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Timothy Hunt, Hamish Low, Sarah Smith

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Department of Economics
Manor Road Building, Manor Road
Oxford, OX1 3UQ

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Timothy Hunt* Hamish Low† Sarah Smith‡

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1 Introduction

This note analyses how the allocation of research funding across disciplines in 2022 came about following the UK Research Excellence Framework (REF). There are two, related issues. First, REF2021 led to substantial changes in funding allocations across disciplines, particularly in Social Sciences. Second, economics emerges as the biggest, relative loser in terms of total funding.

Figure 1 and Table 2 show the variation in funding allocations and changes in allocations across disciplines following REF2021. Funding for Economics research has seen a 16% decline, larger than for any other discipline evaluated in REF2021. This was despite the evaluation that total volume of quality had increased by 58%.

There are three key points in understanding differences in funding across disciplines :

1. The way that quality is calculated
2. The mapping from quality to funding
3. The number of researchers in a subject, partly captured by the total full-time equivalent in a Sub-Panel.[1]

*University of Oxford
†University of Oxford, hamish.low@economics.ox.ac.uk
‡Bristol University

[1]Research areas were divided into 4 panels (broadly corresponding to Biological and Medical Sciences (panel A), Physical Sciences and Engineering (panel B), Social Sciences (panel C) and Humanities (panel D). Each panel was divided into sub-panels corresponding to specific subject areas. Within each sub-panel, a university would submit a Unit of Assessment (UoA).

2 Differences in Funding

Calculating Quality

Changes in the rules used to calculate total quality in REF2021 differed from REF2014 and so it is hard to compare quality measures over time. The number of submitted outputs required per full-time equivalent researcher (FTE) was reduced to 2.5 (from 4), with a minimum of 1 per researcher. This meant there was some substitutability of outputs between researchers. If FTE had not changed, this would be likely to increase apparent quality. Further, all independent researchers had to be submitted, and so if UoAs had been highly selective in REF2014, this may have decreased apparent total quality in 2014. Column (4) of Table 2 reports the change in total quality for each Sub-Panel.[2]

Quality was evaluated within disciplines. However, within each Main Panel, the share of research graded 4* was compared across Sub-Panels. The underpinning assumption of the REF process is of cross-discipline comparability in research scores.

Mapping Quality to Funding

Funding for a discipline depended on the total (weighted) quality of research produced by a Sub-Panel. The formula weighted 4* and 3* research and applied additional cost-weightings for more expensive science subjects. Given that the total funding was fixed, a sub-panel with a higher total quality of research would increase its allocation and reduce the allocation to other sub-panels. This redistribution between sub-panels was significantly affected by two steps taken in the allocation of total funds (described on page 5 of UKRI 2022b):

1 The share of total funding allocated to each of the Main Panels A, B, C and D was not adjusted to reflect the share of total quality across the Main Panels. It was, instead, pre-determined and fixed by the allocation of total funding and total weighted quality that emerged from REF2014.

2 Within each Main Panel, each sub-panel was allocated a share of that Main

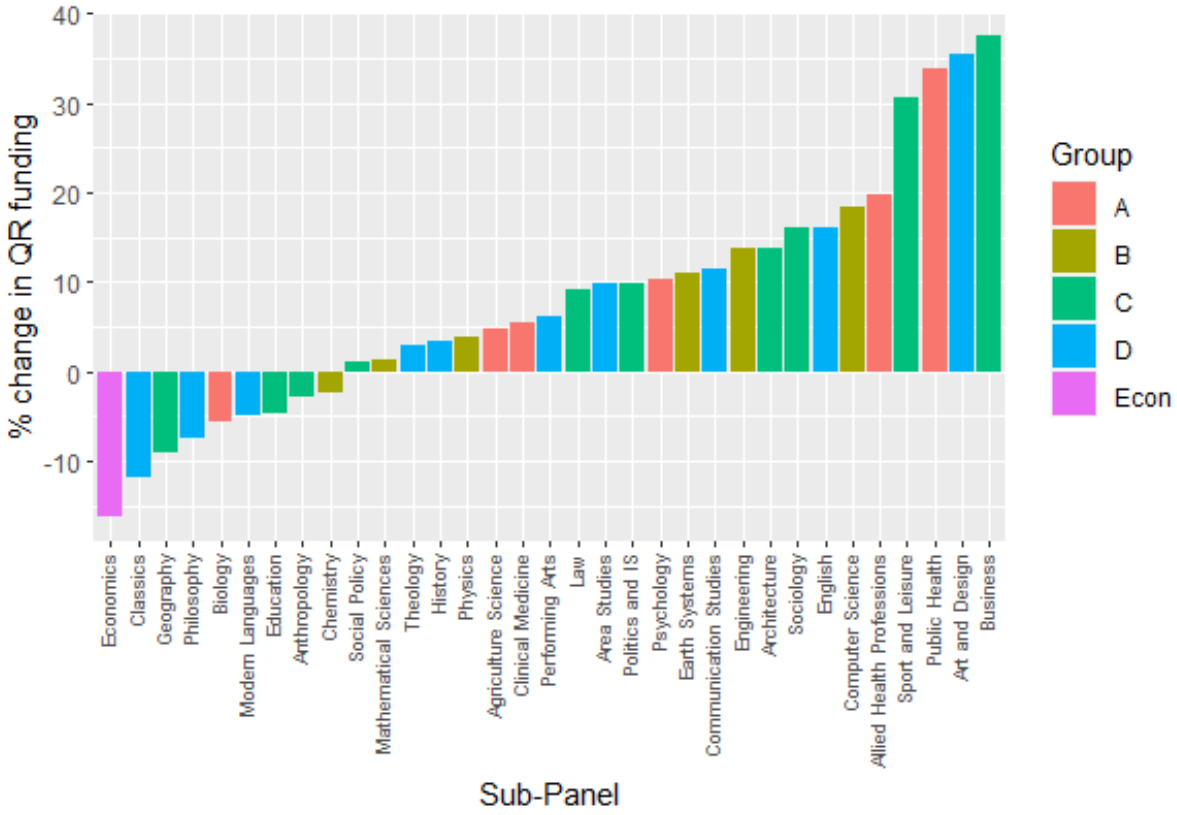
[2]Research quality (for output, impact and research environment) was judged to be 4*, 3*, 2*, 1* or not classified. We use the term "total quality" defined as the quality weighted total volume of research. The total amount of 4* research times four plus the total amount of 3* research gives the measure of total quality. No weight was given to anything else. The three components to each UoA submission (output, environment and impact) were each evaluated using the 4*,3* system. We aggregate the three components with weights 60%, 15% and 25% respectively to create one score of quality, as is done by the REF panels. The weight on outputs was decreased from 65% in REF2014, and the weight on impact increased from 20%.

Table 1: Funding data by Discipline (REF2021)

MP	Sub-Panel	Funding (£1m)	Δ Funding %	Funding per FTE (£)	Δ quality %	Δ FTE %	FTE
		(1)	(2)	(3)	(4)	(5)	(6)
A	Clinical Medicine	109.4	5.4	22422	47.0	36.6	4879
A	Public Health	55.2	33.8	27162	77.6	50.0	2032
A	Allied Health	79.8	19.9	16738	74.9	73.6	4770
A	Psychology	77.1	10.4	19073	60.0	60.3	4040
A	Biology	63.6	-5.6	22172	39.4	20.8	2867
A	Agriculture	19.7	4.7	14085	43.4	34.2	1398
	Total	*404.7*	*10.1*	*20251*	*56.5*	*46.9*	*19984*
B	Earth Systems	37.8	11	21204	69.4	29.0	1782
B	Chemistry	36.3	-2.5	24144	57.9	22.2	1502
B	Physics	52.9	3.9	23889	67.6	29.9	2215
B	Math. Sciences	60.8	1.4	24723	59.9	27.5	2461
B	Comp. Science	60.8	18.4	20243	88.8	46.8	3002
B	Engineering	159.4	13.7	21444	83.3	46.8	7432
	Total	*408.0*	*9.2*	*22178*	*74.4*	*37.8*	*18394*
C	Architecture	20.6	13.8	13514	104.5	49.0	1527
C	Geography	34.2	-9	14538	75.6	39.5	2351
C	Economics	11.9	-16.2	12991	57.9	21.7	920
C	Business	66.2	37.4	9977	139.0	99.8	6634
C	Law	25.5	9.2	10223	78.4	60.5	2494
C	Politics & IS	20.7	10	10569	82.1	53.9	1962
C	Social Policy	18.4	1.1	8738	68.9	61.7	2105
C	Sociology	11.9	16	10764	90.6	56.8	1104
C	Anthropology	8.2	-2.9	11168	64.6	30.6	733
C	Education	21.4	-4.7	9882	64.2	50.4	2168
C	Sport & Leisure	19.0	30.6	13088	118.0	84.0	1453
	Total	*258.1*	*10.2*	*11002*	*92.0*	*62.7*	*23451*
D	Area Studies	8.7	9.9	15032	59.9	20.0	580
D	Modern Lang.	19.2	-4.9	11870	45.6	16.5	1615
D	English	37.6	16	14071	73.0	35.5	2671
D	History	29.6	3.4	12546	58.5	32.2	2360
D	Classics	6.2	-11.9	13827	32.5	17.1	448
D	Philosophy	8.7	-7.5	12572	41.5	17.1	692
D	Theology	5.8	3	11403	58.9	22.3	505
D	Art & Design	39.1	35.5	15002	105.0	62.5	2607
D	Performing Arts	24.1	6	15791	62.4	33.4	1523
D	Comm. Studies	16.0	11.6	12253	68.5	39.3	1303
	Total	*194.9*	*10.1*	*13623*	*65.6*	*33.8*	*14304*

Notes: Funding amounts are in 2022 prices.

Figure 1: % change in Funding across Sub-Panels



Notes: QR funding is "quality related" research funding awarded based on the REF outcome. Funding amounts are in 2022 prices.

Panel's total funding equal to that sub-panel's share of the total quality produced by that Main Panel.

The first step fixes the allocation across the Main Panels independently of the amount of quality within each Main Panel. This is in contrast to REF2014 where the amount allocated to each of the main panels was in proportion to the volume of research in each panel that met or exceeded the 3* quality level (HEFCE 2015). The effect of this decision not to change the allocation of total funding across the Main Panels was to the disadvantage of Social Science.

Because of this restriction, higher total quality in one discipline reduced the share of funding available to other disciplines only *within the same Main Panel*. For economics, total quality increased by 58%, but because other subjects within Social Sciences increased total quality by more, the share of funding to economics fell. And because the total quality across Social Sciences increased by so much, the amount

of funding to economics fell. Column (2) of Table 2 reports the changes in funding in real terms across all Sub-Panels.

The Scale of Research

Funding is driven by the total amount of quality produced and so the number and growth of independent researchers is a key determinant of funding. There have been substantial rises in FTE submitted across the board. Column (5) or Table 2 reports the FTE within each Sub-Panel, and column (6) the change in FTE since REF2014. Panel A grew by 46.9%, Panel B by 37.8%, Panel C by 62.8% and Panel D by 33.8%. The size of these increases partly reflects the inclusion of previously excluded researchers, and it does not necessarily follow that the increase in FTE reflects an increase in staff headcounts. However, there has also been substantial growth in FTE due to hiring since 2014. Growth in FTE is related partly to success of the discipline in REF2014 but, perhaps more so, to the growth in teaching needs as universities have expanded.

The FTE in the economics Sub-Panel grew the slowest within Panel C. Further, although average FTE increased, the number of submitting UoAs fell from 28 to 25. By contrast, the number of submitting UoAs was over 100 to the Business Studies Sub-Panel. On the other hand, 40% of the 3682 outputs evaluated by the Economics Sub-Panel were submitted to Sub-Panel 17 (Business).

The conclusion is that the scale of economics research as measured by submissions to the Economics Sub-Panel is at best growing more slowly than other social sciences, and other disciplines. On the other hand, there is a sizeable volume of "hidden" economics research which is being done within Business Schools. A key question for the economics discipline is how the funding awarded by different Sub-Panels flows to research in economics.

3 Conclusions

Research for REF2021 was submitted using a new set of rules on who was to be submitted, on the number of outputs per FTE and on the substitutability of outputs between researchers. These changes in the rules surrounding REF led to a different metric of quality from previous REFs. The new metric of quality generated different effects on measured quality across disciplines. This increase in quality was alongside very large increases in the numbers of researchers submitted in some Sub-Panels. Nonetheless, quality per FTE went up across the board: evaluations of quality per head had risen even in circumstances where the number of researchers submitted had

doubled. This process for measuring quality makes assumptions on cross-disciplinary comparability that are hard to reconcile with the evidence.

Research funding was allocated using an algorithm that relied on sub-panels' own assessments of the quality of the submitted research. Unlike in REF2014, funds were fixed for each Main Panel regardless of total quality in each Main Panel. Differences in growth in measured quality across Sub-Panels led to redistribution in funds within Main Panels, rather than between and this generated substantial swings in funding across disciplines. Social sciences saw the largest growth in total quality, but it is then relative growth within social sciences that matters. This led to a substantial fall in funding for economics. It is hard to believe these swings in funding were anticipated at the time that the changes in the rules were introduced. Or that these swings in funding reflect true changes in quality over this REF period.

An alternative would have been to follow the approach in REF2014 and allocate funding according to the share of total quality in REF2021 that each sub-panel achieved out of total quality produced across all 34 sub-panels. For economics, this would have meant an allocation of £18 million - and Panel C would have benefited substantially.

Table 2: Funding Allocations Across Main Panels

Panel	REF2021		Alternative	
	Share	Funding	Share	Funding
A	31.9%	£404.7m	28.0%	£354.0m
B	32.3%	£408.0m	24.7%	£312.6m
C	20.4%	£258.1m	28.6%	£362.0m
D	15.4%	£194.9m	18.7%	£236.7m

Note: The alternative scheme allocates funding wherever quality is found, regardless of the Main Panel.

Even if the share of funding allocated to each Sub-Panel was held constant between REF2014 and REF2021, for economics, the total allocation would have been £15.7million instead of the actual £11.9million.

Finally, REF outcomes are not independent over time: it is likely that those disciplines with the highest funding outcomes in REF2021 will be the ones that grow FTE the most in the coming years. This will mean higher measured total quality for those disciplines at the next REF, and so in turn ever increasing shares of funding.

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Appendices

A Data Sources

Data on the full-time equivalent of staff of each sub-panel for each REF are taken from the publicly-available reports on each Main Panel on the REF website (REF 2015; REF 2022). Data on the funding settlements, total funded volume of output and quality weighting for each sub-panel and for each REF are taken from publicly-available tables on the UK Research Institute website (UKRI 2021; UKRI 2022a).

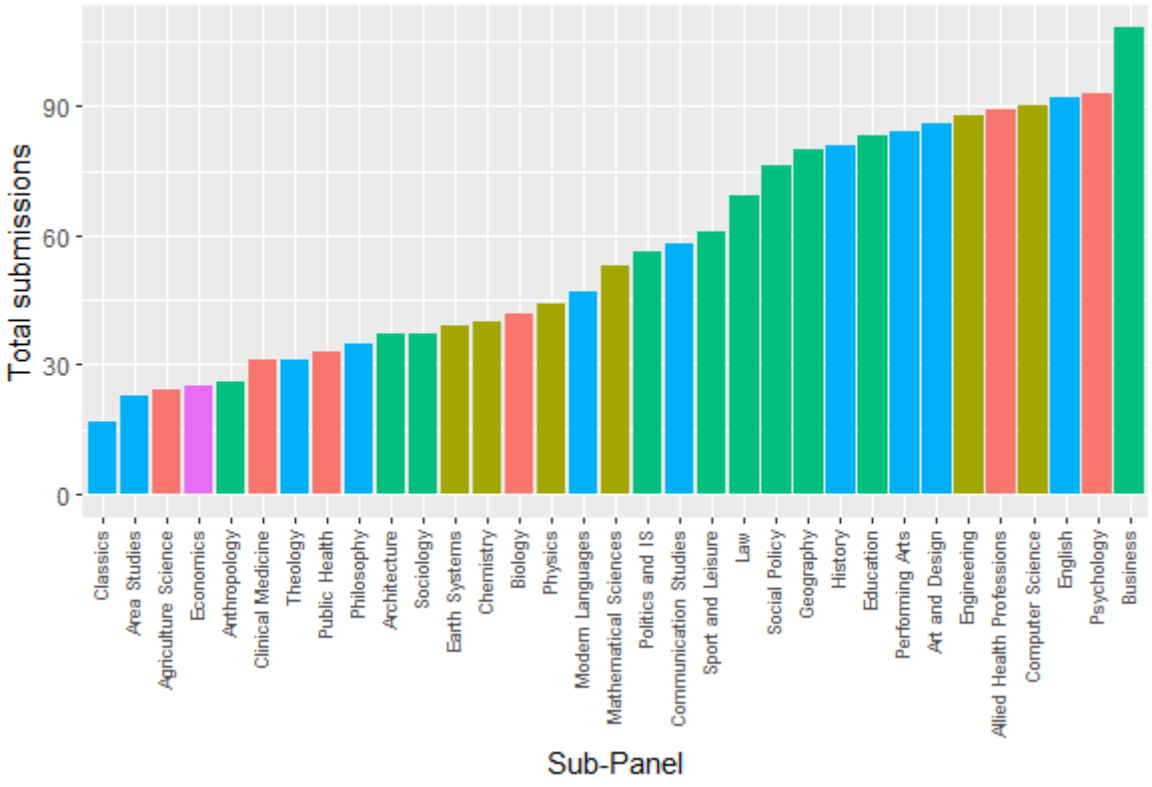

Figure 2: Number of Submitting Universities

Table 3: Change in share of eligible FTE staff submitted, REF2014 to REF2021

MP	Sub-Panel	Share of eligible FTE submitted, 2014	Share of eligible FTE submitted, 2021	% change
A	Clinical Medicine	0.74	0.99	33
A	Public Health	0.53	0.99	89
A	Allied Health	0.33	0.46	41
A	Psychology	0.64	0.88	36
A	Biology	0.67	0.98	47
A	Agriculture	0.67	0.97	43
	Total	*0.55*	*0.76*	*39*
B	Earth Systems	0.77	0.95	24
B	Chemistry	0.79	1.00	25
B	Physics	0.87	0.99	14
B	Math. Sciences	0.82	1.00	22
B	Comp. Science	0.55	0.79	42
B	Engineering	0.69	0.87	26
	Total	*0.71*	*0.90*	*26*
C	Architecture	0.51	0.75	49
C	Geography	0.78	0.98	25
C	Economics	0.59	1.02	72
C	Business	0.39	0.67	73
C	Law	0.51	0.87	70
C	Politics & IS	0.73	0.98	34
C	Social Policy	0.51	0.69	35
C	Sociology	0.57	0.96	67
C	Anthropology	0.80	0.99	24
C	Education	0.27	0.54	97
C	Sport & Leisure	0.39	0.67	70
	Total	*0.47*	*0.75*	*59*
D	Area Studies	0.74	1.01	36
D	Modern Lang.	0.70	0.97	38
D	English	0.77	0.98	27
D	History	0.84	1.02	22
D	Classics	0.95	1.06	12
D	Philosophy	0.89	1.03	16
D	Theology	0.77	1.04	36
D	Art & Design	0.39	0.52	35
D	Performing Arts	0.52	0.72	39
D	Comm. Studies	0.44	0.69	56
	Total	*0.62*	*0.80*	*30*