	Lab
Undergraduate and Postgraduate Diplomas	1.00			1.00	1.30	1.70
Masters Taught (60 credits)	1.00	1.20		1.00	1.30	1.70
Masters Taught (90 credits)	1.50	1.20		1.00	1.30	1.70
Research (60 credits)	1.00		1.80	1.00	1.30	1.70
Research (90 credits)	1.50		1.80	1.00	1.30	1.70

Appendix 2: Note on the Indirect Costs of Research

It is argued that universities are having to bear the cost of contract research overheads out of their overall core funding allocation, which suggests a cross-subsidisation of research from funding intended to support teaching and learning and core research costs. When contract research accounted for roughly 10-15% of the activity of an Irish university over two decades ago, it was common for universities to accept research contracts on a less than fully funded basis, and there may still be instances in which universities would validly decide to do this for specific academic reasons. However, after the steep increase in the scale of Irish research activity based on national development strategies centred on innovation and the introduction of the PRTLI programme, research came to constitute approximately 25% of the activity of universities, and it became critically important for universities to attempt to recover the full costs of contract research.

Underfunded contract research has been identified as a contributor to increasingly unsustainable university finances internationally where it has become clear that many universities are not sufficiently aware of the full costs of their activities and that the introduction of full economic cost costing systems is a necessary cornerstone of sustainability.[18] In Ireland, an interdepartmental inter-agency group was set up, comprised of research providers and research funders (and their parent departments), to address the issue as early as 2003. As a result, research funders undertook to move to full-cost funding if supported by robust auditable data from a new FEC costing system which was subsequently put in place. As an interim step, a common overhead contribution rate of 30% was recommended for lab-based research and 25% for desk-based research which could be provided on a non-negotiated basis.[19] The FEC costing system indicates an average sectoral overhead rate of 65% of allowable direct costs, while average recovered overhead is running at 20% of allowable direct cost, an overall cost recovery rate of approximately 73% on 25% of the universities' activities.

The core grant allocation model operates on the principle that contract research is fully funded outside the RGAM.

The IUA's submission to the current review suggests that funders of competitive research should pay an overhead rate that more realistically relates to the real indirect costs of that research; their view is that the minimum realistic rates are 50% for lab-based research and 40% for desk-based research.

Clearly, the current situation vis-à-vis research overheads is inherently unsustainable. The planned expansion of Irish research activity poses a significant risk to institutional sustainability unless this problem is addressed. As a matter of priority, concerns surrounding research overheads should be revisited in another forum, as they relate to a complex, wider funding issue beyond the scope of the current funding-allocation review. It is essential for the future sustainability of research programmes, as well as for research-intensive institutions, that the additional indirect costs generated by the expansion of such programmes are provided for. The establishment of common rates for all institutions was an important first step in this regard. This was expected to lead over time to each institution being in a position to negotiate individual rates based on FEC data that would ensure that costs of research would be recovered. To date, this has not occurred.

[18] Much research has been done by the EUA in this area. Thomas Estermann and Anna-Lena Claeys-Kulik: *Financially Sustainable Universities. Full Costing: Progress and Practice*, 2013; Thomas Estermann & Enora Bennetot Pruvot: *Financial Sustainable Universities II: European Universities Diversifying Income Streams*, 2011; EUA: *Financially Sustainable Universities: Towards Full Costing in European Universities*, 2008

[19] Forfás & HEA: *Report of the Group on Research Overheads*, July 2003, p.65.