

# Investigating the relationship between research income and research excellence in education: Evidence from the REF2021-UoA23 data

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## Abstract

This paper presents and discusses the relationship between the generation of research income and the REF2021 results for universities who submitted a return to Unit of Assessment 23—Education. Research Excellence Framework exercises tend to be time intensive and come with income streams of Government Quality Research funding as well as reputational gains and risks. Based on REF2021 research environment research income data, freely available on the REF2021 website, analyses have been undertaken to investigate the strength of relationships between different types of fundings streams and grade point averages. The results demonstrate strong variation in funding capture across the different universities with Russell Group members tending to generate more income from prestigious funders such as UK Research and Innovation. However, several post-1992 universities managed to capture significant income from funders like UK and EU governments, without this necessarily translating into higher grade point averages or 4\* scores. While generating research income is perceived as an important part of academic life, the paper concludes that achieving research excellence seems more complicated than just following the money.

## KEYWORDS

higher education, research excellence framework, research income, types of universities

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## Key insights

### What is the main issue that the paper addresses?

This paper investigates the relationship between research income and performance in the UK's Research Excellence Framework 2021 Unit of Assessment 23 Education. It does so by differentiating between different types of funding streams, including—besides UK funds—EU, non-EU and industry funding.

### What are the main insights that the paper provides?

Russell Group universities on average tend to generate more research income, especially from UK Research and Innovation, and achieve higher REF scores. However, several post-1992 universities managed to reach significant grant capture from UK and EU government schemes without this necessarily translating into strong research environments, outputs or impact cases.

## INTRODUCTION

This paper investigates the relationship between research income and research excellence, borrowing data from the recent publication of the REF2021 (Research Excellence Framework, 2021) submissions and results. Analyses specifically focus on universities who made a submission to Unit of Assessment (UoA) 23: Education, part of Panel C. This panel consisted of sub-panels 13–24 representing the social sciences. Unpacking performances in REF is important as it provides universities and academics with insights into what does or does not work within the remit of the REF. These types of analyses also add to the growing knowledge base on university metrics and evaluation systems (see e.g. Basso & di Tollo, 2022; Pinar & Horne, 2022; Tymms & Higgins, 2018; Uslu, 2020). REF-type assessments were initiated to audit universities' research quality and to use this as a mechanism to distribute Government Quality Research (QR) funding (Kelly, 2016, 2023). They typically come with a huge administrative burden on universities as well as with a high cost to taxpayers. For example, the REF2014 came with a price tag of GBP 246 million (Pinar & Unlu, 2020). Mryglod et al. (2015) described the REF as 'expensive, time-consuming and disruptive', while Conroy and Smith (2017) defended this cost because of the high volume of QR funding that flows from it in an evidence-based way. Given the immense collective effort to prepare, assess and report on REF submissions, it is important to dig deeper into the results, going beyond the presentation of descriptive percentages and grade point averages (GPAs) as provided by the REF panels and outlets like *Times Higher Education*. The publicly available REF data provide an excellent opportunity to further exploit them for analytical purposes.

The argument for this paper starts from the centrality of generating research income as part of academic life (Macfarlane, 2011). An investigation into the determinants of the quality of research environments based on REF2014 data by Pinar and Unlu (2020) found that most units who succeeded in generating larger volumes of research income tended to obtain higher scores on the research environment component of the assessment exercise. Zooming in on data from REF2021 UoA23: Education, the analyses presented in this paper will test the hypothesis on the positive relationship between research income and research excellence. Different from the analyses undertaken by Pinar and Unlu (2020), research

income will not be treated as one single variable only. Variation in income streams at UK, EU and non-UK non-EU level will be taken into account, further explained below.

This paper is structured as follows. It will start by providing a detailed account on the history, aims and critiques of the REF, followed by a discussion on the state-of-art of education research, including some reflections on the UK context. Focussing on the role of generating research income as a central part of academic life, a research question will be formulated on the relationship between universities' generation of research income and their obtention of REF scores. Details of the REF2021 UoA23: Education data will be discussed in the Methodology section of the paper, including an outline of analytical techniques to be applied on the data. The results will be discussed as interpretations of statistical data presented in the Results section. The final part of the paper will reach a conclusion on the extent to which research income and research excellence are related. This will lead to the formulation of recommendations for future policy, practice and research. Limitations of the analyses will be acknowledged.

## EDUCATION, THE REF AND THE ROLE OF GENERATING RESEARCH INCOME

### The research excellence framework

Mechanisms to evaluate research quality of universities in the UK have been in place since 1986 (Stockhammer et al., 2021). What was initially known as the Research Assessment Exercise (RAE) was renamed into the Research Excellence Framework (REF) in the early 2010s. Research Assessment Exercises were organised in 1986, 1989, 1992, 1996, 2001 and 2008. Research Excellence Frameworks took place in 2014 and 2021. As already mentioned above, these research evaluations are organised to hold universities to account, to audit the quality of their research work and to use the results as a way to distribute QR funding. Apart from the focus on financial aspects, the REF is also broadly known as a 'reputational yardstick' (Torrance, 2020, p. 772). Over the years, procedures to assess research quality have changed, although recent procedures were centralised around the evaluation of three research components: research environment, outputs and impact. For each of these three domains, assessments were evaluated as: 4\*, 'world leading'; 3\*, 'internationally excellent'; 2\*, 'internationally recognised'; 1\*, 'nationally recognised'; or unclassified, 'falling below national standards'. Three keywords in assessing quality were: originality, significance and rigour. *Originality* of work refers to the introduction of new ideas, including novel methodologies and methods, and work being distinctive from previous work. *Significance* refers to influences on scholarly practices and thoughts, including the influence on future policies and practices. *Rigour* focuses on the robust application of theories, methods and methodologies as well as the integrity and coherence of the research work (REF2021, 2018). Evaluations are undertaken through peer review by UoA panels, recruited for that purpose. While calls have been made to ease the complexity of the REF through the investigation of output metrics, the REF Panel C units—with the exception of Economics and Econometrics—explicitly did not look into aspects such as journal impact factors and *h*-indices (REF2021, 2019).

Throughout the history of the RAEs and REFs, a growing body of literature has summarised and critiqued their approaches. After the publication of outcomes of REF2014, Lord Nicholas Stern led an independent review into the REF, generally known as 'the Stern Review' (BEIS, 2016). The review highlighted a range of benefits of the REF, including the stimulation of research quality and research activity in higher education institutions, the leverage of research opportunities when research results are strong, and using the REF results as a tool to marketise universities' societal and economic impact achieved through

research. Challenges discussed in the report include the high cost of running the REF, the scope for game-playing, and the ongoing assessment in disciplinary Units of Assessment in a research landscape that increasingly stimulates interdisciplinarity. Murphy (2017) argued that the REF has led to a binary distinction in which colleagues are seen as REFable vs. non-REFable. While rules relating to inclusion changed from REF2014 to REF2021, institutions will have had the opportunity to move staff from 'research and teaching' to 'teaching and learning' contracts. Furthermore, REF submissions, he argues, have led to cherry-picking of research outputs and impact case studies, with lots of research activity in fact not being highlighted in the REF. Apart from the division between colleagues within a department, the REF is also typically seen as a procedure that highlights and reinforces the distinctions between different types of institutions (Torrance, 2020). While the unification of higher education in 1992 led to the establishment of new universities, the UK's higher education landscape remains dominated by the classification of internationally oriented research-intensive universities, notably the Russell Group, vs. teaching-focussed institutions (Furey et al., 2014). The differences in reputation and position in research-driven rankings are also related to movements in the academic labour market, with research-intensive universities using their capital to attract individual talent. These financial and reputational mechanisms have been labelled by Warren (2017, p. 128) as the 'micro-political economy of academic life'.

Apart from institutional knock-on effects, the REF has been discussed in light of its impact on the intellectual aspects of academic life. Stockhammer et al. (2021) argued that the REF has softened the focus on risk-taking as generating output has become more important. Torrance (2020) observed that the dominance of the REF has led to a stronger focus on the publication of journal articles instead of books and book chapters. Furthermore, Pinar and Unlu (2020) raised critical voices on the need for awareness about biases in peer review. They discuss the potential 'halo effect' of Russell Group universities and also found that—although not in all Units of Assessment—having a member of your own institution on the panel can positively impact REF ratings. However, Conroy and Smith (2017) tackled the often-heard claim on reviewer subjectivity by pointing out that REF panel members have been carefully selected based on their experience and expertise. Their subjective preference, they argue, is balanced out by their professional judgement.

## Education as a field of research

A total of 83 units made a REF2021 return to Unit of Assessment 23: Education (REF2021, 2022). Typically, education departments employ staff from a variety of backgrounds, including those with years of teaching practice outside academic settings. As a result, these units tend to be more practitioner-oriented than other departments within universities. Torrance (2020) noted that education research does not always resemble the features of REF-type activities as it tends to over-rely on small-scale local inquiries. Similar to elsewhere in the developed world, he argues, education research has been critiqued in relation to its quality, scale and methods. The REFs Panel C report section on UoA 23: Education states that high-quality submissions were received across the methodological spectrum—including quantitative, qualitative and mixed methods research—but that low scoring outputs tended to overclaim their findings, lacked detailed insights on sampling procedures and demonstrated limited criticality of analytical procedures (REF2021, 2022).

Similarly, Van Damme (2019), a recently retired key figure from the Organisation for Economic Co-operation and Development (OECD), raised a number of provocative questions about the state-of-art of education research. He developed his critique as part of his keynote address at the European Conference of Education Research in 2019 in Hamburg and contributed to a recent OECD report on the state-of-art of education research (Revai,

2022). While the knowledge and know-how on social sciences methodologies and methods has massively improved in recent years, Van Damme's contributions highlight ongoing quality issues with education research. One disadvantage of the field, he argues, is the difficulty of implementing true experimental designs—often because of ethical reasons—but also the lack of replication studies to test the reliability and validity of previous research. Additionally, Van Damme argues, the research base in education is too much skewed by ideological views and political activism. He also states the continued overreliance on outdated theories and on how education still needs to make the transition to becoming a truly evidence-based field that generates impact. Another research area that has already made this transition is, for example, health.

Looking into the state-of-art of education as a research discipline in the UK, Torrance (2020) noted that external pressures had led to the shrinking of the number of education departments in the country. He observed that the proportion of full-time equivalent (FTE) staff in REF-type assessment exercises had decreased from 2790 in 1996 to 1442 in 2014. Interestingly, the number of FTE staff submitted to REF2021 UoA 23: Education was 2168 (REF2021, 2022). This is an increase of 47% compared with REF2014. This might be the result of changing rules on the need to submit all research-active members of staff that were implemented for the REF2021 but ideally needs further investigation. The Panel C report underlines the diversity of education research in terms of its focus from early childhood to adult education. It also highlights areas where the panel expects to see higher volume of research in years to come. These include, for example, educational technologies and the need for lifelong learning in a rapidly changing workplace (REF2021, 2022).

## The focus on generating research income

The REF collects data on research income as part of its focus on 'Research Environment'. Especially in research-intensive universities, the generation of research income through grants and fellowships is seen as a core task of academic staff. The focus on grant capture is often included in job adverts and promotion criteria (Edwards, 2022). Research income enables individual researchers and teams to concentrate on novel research work through the hiring of post-doctoral research fellows and research administrators, through securing funds for data collection and through generating funds for necessary equipment. Apart from the financial implications, grants are also seen to add to the prestige of a department and to the team's academic CVs. Macfarlane's typology of professorial leadership includes the senior academic as an 'acquisitor', who besides being a 'role model' or 'mentor' to junior staff, actively tries to secure grants, contracts and funding, including for research students (Macfarlane, 2011). However, the way in which research income is being distributed has been debated in the literature. Jerrim and de Vries (2023) analysed Economic and Social Research Council (ESRC) reviews and only found a weak correlation between the scores attributed to the same proposal by different reviewers. Additionally, they found, one weaker review significantly diminishes the chances for success, even if other reviews are excellent. Unsurprisingly, the chances of ESRC success were found to be higher in Oxbridge and other Russell Group institutions compared with the post-1992 sector. Grant income thus has the power to reinforce already existing institutional hierarchies. As mentioned above, analyses by Pinar and Unlu (2020) demonstrated a positive correlation between the generation of research income and the REF2014 Environment score in most Units of Assessment. This might be a reflection of the observation that research income is unevenly distributed to the most research-intensive universities anyway. However, Pinar and Unlu's (2020) income variable did not diversify between different research income streams. In this paper, detailed

statistics will be shown on different types of funders and the analyses will be solely carried out on data for UoA23: Education. The following research question will be answered:

To what extent is there a relationship between the generation of research income and research excellence based on REF2021 UoA23: Education data?

## DATA AND ANALYTICAL PROCEDURES

This paper draws on quantitative analyses on REF2021 UoA23: Education data. Below is an overview of the nature of the data as well as a discussion of analytical procedures.

### Data

This paper analyses data downloaded from the REF2021 website (<http://www.ref2021.ac.uk>). Data were extracted from the 'Environment submissions database' under 'Results and submissions'. These are publicly available data that can be consulted by everyone, including the wider public beyond academia. Universities who made a REF return are aware that their environment statements and data will be made public on a dedicated REF website.

REF2021 environment data include an institutional and unit environment statement for each of the 83 units who made a submission to UoA23: Education. It also provides data on the number of 'research doctoral degrees awarded' by the unit during the REF period and an overview of 'Research income' generated by the unit in the same period. A REF paper 'Guidance on Submissions' was published in 2019 and detailed all requirements for the reporting of 'income' on pages 78–80 (HEFCE, 2019). External income received for each academic year between 2013–2014 and 2019–2020 needed to be included according to Higher Education Statistics Agency (HESA) research income finance records. Each year, universities submit data on their research income to HESA. Regular audits are being performed to ensure the reliability of these records. Reporting by institutions includes coding of fractional research income towards HESA subject codes in the case of interdisciplinary projects among colleagues that are submitted to different Units of Assessment. Research income data—regardless of REF reporting—are always publicly available on the HESA website under the Finance section of the Data and Analysis tool. As clear from the REF guidelines, this is typically known as 'Finance Table 5'. Details can be consulted online at: <https://www.hesa.ac.uk/data-and-analysis/finances/table-5>.

Data on 'Research income' are being presented in REF environment data returns according to the HESA research income categories:

1. BEIS Research Councils, the Royal Society, British Academy and the Royal Society of Edinburgh;
2. UK-based charities (open competitive process);
3. UK-based charities (other);
4. UK central government bodies/local authorities, health and hospital authorities;
5. UK central government tax credits for research and development expenditure;
6. UK industry, commerce and public corporations;
7. UK other sources;
8. EU government bodies;
9. EU-based charities (open competitive process);
10. EU industry, commerce and public corporations;
11. EU (excluding UK) other;



12. Non-EU-based charities (open competitive process);
13. Non-EU industry commerce and public corporations;
14. Non-EU other; and
15. Total income.

BEIS stands for the Department of Business, Energy and Industrial Strategy and sponsors UKRI—UK Research and Innovation—which hosts the Research Councils. For researchers in Education, most Research Council money tends to flow from ESRC although also from the Arts and Humanities Research Council and others. The British Academy, Royal Society and Royal Society of Edinburgh are also government-sponsored research funders and also sit under the BEIS umbrella. Well-known examples of UK-based charity funders are the Leverhulme Trust and the Education Endowment Foundation although there are many smaller operators active in the field. Government funding includes research income flowing from devolved administrations in Scotland, Wales and Northern Ireland, besides funding flowing from central government. EU government funding during this REF period included Horizon 2020 but also alternative funding streams such as Erasmus+ funding, which tends to be more practitioner-oriented in nature. An example of a non-EU based charity funder that specialises in Education research grants is the USA-based Spencer Foundation but also the Templeton Foundation. For each of the UK, EU and non-UK non-EU funders, there is a category on industry income as well as a category 'other' to classify income that does not fit in any of the listed categories.

Data analysed for the purposes of this paper were downloaded from the website in an Excel file and inserted in IBM SPSS Statistics 28.0. One line was created per university, with 83 in total. Details for each of the 16 income categories mentioned above were merged with data GPAs, the proportion of 4\*, 3\*, 2\*, 1\* and unclassified for total scores, environment, output and impact. Codes were generated for the type of university, distinguishing between Russell Group, post-1992 and non-Russell non-post-1992.

## Analytical procedures

The analytical procedure started with descriptive statistics on research income and GPA data. The next step would have been to apply linear regressions with GPA scores as the dependent and income from different funders as the independent variables. However, the data indicated skewed data for the diverse income streams and very low volumes of income for some of them. Applying regressions in the first instance showed high variance inflation factors between some income categories, indicating high multicollinearity between them (Field, 2017). As such, steps were undertaken to increase the robustness of the analyses. Firstly, given the strong differences in funding—and similar to the analyses undertaken by Pinar and Unlu (2020)—income per funding stream was recalculated as income per FTE. This is important to account for the variation of the FTEs submitted by different universities. Secondly, given the low volume of funding within and/or correlation between some funding streams, eight new categories were created out of the 14 original ones. These will be discussed below. Thirdly, correlational analyses have been applied to investigate different contributions to research excellence of the different funding streams. However, given the skewedness of the income data, log transformations have been applied to the data (Hinton et al., 2014). Fourthly, given the strong interest in rankings, a categorical analysis has been undertaken on where universities sit in terms of quartiles and rank for both research income per FTE and GPA. This analysis is used to reveal variation in where universities score in terms of these two variables of interest.

TABLE 1 Descriptive statistics on research income reported in Research Excellence Framework, 2021 (REF2021) Unit of Assessment (UoA) 23.

	Mean	SD	Median	Minimum	Maximum	Skewness	Kurtosis
Total income in GBP	4,650,134	11,568,345	1,162,056	7000	92,818,833	5.96	42.31
	Mean	SD	Median	Min	Max	Skewness	Kurtosis
Total income per FTE in k GBP	128	163	86	1	1079	3.55	15.98
Total income per FTE in k GBP Russell group	295	252	184	105	1079	2.07	4.33
Total income per FTE in k GBP non-Russell Group non-post-1992	91	68	76	7	227	0.93	-0.16
Total income per FTE in k GBP post-1992	69	62	52	1	346	2.31	8.24
UKRI/RS/BA/RSE per FTE in k GBP	23	36	7	0	187	2.65	8.47
UK charity competitive per FTE in k GBP	21	36	13	-3	272	4.66	28.14
UK government per FTE in k GBP	41	105	12	0	795	5.71	36.41
UK other per FTE in k GBP	7	8	3	0	33	1.56	2.02
EU government per FTE in k GBP	18	22	9	0	119	2.40	6.76
EU other per FTE in k GBP	2	7	0	0	57	6.11	40.36
Industry per FTE in k GBP	5	10	1	0	77	4.92	30.67
Non-EU per FTE in k GBP	11	47	0	0	419	8.19	71.37

Source: REF2021 UoA23: Education data.

Note: BA, British Academy; FTE, full-time equivalent; RS, Royal Society, RSE, Royal Society of Edinburgh.



## RESULTS

### Descriptive statistics on research income and GPA scores

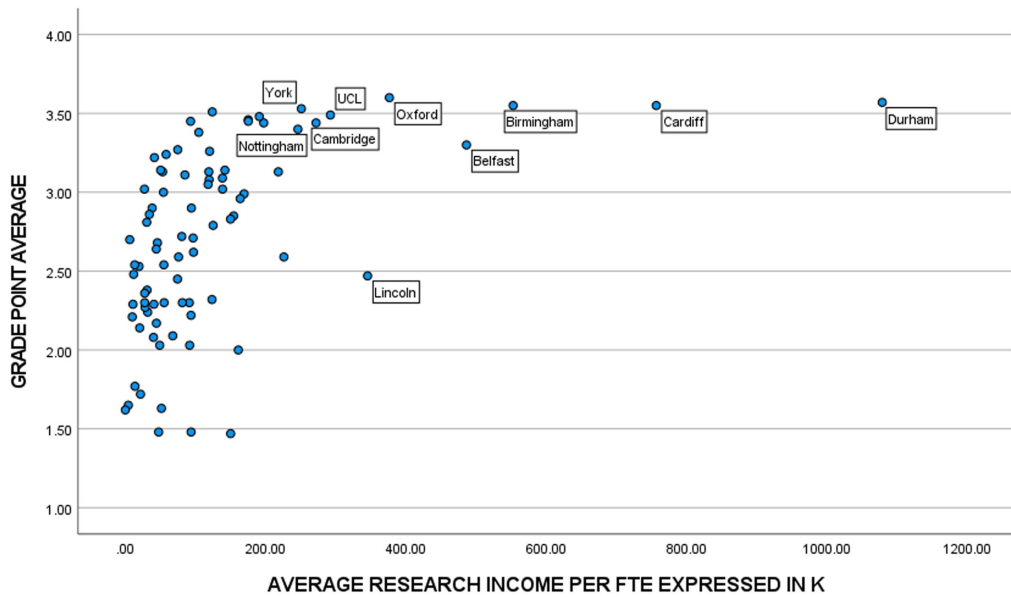
Before digging deeper into the relationship between research income and REF score, descriptive statistics on research income are being presented in [Table 1](#). A total of GBP 385,960,858 was reported by the 83 units during the REF period. As mentioned above, the 14 funding categories were reduced to eight given low volumes of funding within or correlations between certain categories. As a result, all industry funding (UK, EU, non-EU) was merged into one category. The correlation between UK and EU industry funding was  $r=0.756$ . UK industry income accounted for 2.5% of the total reported income while EU and non-EU industry income only accounted for 0.3 and 0.5% respectively. Non-EU funding apart from industry income was also merged into one category given its low volume. As a combined category, it still sits under 9% of the total income. The two distinct UK government funding streams were merged into one given that the UK government tax category only accounted for 1% of the total income. As separate categories, BEIS (which includes ESRC and British Academy) represented 29% of all research income, UK governments 28%, the UK competitive charity funders 14% and the EU government 9%. Overall, 79% of all reported research income came from within the UK. Funding from the EU amounted to 11% with the remaining income coming from funders worldwide.

As evident from the statistics in [Table 1](#), the generation of research income is skewed, with massive differences between the top and bottom earners. Additional data on standard deviations, skewness and kurtosis have been included in the table to further highlight strong variation in the data.

For total income in GBP, the mean and median income are nearly 3 million away from each other. The standard deviation is large. The lowest scoring unit generated GBP 7000 (Chichester) during the REF period while the top income earner generated GBP 92,818,833 (University College London). Given the differences in size of units, research income has also been calculated as an average per FTE. Again, differences are clear from the data. The lowest scoring unit generated only GBP 1k per FTE (Chichester) while the highest scoring one generated more than GBP 1 million per FTE (Durham). On average, income streams per FTE were highest in Russell Group universities. Mean and median scores were lowest for post-1992 institutions. Looking into the different funding streams, the mean score per FTE was highest for UK government funding and the median score was highest for UK competitive charity funding. Looking at the minimum and maximum scores, it is clear that there are wide variations between universities for all funding streams. One unit (Durham) managed to generate GBP 795k per FTE for UK government funding alone while a range of units did not get any—or hardly any—funding from them. Typically, non-EU non-UK funding was found to be low as well as industry funding.

Details about the specific nature of research funded by these types of income can be found in the Unit-level Environment Statements, which can also be downloaded from the REF results website. This will be further unpacked in the results sections below. For example, reading these statements, it becomes clear that Durham received GBP 25 million in funding for a research network on Assessment, Evaluation and Educational Effectiveness. An additional GBP 4 million was received from the Education Endowment Foundation for work employing randomised control trials and meta-analysis methodologies. University College London described the ESRC as their largest funder, receiving more than GBP 7 million on an annual basis. Specifically mentioned are large ESRC investments in cohort and longitudinal studies.

Crossing over not yet log-transformed income data with research excellence data, [Figure 1](#) shows information on the average research income per FTE (in k) and the universities' total



**FIGURE 1** Scatterplot REF2021 Education GPA vs. research income per full-time equivalent in k. Source: REF2021 UoA23: Education data.

**TABLE 2** Correlation between income (in k per FTE) streams and research excellence expressed through grade point average (GPA) and proportion of 4\* scores in each of the three categories.

	GPA	4* Output	4* Impact	4* Environment
Total	0.590	0.506	0.550	0.537
BEIS:UKRI/RS/BA/RSE	0.644	0.498	0.546	0.462
UK charity competitive	0.568	0.440	0.421	0.286
UK government	0.295	0.094	0.294	0.263
UK other	0.413	0.306	0.310	0.277
EU government	0.244	0.154	0.217	0.175
EU other per FTE	0.418	0.301	0.421	0.290
Industry per FTE	0.400	0.312	0.350	0.308
Non EU per FTE	0.557	0.394	0.457	0.503

Source: REF2021 UoA23: Education data.

Note: BEIS, Department of Business, Energy and Industrial Strategy; FTE, full-time equivalent.

grade point average. The figure additionally underlines the skewness in the data with many universities scoring low on income vs. some outliers such as Durham. The top 10 income earners across all research income streams have been labelled for clarity of reading. From the scatterplot, it is clear that the University of Durham was the top income earner per FTE (GBP 1079k), followed by Cardiff and Birmingham. The only university that sits in the top 10 of generic research income per FTE that is not a Russell Group university is the University of Lincoln. Its position will be further discussed below. Of the top 10 income earners, half score a GPA of above 3.50. For universities who did not generate high volumes of funding, there is significant variation in GPA scores, which can be seen by the vertical presence of dots on the left-hand side of the scatterplot. Six submission units achieved a general GPA score above 3.50. The only submission that does not sit in the top 10 of income earners at

this level of GPA is King's College London which—as will be demonstrated below—ranked 27th for research income per FTE.

## Discovering the relationship between research income per FTE and research excellence

Apart from exploring the income data in its totality, additional analyses were run to discover correlations between research excellence and research income streams. This was not only done for GPA but also for the proportion of 4\* scores on output, impact and environment. Other than GPA, this metric represents the proportion of research being evaluated as the strongest in terms of its rigour, originality and significance. As explained above, income data were log-transformed for this analysis given their initial skewed nature. The results of this straightforward analysis can be found in [Table 2](#) and demonstrate that all correlations were found to be positive.

### GPA and 4\* scores

In terms of GPA, mostly modest correlations were found for the different funding streams, with the strongest coming in for BEIS (0.644), the UK competitive charity sector (0.568) and non-EU funders (0.557). The lowest correlations with GPA are observed for UK (0.259) and EU (0.244) government funding. This trend is also visible for publications, impact and environment. The relationship between the proportion of 4\* output scores and UK government funding is the weakest of all (0.094). While coefficient scores tend to be higher across the different funding categories in relation to 4\* impact—compared with output and environment—BEIS funding again demonstrates the highest correlate for impact (0.550). Together with the non-EU funding category, BEIS also scores strongest on 4\* environment scores compared with the other funding categories. As will be further unpacked below, BEIS funding tends to be dominant in Russell Group institutions.

To add to the robustness of the analyses based on data which are skewed and contain several outliers, an additional categorical approach has been carried out. For ease of reading, the matrix in [Table 3](#) presents all 83 submissions in ranking groups for the two dimensions of interest to this study: overall GPA as a measure for research excellence and overall research income per FTE. Each returner was assigned a category based on 25–50–75 percentile cut offs on both GPA and income data. Following the hypothesis that higher levels of research income predict higher levels of research excellence, one can assume that those in quartile 1 for research income per FTE also fit in quartile 1 for GPA. Similar assumptions can be made for quartiles 2–4. However, as can be seen in [Table 3](#), there is only partial overlap in where universities sit in their income vs. GPA grade expressed through quartiles. Apart from the group that clusters the top quartile for GPA and the bottom one for research income per FTE, all cells are being populated. The empty cell indicates that there are no top 25% GPA scorers who sit in the bottom 25% income scorers. Given universities' interests in knowing where they are in the rankings, [Table 4](#) additionally presents rankings for general GPA as well as general research income per FTE and provides all statistics on research income per FTE per GBP 1000 for all 83 universities that submitted to UoA23: Education. These data further underline the discrepancies between research excellence scores and income. For example, among the high scorers on GPA, we have King's College London, which did not make it in the top quartile for research income per FTE. Lancaster scored 10th on GPA but only 39th on income. Surrey scored 20th for GPA but 61st for income.

TABLE 3 REF2021 education GPA and income per full-time equivalent data quartiles.

	Income Q1	Income Q2	Income Q3	Income Q4
GPA Q1	Oxford	King's College London	Loughborough	
	Durham	Lancaster	Roehampton	
	Cardiff	Sheffield	Surrey	
	Birmingham	Warwick	Bath	
	York	Edinburgh		
	UCL			
	Bristol			
	Manchester			
	Glasgow			
	Cambridge			
	Sussex			
	Nottingham			
	Queen's Belfast			
GPA Q2	Ulster	Southampton	Stirling	East Anglia
	Newcastle	Manchester Metropolitan	Brighton	Dundee
	West of England	Leeds	Bath Spa	Oxford Brookes
	Hull	Exeter		Huddersfield
		Reading		
		Sheffield Halam		
		Open University		
		Plymouth		
		Canterbury Christ Church		
GPA Q3	Aberdeen	Derby	Kingston	Kent
	Lincoln	Strathclyde	Winchester	Liverpool Hope
		Gloustershire	Brunel	Goldsmiths
		Birmingham City	Northampton	Edge Hill
			Anglia Ruskin	Bedfordshire
			East London	Leeds Beckett
			Plymouth MARJON	York St John
GPA Q4	Sunderland	Glasgow Caledonian	Cardiff Metropolitan	Liverpool John Moores
	Bolton	Stranmills	Middlesex	West of Scotland
		Buckinghamshire	Chester	Hertfordshire
			Wolverhampton	Wales Trinity St David
			Worcester	Cumbria
			Highlands & Islands	Bishop Grosseteste
			London Metropolitan	Newman
				Leeds Trinity
			Chichester	

Source: REF2021 UoA23: Education data.

TABLE 4 REF21 Education research income data per full-time equivalent.

GPA rank	GPA	University	N	Total income	Total income rank	Percentage 4*	BEIS	Charity competitive	UK		EU		Non-EU	Industry
									government	other	government	other		
1	3.60	University of Oxford	55.3	376.85	5	69	69.3	39.9	113.1	30.1	25.7	6.6	14.9	77.3
2	3.57	Durham University	35.2	1079.10	1	67	76.1	116.2	794.9	29.0	15.3	1.0	24.3	22.3
=3	3.55	Cardiff University	33.6	757.15	2	66	187.3	34.4	500.5	10.7	15.0	0.0	7.6	1.8
=3	3.55	University of Birmingham	34.4	553.22	3	63	75.4	23.0	17.8	11.3	5.2	-0.6	419.3	1.7
5	3.53	University of York	30.6	251.43	9	63	49.0	110.9	28.2	18.2	36.2	2.3	6.0	0.8
6	3.51	King's College London	42.5	124.55	27	62	29.0	35.6	3.5	4.4	19.7	0.4	4.0	28.0
7	3.49	University College London	317.0	292.83	7	62	178.5	19.0	45.7	12.4	22.2	1.0	11.2	3.0
8	3.48	University of Bristol	42.3	191.51	14	60	129.0	15.9	11.6	2.3	22.7	0.0	8.1	2.0
9	3.46	University of Manchester	31.8	175.81	15	61	18.5	81.7	62.1	3.9	4.9	1.6	1.9	1.3
=10	3.45	University of Glasgow	48.6	175.78	16	56	95.6	9.2	35.5	7.4	16.8	1.2	7.6	2.5
=10	3.45	Lancaster University	18.9	93.61	39	55	55.0	9.0	7.1	7.6	8.5	5.1	0.0	1.4
=12	3.44	University of Sussex	20.6	197.81	13	57	55.0	2.5	36.9	2.0	11.0	7.9	62.8	19.8
=12	3.44	University of Cambridge	59.3	272.38	8	61	55.8	12.9	58.1	17.6	24.0	56.8	31.0	16.1
14	3.40	University of Nottingham	33.1	246.50	10	52	31.5	82.7	29.3	4.2	28.0	1.6	52.6	16.6
15	3.38	University of Sheffield	27.7	105.28	33	54	57.3	5.2	5.4	5.2	28.1	3.6	0.2	0.3
16	3.30	Queen's University Belfast	31.4	486.69	4	48	28.9	272.7	158.3	5.3	5.2	6.9	9.2	0.3
17	3.27	Loughborough University	18.4	75.29	45	46	65.7	1.0	0.1	7.3	0.0	0.0	0.0	1.1
18	3.26	University of Warwick	43.6	120.69	29	47	5.5	15.6	61.3	20.0	14.6	1.2	1.2	1.2
19	3.24	University of Roehampton	14.7	58.75	49	44	17.1	22.4	2.3	13.8	2.1	0.6	0.0	0.5
20	3.22	University of Surrey	13.8	42.03	61	38	9.9	21.2	3.7	0.1	2.2	0.0	0.0	5.0
=21	3.14	University of Bath	34.8	50.92	55	37	25.9	4.8	3.0	0.0	5.7	0.3	6.7	4.5
=21	3.14	University of Edinburgh	68.8	142.51	23	42	38.0	23.6	63.7	3.4	7.9	0.5	4.8	0.7

(Continues)

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TABLE 4 (Continued)

GPA rank	GPA	University	N	Total income	Total income rank	Percentage 4*	BEIS	Charity competitive	UK government	UK other	EU government	EU other	Non-EU	Industry
=23	3.13	University of Stirling	23.2	53.77	53	45	21.7	6.3	17.8	3.3	4.3	0.1	0.2	0.0
=23	3.13	Ulster University	11.2	218.65	12	32	55.9	22.0	42.2	32.8	21.9	1.9	42.1	0.0
=23	3.13	University of Southampton	22.4	119.64	31	25	44.9	12.7	24.0	17.9	14.8	3.7	1.3	0.4
26	3.11	Manchester Metropolitan University	46.3	85.53	42	29	26.2	16.6	12.2	12.6	11.9	3.1	0.1	3.0
27	3.09	University of Leeds	29.1	139.00	25	32	58.5	17.9	16.6	3.1	4.6	1.6	36.6	0.1
28	3.08	University of Exeter	38.4	120.06	30	32	35.8	17.0	29.1	12.9	21.5	0.0	1.0	2.7
29	3.05	University of Reading	12.6	118.60	32	30	41.9	15.5	5.5	10.2	8.0	0.0	33.1	4.6
=30	3.02	University of East Anglia	15.2	27.83	72	30	18.2	0.9	5.0	0.0	1.9	0.2	0.3	1.4
=30	3.02	Sheffield Hallam University	41.6	139.17	24	26	7.8	35.1	57.8	6.9	25.1	2.5	1.5	2.3
32	3.00	University of Brighton	13.5	54.95	52	24	15.8	13.9	5.6	0.0	4.7	3.0	9.4	2.5
33	2.99	Newcastle University	16.7	169.83	17	23	30.7	14.8	41.9	6.2	36.9	4.5	22.6	12.2
34	2.96	University of the West of England	7.0	164.33	18	42	12.8	46.7	17.2	0.0	83.8	0.0	0.9	3.0
=35	2.90	University of Dundee	18.0	38.87	64	23	0.0	0.4	31.1	2.9	4.5	0.0	0.0	0.0
=35	2.90	The Open University	105.9	94.79	36	26	14.5	8.5	21.4	0.0	25.0	2.3	22.3	0.8
37	2.86	Oxford Brookes University	16.6	34.89	65	27	2.2	18.2	3.9	9.9	0.1	0.0	0.1	0.6
38	2.85	University of Hull	7.5	154.94	20	19	20.0	12.6	50.6	2.2	60.3	0.0	8.9	0.3
39	2.83	University of Plymouth	25.1	150.56	22	30	0.9	16.2	92.5	27.9	11.5	0.8	0.0	0.9
40	2.81	University of Huddersfield	24.7	31.14	68	20	5.3	18.4	4.1	0.3	0.8	0.0	1.8	0.5
41	2.79	Canterbury Christ Church University	19.8	125.75	26	17	0.0	70.2	11.0	3.3	9.0	0.0	30.8	1.4
42	2.72	Bath Spa University	26.6	81.09	44	22	37.2	22.8	5.3	4.0	6.2	5.2	0.0	0.3



TABLE 4 (Continued)

GPA rank	GPA	University	N	Total income	Total income rank	Percentage 4*	BEIS	Charity competitive	UK government	UK other	EU government	EU other	Non-EU	Industry
43	2.71	University of Derby	21.3	97.18	35	18	0.0	33.4	12.3	10.5	6.7	2.0	0.5	31.9
44	2.70	University of Kent	5.0	6.90	81	24	1.4	5.1	0.0	0.4	0.0	0.0	0.0	0.0
45	2.68	Kingston University	16.2	46.39	58	19	0.0	15.7	25.3	4.5	0.0	1.0	0.0	0.0
46	2.64	University of Winchester	21.5	44.75	60	20	0.0	0.9	21.9	16.4	0.0	0.4	3.0	2.1
47	2.62	University of Strathclyde	34.0	97.74	34	8	10.5	20.9	36.2	6.0	5.5	6.1	0.4	12.1
=48	2.59	Brunel University London	18.2	76.48	45	10	20.7	1.9	21.7	-0.1	26.1	0.0	5.3	0.9
=48	2.59	University of Aberdeen	15.8	226.56	11	14	11.3	26.6	138.6	11.0	38.8	0.0	0.0	0.1
=50	2.54	Liverpool Hope University	26.4	13.94	77	16	0.3	2.1	1.3	7.7	0.0	0.2	0.5	1.9
=50	2.54	University of Northampton	15.8	55.53	51	21	6.0	11.0	5.8	0.9	16.8	5.9	3.2	6.1
52	2.53	Goldsmiths	18.8	20.11	75	23	3.8	1.8	0.0	11.5	2.8	0.2	0.0	0.0
53	2.48	Edge Hill University	25.2	12.45	78	25	2.6	3.7	3.0	0.8	1.3	0.8	0.0	0.2
54	2.47	University of Lincoln	5.0	345.80	6	20	0.0	28.3	215.3	1.4	100.6	0.2	0.0	0.0
55	2.45	Anglia Ruskin University	7.5	75.01	47	9	5.8	13.8	6.7	3.0	45.7	0.0	0.0	0.0
56	2.38	University of Bedfordshire	9.1	31.64	67	13	13.9	0.6	12.2	2.5	0.0	0.0	0.0	2.5
57	2.36	Leeds Beckett University	16.0	28.25	70	11	0.5	3.4	6.2	3.2	6.8	4.2	0.0	3.9
58	2.32	University of Gloucestershire	8.0	124.12	28	9	0.0	0.6	3.8	1.1	118.6	0.0	0.0	0.0
=59	2.30	Plymouth Marjon University	10.5	55.90	50	2	0.0	-2.8	23.9	3.2	26.9	0.0	0.0	4.7
=59	2.30	York St John University	10.5	28.21	71	16	0.0	0.0	0.0	9.0	13.8	0.0	0.0	5.4
=59	2.30	Birmingham City University	14.7	91.77	41	2	1.1	29.7	11.8	9.3	21.8	0.0	2.2	16.0
=59	2.30	University of East London	14.0	81.83	43	3	27.6	13.1	8.6	20.8	10.7	0.5	0.0	0.6

(Continues)

TABLE 4 (Continued)

GPA rank	GPA	University	N	Total income	Total income rank	Percentage 4*	BEIS	Charity competitive	UK government	UK other	EU government	EU other	Non-EU	Industry
=63	2.29	Cardiff Metropolitan University	15.6	41.38	62	8	0.2	2.4	24.0	0.0	12.1	0.0	0.0	2.8
=63	2.29	Liverpool John Moores University	25.6	11.48	79	13	0.6	1.2	2.4	6.8	0.2	0.0	0.0	0.3
65	2.27	University of the West of Scotland	18.7	28.82	69	11	6.6	4.5	9.6	0.0	7.8	0.4	0.0	0.0
66	2.24	University of Hertfordshire	14.7	32.45	66	3	1.1	1.2	4.0	2.3	5.2	1.5	16.7	0.3
67	2.22	Glasgow Caledonian University	5.1	94.20	38	0	4.8	15.9	9.4	1.1	60.2	0.0	2.9	0.0
68	2.21	University of Wales Trinity St David	13.4	10.52	80	4	0.0	0.0	1.6	1.6	7.4	0.0	0.0	0.0
69	2.17	Middlesex University	14.5	44.93	59	8	0.8	6.7	1.5	0.0	18.9	4.7	11.5	0.8
70	2.14	University of Cumbria	9.8	21.08	74	2	1.1	0.4	2.4	14.1	1.7	0.0	0.0	1.4
71	2.09	University of Chester	7.5	68.22	48	9	3.3	23.4	12.0	-0.1	23.9	2.3	1.0	2.5
72	2.08	University of Wolverhampton	24.6	40.72	63	5	6.6	2.5	6.4	0.6	4.2	0.0	20.1	0.4
=73	2.03	University of Worcester	16.8	49.59	56	7	2.3	22.0	2.8	0.2	7.5	0.0	0.0	14.8
=73	2.03	Stranmillis University College	11.0	92.27	40	5	0.0	8.6	41.6	1.8	2.5	36.6	0.0	1.3
75	2.00	University of Sunderland	8.7	161.62	19	0	0.0	76.0	79.8	1.0	4.8	0.0	0.0	0.0
76	1.77	Bishop Grosseteste University	20.5	14.36	76	4	6.5	0.0	3.5	0.5	0.0	0.0	0.0	3.8
77	1.72	Newman University	10.7	22.24	73	2	0.0	0.0	22.2	0.1	0.0	0.0	0.0	0.0
78	1.65	Leeds Trinity University	9.8	4.90	82	3	1.6	2.8	0.2	0.0	0.0	0.3	0.0	0.0
79	1.63	University of Highlands and Islands	9.6	52.11	54	6	0.0	0.5	32.5	-0.5	18.4	0.0	0.0	1.3
80	1.62	University of Chichester	10.4	0.67	83	0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0

TABLE 4 (Continued)

GPA rank	GPA	University	N	Total income	Total income rank	Percentage 4*	Source: REF2021 UoA23: Education data									
							BEIS	Charity competitive	UK government	UK other	EU government	EU other	Non-EU	Industry	QUARTILE 1	QUARTILE 2
=81	1.48	London Metropolitan University	12.5	48.08	57	6	0.0	0.0	0.0	0.0	0.0	0.0	48.1	0.0	0.0	0.0
=81	1.48	Buckinghamshire New University	8.5	94.35	37	3	0.0	0.0	18.0	8.7	66.7	0.0	0.0	0.9	0.0	
83	1.47	University of Bolton	9.4	150.70	21	5	0.0	8.0	52.7	27.8	49.4	0.0	0.0	0.0	12.7	

Note: Darker green, top 25 percent; lighter green, 26–50 percent; Yellow, 51–75 percent; Orange, 76–100 percent so bottom 25 percent. Digits in bold indicate the unit's highest income stream per full-time equivalent.

## Type of institution

Out of the 20 Russell Group returns, 12 fall into quartile 1 for both income per FTE and GPA. There is only one university that is not a Russell Group institution in this highest performing group: the University of Sussex. Four more Russell Group universities (King's College London [KCL], Warwick, Sheffield, Edinburgh) sit in the top quartile for GPA but in the second one for income per FTE. The lowest performing Russell Group universities sit in quartile 2 for both income and GPA (Exeter, Leeds and Southampton).

Investigating the bottom quartile for GPA, presented in the bottom row, it is clear from the data that all of them are post-1992 universities. However, some of them did achieve higher volumes of research funding per FTE than some Russell Group universities. Sunderland and Bolton generated more research income per FTE than KCL, Sheffield, Warwick, Edinburgh, Southampton, Leeds and Exeter. The strongest performing post-1992 university in terms of GPA is Roehampton, which had longstanding links with the university of Surrey. The other types of institutional returns—non-Russell Group but also non-post-1992—are scattered across the four quartiles for research income per FTE while none of them sit in the bottom 25% based on their general GPA. As mentioned above, Sussex is the top performing university in this group, followed by Lancaster, which sits in the second quartile for research income per FTE but was joined 10 with Glasgow on GPA, falling into quartile 1 for GPA. Loughborough, Surrey and Bath also sit in GPA quartile 1. They are not members of the Russell Group but are also not post-1992 universities.

## Size of submission

The reporting of research income in this paper reflects on average income per FTE. This approach is in accordance with previous analyses on REF results and income data (Pinar & Unlu, 2020). The size of submission in FTE is included in [Table 4](#). There were two submissions that featured more than 100 FTE colleagues: University College London (317) and the Open University (105.9). Three more universities had submissions larger than 50 FTE: Edinburgh (68.8), Cambridge (59.3) and Oxford (55.3). The size of submission can have advantages as well as disadvantages. There could be a larger pool of colleagues whose strong publication record might compensate for those with lower scoring ones, but they will also have to submit more impact case studies. In general, Russell Group universities tend to have higher returns than post-1992 institutions, which is not surprising given their research-intensive focus. The smallest return from within the Russell Group came from Newcastle (16.7), which was also the lowest scoring Russell Group expressed through GPA. Exeter (38.4) had the second lowest GPA in the Russell Group but had a larger return than Durham, Birmingham, Cardiff, Nottingham, Leeds, Manchester, Belfast, Nottingham, York, Sheffield and Southampton. The largest entries in the post-1992 sector came from Manchester Metropolitan University (46.3) and Sheffield Hallam University (41.6), which both featured in the top 30 on GPA. Smaller units have the disadvantage that there are fewer colleagues available to apply for research income. However, one large grant substantially tops up the average across the unit. The four post-1992 universities that generated over GBP 100k per FTE were all submitted with fewer than 10 FTE colleagues: Bolton (9.4), Sunderland (8.7), West of England (7.0) and Lincoln (5.0). The types of research income they captured will be discussed below.

## Type of research income

Given the approach to the grouping of the data, universities that sit in the first quartile for research income per FTE score highest on *general income*. The highest overall research income per FTE was recorded in the first GPA quartile. Looking at the different income streams in [Table 4](#), a number of interesting observations can be made. Out of all 83 returns, there is only one university that sits in the top quartile for each individual research stream: the University of Oxford. Outliers per funding stream have been visually represented through boxplots which can be found in [Appendix A](#).

Universities that sit in the highest quartile in relation to GPA tend to score higher on average on funding streams from UKRI, the British Academy, the Royal Society and the Royal Society of Edinburgh (BEIS). In particular, those in the lowest GPA quartile hardly generate income from these funding streams. Universities who generated more than GBP 25k per FTE from these BEIS streams all sit in the first or second quartiles for GPA. In relation to BEIS research income, there were four outliers: Cardiff, UCL, Bristol and Glasgow. All of these are Russell Group universities and all of them scored in the top 10 in terms of generic GPA. As mentioned above, UCL generates large amounts of ESRC funding for its longitudinal data projects. Glasgow's return included a large number of BEIS projects funded under the Global Challenges Research Funding stream. Bristol also generated significant funding under Global Challenges Research Funding. Cardiff leads on large ESRC investments such as the Wales Institute of Social and Economic Research Data.

The mean *competitive charity funding* score—for example from the Leverhulme Trust and the Education Endowment Foundation—is clearly highest among the top income earners in the first GPA quartile while some of the post-1992 universities also scored highly for this specific income stream, but without this necessarily translating into higher GPA scores for them. For example, Sunderland was found to be an outlier in this funder category but sits in the bottom quartile for GPA. Investigating Sunderland's Environment Statement, it becomes clear that they received GBP 2.1 million from a Sunderland-based charity 'Together for Children'. Canterbury Christ Church university received funding from the Douglas Trust, a charity dedicated to physically disabled children.

Funding from *UK governments* in income quartile 1 but GPA quartile 3 comes from outliers Aberdeen and Lincoln. Again, their research income did not seem to have enabled them to generate top GPA scores despite Lincoln receiving significant funding to investigate science and mathematics teaching for GCSE pupils. As mentioned above, Durham generated high income from government sources for its work on Assessment, Evaluation and Educational Effectiveness. Interestingly, other outliers in the UK government category include Cardiff, Belfast and Aberdeen. Each of them is located in one of the devolved countries—Wales, Northern Ireland and Scotland, respectively. Not all of this funding is spent on research in the devolved countries. For example, Aberdeen received a Scottish government grant of over GBP 1 million to study adult literacy in Rwanda.

As can be seen from [Table 4](#), multiple universities managed to generate income from *EU government-funded* schemes. It is clear that this funding category is not just featuring Russell Group universities but is also present in the statistics of some of the post-1992 institutions. Gloucestershire is the top scorer with more than GBP 118k per FTE. Lincoln also sits above GBP 100k per FTE through generation of Erasmus+ funding. From the descriptive statistics, it is clear that there is no clear link with their GPA. Out of the six universities that were found to be outliers in terms of EU government funding, five are located in the post-1992 sector: Gloucestershire, Lincoln, West of England, Buckinghamshire and Glasgow Caledonian. The other outlier, Hull, is not in the post-1992 sector but also not a Russell Group institution. The Environment Statement for Gloucestershire mentions Erasmus+ as their main income stream. This funding route is also highlighted by Buckinghamshire and Glasgow Caledonian.

Hull equally mentions Erasmus+ as their largest funding source. Given the lower GPAs of these universities, this might indicate that funds that stimulate more practitioner-based activities such as Erasmus+ might in fact not generate research excellence as defined for REF purposes. The University of the West of England mentioned participation in FP7 projects and also achieved a higher GPA score than the other outliers in this group. Another type of EU funding is provided by the European Research Council. These funds are meant to facilitate ground-breaking frontier research but are extremely difficult to get and hardly any grant holders will be present in any submissions. Interestingly, the *Eurostudents* European Research Council project won by Rachel Brooks did not feature in the Education submission by Surrey but was included in the Sociology submission.

In relation to funding from *non-EU sources*, the largest grant capture per FTE was recorded by the University of Birmingham. Their Environment Statement refers to non-governmental organisation and philanthropic sources, for example the John Templeton Foundation based in the USA. Sussex has a strong profile on international development research and captured significant funding from organisations such as UNICEF. Nottingham highlighted strong expertise on vocational training research, including work in non-European contexts such as South Africa.

*Industry funding* tended to be low. Oxford, the number 1 return in terms of general GPA, was the clear outlier. Examples of industry funding remain vague and it is difficult to extract specific details from the REF Environment Statement. Several other high GPA scorers (e.g. Durham and KCL) generated industry income while it also included some of the lower scoring returners, for example Bolton.

## DISCUSSION AND CONCLUSION

The final section of this paper turns back to the original research question of this study: *To what extent is there a relationship between the generation of research income and research excellence based on REF2021 UoA23: Education data?*

Based on the analyses presented above, it is important to be nuanced about the claim that generating research funding automatically strongly correlates with research excellence from the highest level. As mentioned earlier in the paper, academics tend to be under pressure to apply for funds to support their research, highlighted by Macfarlane (2011) as the 'acquirers role' of the professoriate. However, as the analyses demonstrate, different types of funding streams tend to flow to different types of universities. The role of research funding therefore might need to be further digested through notions of vicious circles that are difficult to break. The role of the Russell Group seems very important in unpacking this issue. The most prestigious funding, such as ESRC and British Academy grants, tend to flow to Oxbridge and the other Russell Group universities (Jerrim & de Vries, 2023). They score highly on international rankings and are likely to attract a highly competitive field of applicants for job postings. EU funding, for example through Erasmus+, tends to flow more to post-1992 universities and might facilitate types of activities that lend themselves less to outputs or impact that are evaluated as 4\* or 3\* under the REF framework. Government funding might also sit in a similar category as this type of funding was found to be weakly correlated with GPA as well as the generation of 4\* outputs. Ideally, further research needs to be undertaken to delve deeper into the mechanisms that are at play. For now, the data have shown that Russell Group universities attract most BEIS funding, generate on average the highest GPA scores but equally score low on some other funding categories such as EU funds. Is this result on high GPA and high prestigious funding because of their 'halo effect' (see Pinar & Unlu, 2020) or simply because the best research is being done there?

To advance knowledge on research assessments through REF investigations as presented above, it is important to acknowledge that various types of research projects in the



broader field of education could in fact be carried out with little or no external research funding. These include desk-based philosophical inquiries or quantitative secondary data analysis work. Top researchers with solid theoretical understanding of their field and good technical analytical skills might translate this type of work into 4\* output. As critiqued by Van Damme (2019), there is room for improvement in relation to the use and application of more sophisticated methodologies and the advancement of theories and concepts, going beyond the status of keep on sticking to outdated and non-validated ideas. One recommendation for education departments is to simply focus on undertaking research that is significant and original and undertaken in a rigorous way. Doing good research is also a necessary precondition for generating high-quality impact, which is more than engaging in knowledge exchange activities. Further research could investigate how static research excellence performances in education have evolved over the years. It could further unpack the progress that has been made in relation to research in the post-1992 sector. This was beyond the scope of this paper. Another area for future research includes an investigation of education research in submission to other units of assessment or the production of non-education related research outputs and impact in other disciplines. For example, ESRC investments in longitudinal surveys generate data suitable for engaging in research that can feature in units such as sociology, economics or health. While the current analyses have been conducted for Education, the REF format across units of assessment makes replication possible.

To conclude, while generating research income can thus significantly improve individual career prospects and enable academics to undertake novel work, scoring high in REF at the institutional level is more complicated than just following whatever research funding is available.

#### **FUNDING INFORMATION**

No funding received to undertake this work.

#### **CONFLICT OF INTEREST STATEMENT**

Not applicable.

#### **DATA AVAILABILITY STATEMENT**

All data used for the purpose of these analyses are publicly available at <https://results2021.ref.ac.uk/>. *Data derived from public domain resources.* The data that support the findings of this study are available in [REF results and submission] at [<https://results2021.ref.ac.uk/>], reference number [n/a]. These data were derived from the following resources available in the public domain: [<https://results2021.ref.ac.uk/>].

#### **ETHICS APPROVAL STATEMENT**

All data used for the purpose of the analyses presented in the paper are publicly available. None of the data or statements in the paper include personal information of individual researchers. All data have been presented at university-level. I followed guidelines as provided by my university—see <https://www.gla.ac.uk/colleges/socialsciences/students/ethics/informationforapplicants/#workingwithpeople>, research using non-standard human data (social media etc) and can confirm there are no issues with privacy, confidentiality and data security and risk of disclosure given the public availability of data worldwide.

#### **PATIENT CONSENT STATEMENT**

Not applicable.

#### **PERMISSION TO REPRODUCE MATERIAL FROM OTHER SOURCES**

Not applicable.

## CLINICAL TRIAL REGISTRATION

Not applicable.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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**APPENDIX A**

**A.1 | BOXPLOTS PER FUNDING STREAM—OUTLIER ANALYSIS.**

