


Research income of physics in UK higher education institutions: Update



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Definitions

Category A staff	The number of research-active staff who were employed by and on the payroll of the submitting HEI at the census date for each research assessment exercise.
Cost centres	Cost centres are a set of “subjects” used for the reporting of management data.
Dual support system	The system of state funding for research whereby some funding is provided by the funding councils (QR income) to support a foundation for strategic and applied work, and funding is also provided by the research councils who fund individual research project costs and the indirect costs associated with each project.
External research income	Research income from sources other than the funding councils, including income from the research councils.
fEC	Full economic costing of research. A system whereby HEIs charge the full cost of research including all of the overheads.
HEFCE	Higher Education Funding Council for England.
HEFCW	Higher Education Funding Council for Wales.
HEI	Higher Education Institution.
SFC	Scottish Funding Council.
Total research income	Total research income for all sources, i.e. the sum of QR income and external research income.
QR	Quality-related income. Income from the funding councils is dependent on the result of research assessment exercises that is passed on to HEIs as part of their block grant. This income also includes some additional elements. In Scotland QR income is now called the Research Excellence Grant (REG).
UoA	Unit of assessment. A set of “subjects” under which HEIs may submit their research for assessment.

Summary

- Between 2004/05 and 2011/12 research income received by all cost centres rose by 52% to £6322 m. Over the same period of time research income in UK physics cost centres rose by 54% to £343 m.
- In 2011/12 quality-related (QR) income from the funding councils accounted for 22% of research income in physics, and external research income accounted for 78% of research income. Overall, 83% of research income in physics was from UK public sources including the research councils, compared to 65% of all cost centres, and 58% of research income in physics was from the research councils, compared to 24% for all cost centres. Physics remains particularly sensitive to changes in public funding in general and research council funding in particular, and consequently the ongoing public sector spending cuts continue to have potential to affect physics more than other cost centres.
- Between 2004/05 and 2011/12 external research income received by UK HEIs increased by 59% from £2825 m to £4499 m. Over the same period, the external research income of the physics cost centre in UK HEIs grew from £165 m to £268 m – an increase of 67%. External research income in physics peaked at £277 m in 2009/10. The average external income in physics per permanent research active academic member of staff in 2011/12 was £154,500.
- Total income from the research councils of UK HEIs increased by 65% to £1502 m between 2004/05 and 2011/12. In physics, income from the research councils rose by 56% between 2004/05 and 2011/12 to £197 m: income peaked in 2009/10 at £221 m. In 2011/12 74% of the external research income for physics cost centres came from the research councils. Of all cost centres, physics is most dependent on research council funding.
- QR funding for physics between 2004/05 and 2011/12 rose by 27% to £61.9 m. Overall, in England the total QR funding nominally allocated to all academic cost centres rose by 35.4% to £1487 m. Physics' share of QR funding has varied little over the past 15 years, from 4.37% in 1999/2000 to 4.16% in 2013/14.
- QR and Research Excellence Grant (REG) funding in Scotland and Wales varies more than in England as far fewer HEIs receive funding. Funding for physics in Scotland rose by 46% between 2004/05 and 2010/11 to £11.3 m. In Wales, funding for physics fell by 21% over the same period to £1.5 m.
- In Northern Ireland, between 2007/08 and 2012/13, QR funding for physics has fallen by 38% to £2.0 m.

Introduction

¹ *Research Income of Physics Cost Centres in UK Higher Education Institutions*, Institute of Physics, London, 2012.

² Assignment of departments to academic cost centres 2001/02 (www.hefce.ac.uk/pubs/hefce/2002/02_25.htm).

³ Much of this section is adapted from *Guide to funding: How HEFCE allocates its funds* (www.hefce.ac.uk/pubs/hefce/2010/10_24/).

This report is an updated version of the overview of research income of UK Higher Education Institutions' (HEIs) physics cost centres published in 2012.¹ The original report presented data on external research income up to the end of the academic year 2009/10. This edition also contains data for academic years 2010/11 and 2011/12. Additionally, the original report presented data on quality-related (QR) income up to 2011/12 in England and Wales and up to 2010/11 in Scotland. This edition also includes QR income for 2012/13 and 2013/14 for England and Wales, and for 2011/12, 2012/13 and 2013/14 in Scotland. Additionally, details of QR income in Northern Ireland are given for 2007/08 to 2012/13.

The data sources are the Higher Education Statistics Agency (HESA), the central source for the collection and dissemination of statistics about publicly funded UK higher education, and the UK funding councils: Higher Education Funding Council for England (HEFCE), Scottish Funding Council (SFC), Higher Education Funding Council for Wales (HEFCW), and the Department for Education and Learning Northern Ireland (DELNI).

1.1. Cost centres and units of assessment

HESA requires external research income data to be returned with income assigned to cost centres and is reported by HESA on the basis of cost centres. The list of cost centres includes mathematics, physics, electrical engineering and computer engineering (EECE), chemistry, and biosciences, which are all discussed in this report. HEIs are required to map their constituent departments/schools to cost centres, and they can apportion departments across a number of cost centres.

Cost centres vary greatly in their breadth of coverage. For example, biosciences covers a large range of university departments including life and health sciences, biomedical science, cancer research, biochemistry, and sports science. Full details of the mapping between departments and cost centres are available on the HEFCE website.²

QR research funds distributed by the funding councils are calculated based on units of

assessment (UoAs). Funding councils publish the sums generated by individual UoAs in HEIs, although the funds are transferred to HEIs as part of their annual recurrent block grant. There were 69 UoAs before the 2001 Research Assessment Exercise (RAE). For the RAE 2001 the biochemistry UoA was combined with the biological sciences UoA. 68 UoAs were used until the RAE 2008. A number of amendments were made to the UoAs for the RAE 2008 resulting in a total of 67. Mappings are published of UoAs to cost centres.

The physics, chemistry, biological sciences and the electrical and electronic engineering UoAs map directly to the physics, chemistry, biosciences and EECE cost centres, respectively. The pure mathematics, applied mathematics and statistics, and operational research UoAs map to the mathematics cost centre.

In this report, in order to be comparable with external research income, QR income is reported on the basis of cost centres rather than UoAs.

1.2. Research income

The "Dual Support System" for research income comprises funds for general purposes provided by the funding councils, and income from the research councils who fund individual research project costs and the indirect costs associated with each project.

The annual external research income is based on the grant-derived monies spent in each year rather than being the values of grants awarded in that year.

Funding council monies comprise QR funding provided to HEIs to cover the costs of the research infrastructure, which includes permanent academic staff salaries, premises, central computing and library facilities. There are a number of different components used in calculating mainstream QR funding: volume measures; a quality measure; subject cost weightings; and London weighting. All funding councils do not necessarily follow the same methodology; for example, subject weightings may vary.³

Data in this report are reported on the basis of individual UoAs' allocations of QR funding aggregated as appropriate. Where totals of

QR funding are reported these include only the monies nominally allocated to the UoAs and excludes the business research and the national research libraries elements. Sections are presented for QR income distributed by HEFCE, SFC, HEFCW and DELNI.

It should be noted that although the funding councils publish nominal allocations for individual UoAs within HEIs, the money is provided to HEIs as part of their block grant. It is for each HEI to decide how the funds they receive are allocated, although the use of the Transparent Approach to Costing (TRAC) methodologies (see **section 1.3**) means that HEIs are required to be transparent about how they spend their funds.

HEIs report their external research income each year to HESA on the basis of cost centres and income source. Until 2006/07, income was broken down into eight categories. From 2007/08, 13 categories have been used, which are listed in **table 1**.

In this report, external research income is reported on the basis of the eight categories used up to 2006/07. Data on the external research income from 2007/08 to 2011/12 broken down into the 13 categories are shown in **appendix A**.

1.3. Full economic costing

The government's 1998 Spending Review granted additional funds for higher education, but required transparent costing at institutional level. This led to the introduction of the Transparency Review, which established the TRAC methodologies.

TRAC showed that all research was underfunded when full economic costings (fEC) were calculated. The upshot was that HEIs were required to take responsibility for their own financial sustainability, particularly in respect of research infrastructure. Consequently, the former Office of Science and Technology (OST) distributed additional funds that rose to £200 m from 2007/08. The aim of these extra funds was to ensure that a greater proportion of the cost of research was met. The funds were not to increase

the volume of research being funded. The fEC methodology was fully embedded within HEIs by 2008/09.

Research council projects were awarded under an fEC basis from 1 September 2005 with equipment funded at 80% for the first £50,000 and 100% above £50,000. The research councils currently provide funding at 80% of the fEC for awarded grants; the HEI receiving funding must agree to find the balance of fEC for the project from other resources.

As noted above, the additional funds were not intended to increase research volume. In fact there was some concern that the introduction of fEC would lead to a decrease in research council-funded volume.⁴ This report looks at external funding for research and not volume. Nonetheless, some of the funding increases presented in **section 2.1** are due to the introduction of fEC.

⁴ www.rsc.org-chemistryworld-News-2008-January-25010801.asp.

Table 1: External research income funding sources*

2007/08 onwards	Up to 2006/07
BIS research councils, The Royal Society, British Academy and The Royal Society of Edinburgh	Research councils
Non-EU-based charities (open competitive process)	Other overseas
Non-EU industry, commerce and public corporations	
Non-EU other	
UK-based charities (open competitive process)	UK charities
UK-based charities (other)	
UK central government bodies, local authorities, health and hospital authorities	UK public and health funding
UK industry, commerce and public corporations	UK industry and commerce
EU government bodies	EU government
EU-based charities (open competitive process)	EU other
EU industry, commerce and public corporations	
EU other	
Other sources	Other sources

*A full description of the research income sources is provided in appendix B.

External research income of UK HEIs

2.1. The total external research income of HEIs

External research income received by all academic cost centres in UK HEIs between 2004/05 and 2011/12 is shown in **table 2** and **figure 1**. Between 2004/05 and 2011/12 total

external research income increased by 59%. Income from the research councils is the largest proportion of the external income, and increased by 65% over the same period.

Table 3 shows the proportion of total funding from each income source. In 2011/12, public

Source: HESA research grants and contracts income

Figure 1: External research income by source of HEIs 2004/05 to 2011/12

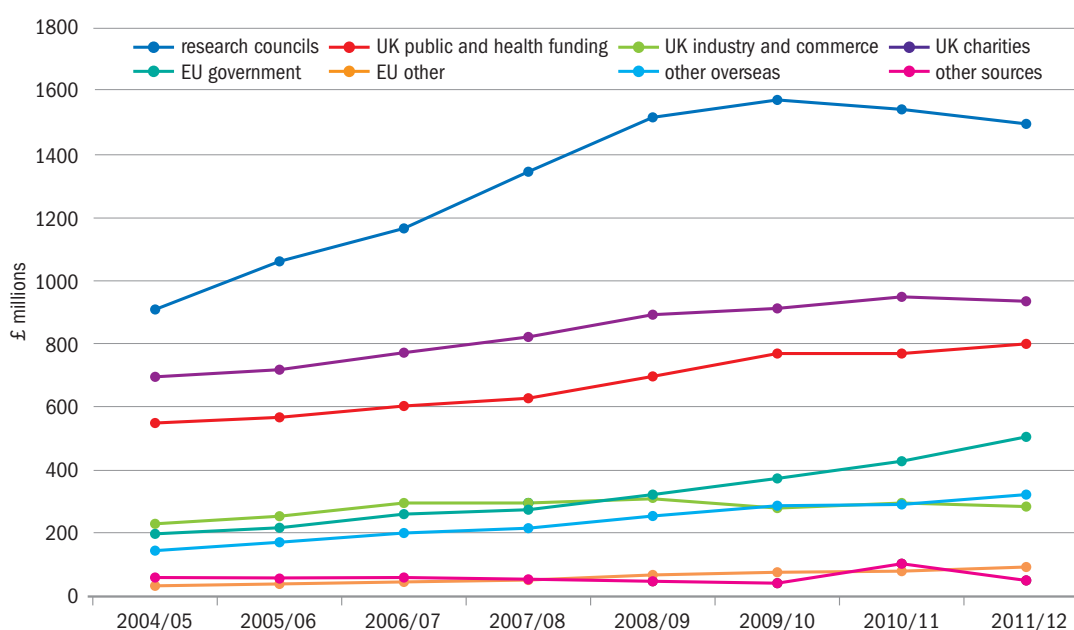


Table 2: Total external research income of HEIs 2004/05 to 2011/12

Income source	External research income by year (£m)								% increase 2004/05 to 2011/12**
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	
Research councils	911	1065	1169	1349	1522	1577	1548	1502	65
UK public and health funding	551	569	605	630	699	772	771	803	46
UK industry and commerce	228	255	296	296	312	280	296	285	25
UK charities	698	721	774	824	895	915	950	937	34
EU government	198	218	261	278	323	375	430	507	156
EU other	33	40	47	52	67	76	82	93	177
Other overseas	145	172	201	217	255	288	291	323	123
Other sources	60	57	59	52	50	42	102	50	-17
Total*	2825	3095	3413	3698	4123	4325	4469	4499	59

* Totals may not equal the sum of the figures above due to rounding.

** % changes are calculated using unrounded figures and therefore may differ from the values calculated using the rounded figures presented in the table.

Source: HESA research grants and contracts income

2: External research income of UK HEIs

Table 3: The percentage share of total external research income in HEIs by source 2004/05 to 2011/12

Source: HESA research grants and contracts income

Income source	Share of external research income between sources							
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Research councils	32.3%	34.4%	34.3%	36.5%	36.9%	36.5%	34.6%	33.4%
UK public and health funding	19.5%	18.4%	17.7%	17.0%	17.0%	17.8%	17.3%	17.8%
UK industry and commerce	8.1%	8.2%	8.7%	8.0%	7.6%	6.5%	6.6%	6.3%
UK charities	24.7%	23.3%	22.7%	22.3%	21.7%	21.2%	21.3%	20.8%
EU government	7.0%	7.0%	7.7%	7.5%	7.8%	8.7%	9.6%	11.3%
EU other	1.2%	1.3%	1.4%	1.4%	1.6%	1.8%	1.8%	2.1%
Other overseas	5.1%	5.5%	5.9%	5.9%	6.2%	6.7%	6.5%	7.2%
Other sources	2.1%	1.8%	1.7%	1.4%	1.2%	1.0%	2.3%	1.1%

Table 4: The total external research in the physics cost centre by income source 2004/05 to 2011/12

Income source	External research income (£ m)								% increase 2004/05 to 2011/12**
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	
Research councils	126.6	145.4	158.5	189.1	211.5	220.7	210.0	197.4	55.9
UK public and health funding	10.0	8.9	10.4	9.9	13.2	11.8	13.8	11.2	11.7
UK industry and commerce	5.8	6.1	6.6	6.5	6.8	5.9	7.2	7.7	32.7
UK charities	4.5	5.4	4.8	5.3	5.0	5.6	5.8	6.2	37.2
EU government	12.1	14.5	20.1	19.3	23.5	23.8	29.1	35.5	194.1
EU other	1.2	1.2	1.5	1.7	2.4	2.2	2.8	2.9	143.0
Other overseas	2.8	3.9	3.9	4.0	5.3	5.6	6.8	5.9	110.8
Other sources	2.4	1.0	1.2	1.2	1.8	1.2	1.1	1.2	-51.0
Total*	165.4	186.4	207.1	236.8	269.4	276.8	276.4	267.9	62.0

* Totals may not equal the sum of the figures above due to rounding.

** % changes are calculated using unrounded figures and therefore may differ from the values calculated using the rounded figures presented in the table.

Source: HESA research grants and contracts income

funding from the research councils and public and health funding represented over 50% of the total. UK charities provide over 20% of income. Additionally, funding from UK industry and commerce, EU government and other overseas sources all represent significant sources of income.

Interestingly, the proportion of funding from UK industry and commerce has fallen from a peak of 8.7% in 2006/07 to 6.3% in 2011/12. In monetary terms, the funding peaked at £312 m

in 2008/09 but fell thereafter and was £285 m in 2011/12. This probably reflects the effects of the economic downturn.

2.2. The total external research income of physics in HEIs

Table 4 shows the external research income of the physics cost centre in UK HEIs between 2004/05 and 2011/12. During that period, total external research income for physics grew from £165 m to

2: External research income of UK HEIs

Source: HESA research grants and contracts income

Table 5: The percentage share of total external research income in the physics cost centre by source 2004/05 to 2011/12

Income source	Share of external research income between sources							
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Research councils	76.6%	78.0%	76.6%	79.8%	78.5%	79.7%	76.0%	73.7%
UK public and health funding	6.0%	4.8%	5.0%	4.2%	4.9%	4.3%	5.0%	4.2%
UK industry and commerce	3.5%	3.3%	3.2%	2.7%	2.5%	2.1%	2.6%	2.9%
UK charities	2.8%	2.9%	2.3%	2.2%	1.9%	2.0%	2.1%	2.3%
EU government	7.3%	7.8%	9.7%	8.1%	8.7%	8.6%	10.5%	13.2%
EU other	0.7%	0.6%	0.7%	0.7%	0.9%	0.8%	1.0%	1.1%
Other overseas	1.7%	2.1%	1.9%	1.7%	1.9%	2.0%	2.4%	2.2%
Other sources	1.5%	0.6%	0.6%	0.5%	0.7%	0.4%	0.4%	0.4%

Source: HESA research grants and contracts income

Table 6: External research in selected cost centres by income source 2011/12

Income source	External research income (£ m)				
	Physics	Mathematics	Chemistry	EECE	Biosciences
Research councils	197.4	55.6	99.7	73.4	205.7
UK public and health funding	11.2	4.5	9.9	17.0	34.7
UK industry and commerce	7.7	3.3	13.4	19.7	25.1
UK charities	6.2	3.6	13.4	4.5	194.2
EU government	35.5	9.6	30.3	34.5	63.1
EU other	2.9	1.0	4.0	3.4	10.0
Other overseas	5.9	6.0	8.3	4.9	28.0
Other sources	1.2	0.4	1.3	1.7	2.6
Total*	267.9	84.1	180.4	159.1	563.2

* Totals may not equal the sum of the figures above due to rounding.

£268 m, an increase of 62%. Funding has fallen slightly from a peak of £277 m in 2009/10.

Table 5 shows the distribution of external research income between sources. Physics is particularly dependent on research council funding, which represents 74% of external funding, although this has fallen from a peak of 80% in 2009/10. Overall, 78% of external research funding for physics comes from public UK sources (research councils and UK public and health funding). A relatively small proportion of external research income comes from UK industry

and commerce. Income from UK industry and commerce has risen from £5.8 m in 2004/05 to £7.7 m in 2011/12.

2.3. Comparison of the external research income of selected cost centres in HEIs

Table 6 presents the external research income of selected cost centres for 2011/12. Of the cost centres under consideration biosciences attracts the most external research income (£563 m), followed by physics (£268 m), and chemistry

2: External research income of UK HEIs

Table 7: The external research in selected cost centres per member of permanent academic staff* with a research and teaching or research-only employment function by income source 2011/12

Source: HESA research grants and contracts income; HESA staff data

Income source	External research income per member of academic staff (£000)				
	Physics	Mathematics	Chemistry	EECE	Biosciences
Research councils	113.8	24.3	67.2	36.3	43.0
UK public and health funding	6.4	2.0	6.7	8.4	7.3
UK industry and commerce	4.4	1.5	9.0	9.7	5.2
UK charities	3.6	1.6	9.1	2.2	40.6
EU government	20.5	4.2	20.4	17.1	13.2
EU other	1.7	0.5	2.7	1.7	2.1
Other overseas	3.4	2.6	5.6	2.4	5.9
Other sources	0.7	0.2	0.9	0.8	0.5
Total**	154.5	36.8	121.5	78.6	117.9

* Permanent academic staff numbers are the numbers of lecturers, senior lecturers/readers and professors in the respective cost centres in 2011/12.
 ** Totals may not equal the sum of the figures above due to rounding.

Table 8: The distribution of total external research income in selected cost centres between different sources 2011/12

Source: HESA research grants and contracts income

Income source	Share of external research income in selected cost centres between sources 2011/12				
	Physics	Mathematics	Chemistry	EECE	Biosciences
Research councils	73.7%	66.1%	55.3%	46.1%	36.5%
UK public and health funding	4.2%	5.3%	5.5%	10.7%	6.2%
UK industry and commerce	2.9%	3.9%	7.4%	12.4%	4.5%
UK charities	2.3%	4.3%	7.5%	2.8%	34.5%
EU government	13.2%	11.4%	16.8%	21.7%	11.2%
EU other	1.1%	1.2%	2.2%	2.2%	1.8%
Other overseas	2.2%	7.2%	4.6%	3.1%	5.0%
Other sources	0.4%	0.5%	0.7%	1.1%	0.5%

(£180 m). The external research income per permanent member of academic staff with a research function is shown in **table 7**.

Of the subjects under consideration, physics has the highest level of external research income per permanent member of academic staff (£154,500) followed by chemistry (£121,500), biosciences (£117,900), EECE (£78,600) and mathematics (£36,800).

Table 8 shows the distribution of external research income between sources. As noted above, physics is particularly dependent on

research council funding (74%). Mathematics receives 66% of its external research income from the research councils, chemistry 55% and EECE 46%. Biosciences attracts 37% of external research income from the research councils, and 35% of biosciences external research income comes from UK charities, which is a significantly greater proportion than the other cost centres under consideration. For all cost centres under consideration, the share of external income from the research councils has fallen from 2010/11, and in general, the shares from other sources

2: External research income of UK HEIs

Source: HESA research grants and contracts income

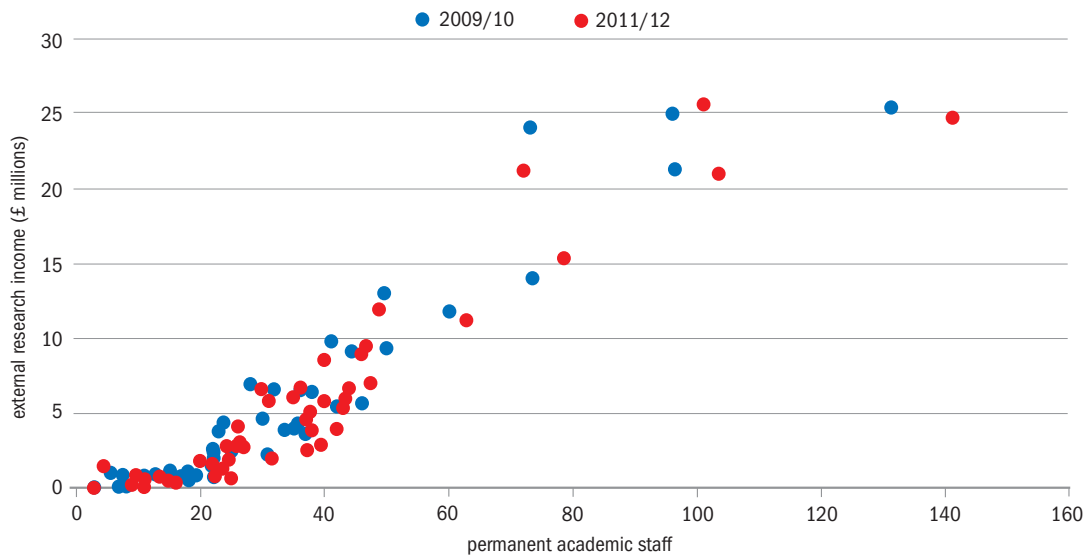
Table 9: The proportion of total external research income from the research councils by cost centre 2009/10, 2010/11 and 2011/12

Cost centre	Proportion of external income from the research councils		
	2009/10	2010/11	2011/12
Physics	79.7%	76.0%	73.7%
Mathematics	67.2%	67.9%	66.1%
Chemistry	61.3%	57.8%	55.3%
Librarianship communication and media studies	36.0%	51.1%	51.0%
French, Spanish and German modern languages	63.4%	64.5%	50.8%
Earth marine and environmental sciences	51.2%	49.3%	50.1%
Chemical engineering	54.7%	51.4%	49.2%
Language-based studies	52.7%	51.6%	48.4%
Geography	46.1%	45.8%	47.6%
Veterinary science	41.7%	46.7%	47.5%
Architecture built environment and planning	43.3%	47.5%	46.9%
EECE	53.4%	50.8%	46.1%
Civil engineering	49.5%	46.9%	45.4%
IT and systems sciences, computer software engineering	51.5%	47.1%	44.9%
Mineral metallurgy and materials engineering	46.2%	46.9%	43.5%
Design and creative arts	48.8%	43.0%	39.0%
Psychology and behavioural sciences	45.4%	42.6%	38.6%
Social studies	38.2%	37.8%	36.8%
Biosciences	39.2%	38.4%	36.5%
Anatomy and physiology	39.2%	38.5%	33.9%
General engineering	34.5%	31.7%	31.0%
Mechanical aeronautical and production engineering	37.5%	31.7%	28.9%
Business and management studies	30.6%	28.6%	27.8%
Pharmacy	26.7%	26.2%	26.3%
Archaeology	26.6%	26.4%	25.1%
Education	21.9%	21.0%	21.6%
Catering and hospitality management	7.1%	34.1%	21.6%
Sports science and leisure studies	21.8%	22.2%	21.0%
Clinical medicine	17.8%	17.2%	16.9%
Clinical dentistry	19.4%	16.6%	15.3%
Continuing education	3.4%	11.8%	14.2%
Agriculture and forestry	15.7%	11.7%	12.5%
Health and community studies	13.1%	5.2%	11.0%
Nursing and paramedical studies	7.6%	7.9%	6.6%
All cost centres	36.5%	34.6%	33.4%

2: External research income of UK HEIs

Figure 2: Plot of total external research income against the number of permanent academic staff with a research and teaching, or research-only employment function for individual physics cost centres 2009/10 and 2011/12

Source: HESA research grants and contracts income, and staff data



increased as a result.

Table 9 ranks all of the cost centres based on the proportion of external research income that comes from the research councils in 2011/12. These data emphasise how important research council funding is to the health of the research base in physics, mathematics and chemistry, in comparison to other cost centres and also underline how these cost centres are particularly sensitive to changes in the level of research council funding. The share of external income from the research councils has fallen from 2010/11 for

the majority of cost centres because, in general, the value of research council funding has fallen.

Figure 2 shows a plot of the external research income against the number of permanent academic staff in physics cost centres for 2009/10 and 2011/12. As might be expected, there is a good correlation between the research income and the number of staff. The plot also indicates that there is a minimum number of staff, around 20–25, above which research income increases broadly in line with the number of academic staff.

Quality-related income of UK HEIs

3.1. Quality-related income of English HEIs

Table 10 presents data on the QR income allocated to selected cost centres in England by HEFCE from 2004/05 to 2013/14.

Overall, QR funding nominally allocated to academic cost centres has risen by 35%. Considering individual cost centres, between 2004/05 and 2013/14 the funding for physics rose by 27%, mathematics by 37%, chemistry by 4%, EECE by 16% and biosciences by 42%.

Data are presented in **table 11** for the amount

of QR income per number of eligible category A staff in the selected cost centres. The QR income per category A staff fell significantly between 2008/09 and 2009/10 following the RAE2008. In physics the funding per category A staff has fallen to £45,400 from a peak of £61,000 in 2008/09. This is partly explained as the number of eligible category A staff has increased over that time. Similarly, the significant fall in the funding per person for other subjects between 2008/09 and 2009/10 is caused by significant rises in the number of eligible category A staff.

Table 10: HEFCE QR income in selected cost centres 2004/05 to 2013/14

Cost centre	HEFCE QR income (£ m)										% change**
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13*	2013/14*	
Physics	48.7	56.9	60.7	61.1	61.1	62.3	63.8	61.4	62.4	61.9	27.1
Mathematics	40.9	49.1	52.4	53.2	52.3	55.9	57.4	55.1	55.8	55.9	36.8
Chemistry	47.6	50.7	52.4	49.1	52.5	49.6	50.0	48.1	49.9	49.6	4.2
EECE	25.9	27.9	29.6	27.1	28.7	30.2	30.7	29.4	29.8	30.1	16.2
Biosciences	85.0	94.6	101.8	103.9	104.1	112.3	113.1	110.0	119.4	120.6	41.8
All cost centres	1098.9	1267.7	1358.3	1361.2	1397.9	1514.5	1532.9	1487.9	1487.9	1487.9	35.4

**Up to 2011/12, HEFCE published data on the charity contribution for each HEI at the cost centre level. Since 2012/13, HEFCE has only published the total charity contribution of each individual HEI. Values of the QR charity funding contribution for 2012/13 and 2013/14 by cost centre have been calculated using the same protocol used by HEFCE using HESA data on external charity funding and the total size of the charity fund.*

***% changes are calculated using unrounded figures and therefore may differ from the values calculated using the rounded figures presented in the table.*

Source: HEFCE

Table 11: HEFCE QR income per number of eligible category A staff* in selected cost centres 2004/05 to 2013/14

Cost centre	HEFCE QR income (£000)										% change***
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13**	2013/14**	
Physics	48.6	56.8	60.6	61.0	61.0	50.0	51.3	49.3	45.7	45.4	-6.6
Mathematics	37.8	45.4	48.5	49.2	48.4	37.1	38.0	36.5	34.9	34.9	-7.7
Chemistry	61.0	65.0	67.2	63.0	67.3	55.6	56.1	54.0	54.8	54.5	-10.7
EECE	50.6	54.4	57.7	53.0	56.1	49.8	50.6	48.6	44.8	45.3	-10.6
Biosciences	66.8	74.4	80.0	81.7	81.9	68.9	69.4	67.4	64.7	65.3	-2.3
All cost centres	42.1	48.6	52.0	52.1	53.5	41.1	41.6	40.4	40.4	40.4	-4.0

**Total eligible category A staff numbers are published by HEFCE each year. From 2009/10 funding is based on the proportions of eligible category A staff whose research was categorised as 4* or 3* quality in the RAE2008.*

***Values of the QR charity funding contribution for 2012/13 and 2013/14 have been calculated using the same protocol used by HEFCE using HESA data on external charity funding and the total size of the charity fund.*

**** % changes are calculated using unrounded figures and therefore may differ from the values calculated using the rounded figures presented in the table.*

Source: HEFCE

Table 12: HEFCE QR charity support funding in selected cost centres 2006/07 to 2013/14

Cost centre	HEFCE QR charity support funding (£ m)								% change**
	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13*	2013/14*	
Physics	0.69	1.06	0.76	0.71	0.79	0.91	1.26	1.22	77.3
Mathematics	0.49	0.48	0.60	0.52	1.43	1.77	0.93	0.78	58.2
Chemistry	1.65	2.03	2.16	1.91	2.04	2.21	2.51	2.63	60.0
EECE	0.24	0.28	0.37	0.28	0.27	0.29	0.62	0.79	236.1
Biosciences	21.41	26.25	25.37	28.40	27.85	27.20	36.22	37.21	73.7
All cost centres	135.0	180.0	184.9	193.6	197.5	197.5	197.5	197.5	46.3

*Values of the QR charity funding contribution for 2012/13 and 2013/14 have been calculated using the same protocol used by HEFCE using HESA data on external charity funding and the total size of the charity fund.
** % changes are calculated using unrounded figures and therefore may differ from the values calculated using the rounded figures presented in the table.

Source: HEFCE

Table 13: SFC QR and REG income in selected cost centres 2004/05 to 2013/14

Cost centre	SFC QR and REG income (£ m)										% change*
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	
Physics	7.7	8.1	8.8	9.1	9.6	10.7	10.2	10.2	10.5	11.3	46.3
Mathematics	6.1	6.5	7.0	7.3	7.7	6.0	5.8	5.8	6.0	6.6	7.7
Chemistry	5.8	6.0	6.6	6.9	7.2	9.6	9.1	9.2	10.1	11.0	89.6
EECE	5.5	5.8	6.3	6.5	6.9	4.6	5.0	5.0	5.1	5.6	1.7
Biosciences	16.2	17.1	20.4	22.9	24.0	21.9	23.8	23.8	25.6	27.3	67.7
All cost centres	149.3	155.8	175.7	188.7	197.5	207.5	208.4	213.0	223.0	242.5	62.4

*% changes are calculated using unrounded figures and therefore may differ from the values calculated using the rounded figures presented in the table.

Source: SFC

Data for the charity support funding for selected cost centres from 2006/07 to 2013/14 are shown in **table 12**. In 2013/14 biosciences received £36.2 m compared to £1.2 m received by physics.

Figure 3 shows the ratio of QR research income each year in selected cost centres to that in 1999/2000. Of the cost centres under consideration, only mathematics has consistently increased its funding by more than the overall proportionate increase in funding. Although physics did better than the overall increase until the RAE 2008, it has now fallen behind the overall increase.

3.2. Quality-related and research excellence grant income of Scottish HEIs

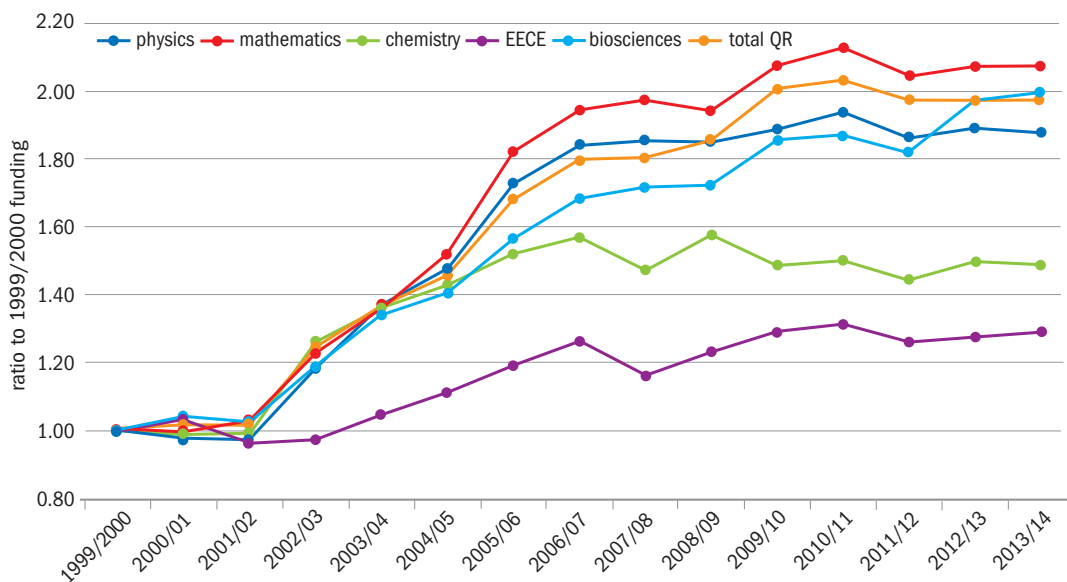
Table 13 presents data on the QR and research excellence grant (REG) income allocated to

selected cost centres in Scotland by SFC from 2004/05 to 2013/13. Overall, QR/REG funding nominally allocated to academic cost centres has risen by 62%. Considering individual cost centres, the funding for physics has risen by 46% and for mathematics it has risen by 8%. The funding for chemistry has risen by 90%, for biosciences by 68% and for EECE by 2%. It is notable that there were significant changes in 2009/10 following the RAE 2008, a point that is underlined in **figure 4** that illustrates the ratio of QR research income in selected cost centres to that in 2001/02. The changes in 2009/10 were caused by a number of factors, including changes in the outcomes of the research assessment itself. Some changes at the cost centre level are because HEIs changed which units of assessments they made submissions under.

3: Quality-related income of UK HEIs

Source: HEFCE

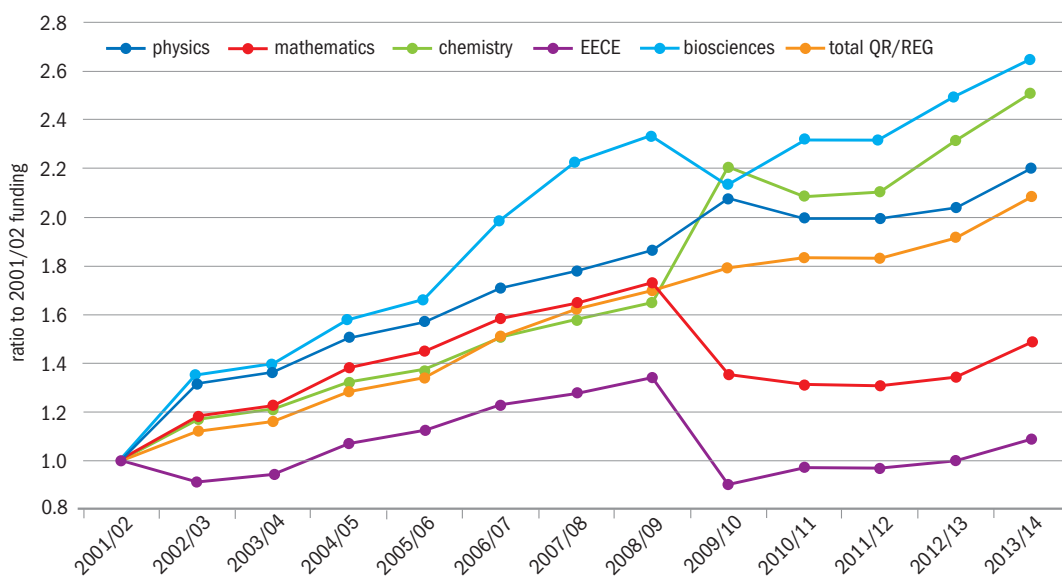
Figure 3: Ratio of HEFCE QR income in a given year to that in 1999/00 for selected cost centres in England 1999/00 to 2013/14*



*Values of the QR charity funding contribution for 2012/13 and 2013/14 have been calculated using the same protocol used by HEFCE using HESA data on external charity funding and the total size of the charity fund.

Source: SFC

Figure 4: Ratio of SFC QR and REG income in a given year to that in 2001/02 for selected cost centres in Scotland 2001/02 to 2013/14



3.3. Quality-related income of Welsh HEIs

Table 14 presents data on the QR income allocated to selected cost centres in Wales by HEFCW from 2004/05 to 2013/14. Overall, QR funding nominally allocated to academic cost centres has risen by 24%. The funding for physics has fallen by 21% and that for the other selected costs centres range from EECE, where funding has fallen by 30%, to biosciences, where funding has risen by 1%. **Table 14** illustrates that overall funding peaked in 2009/10 and that there were significant changes to funding at the cost centre level in 2009/10 following the RAE 2008.

Figure 5 illustrates the ratio of QR income in selected cost centres to that in 2003/04. All cost centres under consideration have not kept pace with the growth in overall QR funding in Wales.

3.4. Quality-related income of Northern Irish HEIs

Table 15 presents data on the QR income allocated by DELNI to selected cost centres in Northern Ireland from 2007/08 to 2012/13.

Overall, QR funding nominally allocated to academic cost centres in Northern Ireland has risen by 4%.

Considering individual cost centres, the funding for physics has fallen by 38%, and that for mathematics has increased by 112%. Funding for chemistry fell by 2%, that for EECE fell by 11% and for biosciences funding fell by 15%.

Figure 6 shows the ratio of QR income in selected cost centres to that in 2007/08. Physics' share fell from 6.8% in 2007/08 to 4.1% in 2012/13.

Figure 5: Ratio of HEFCW QR income in a given year to that in 2003/04 for selected cost centres in Wales 2003/04 to 2013/14

Source: HEFCW

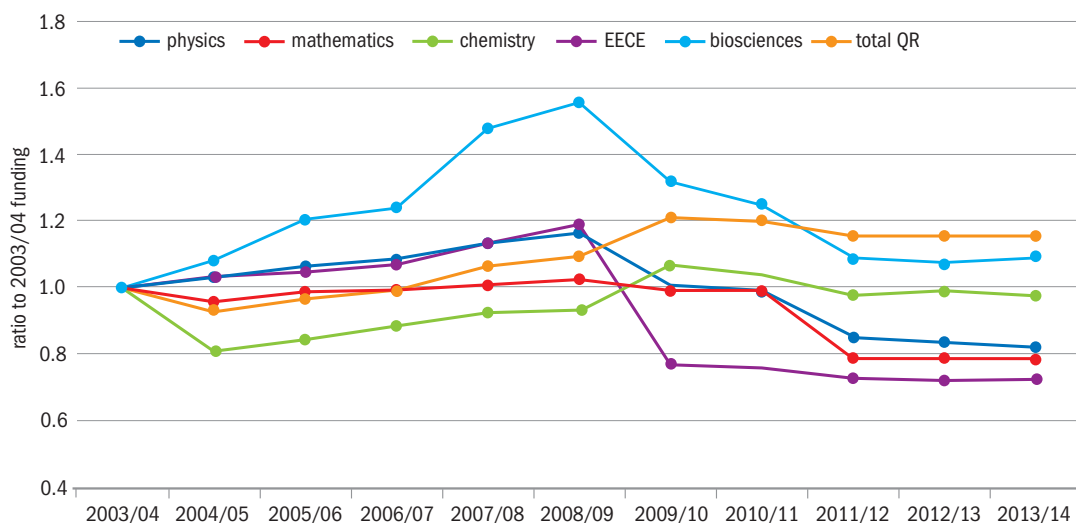


Table 14: HEFCW QR income in selected cost centres 2004/05 to 2013/14

Cost centre	HEFCW QR income (£ m)										% change*
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	
Physics	1.85	1.91	1.94	2.02	2.08	1.80	1.76	1.52	1.49	1.47	-20.7
Mathematics	1.05	1.08	1.09	1.11	1.12	1.09	1.09	0.86	0.86	0.86	-17.8
Chemistry	1.63	1.70	1.78	1.86	1.88	2.15	2.09	1.98	1.99	1.96	20.6
EECE	1.99	2.02	2.07	2.18	2.29	1.48	1.46	1.40	1.40	1.40	-29.8
Biosciences	3.80	4.24	4.36	5.20	5.48	4.64	4.39	3.82	3.79	3.84	0.9
All cost centres	57.39	59.43	60.89	65.51	67.31	74.46	73.90	71.08	71.08	71.08	23.8

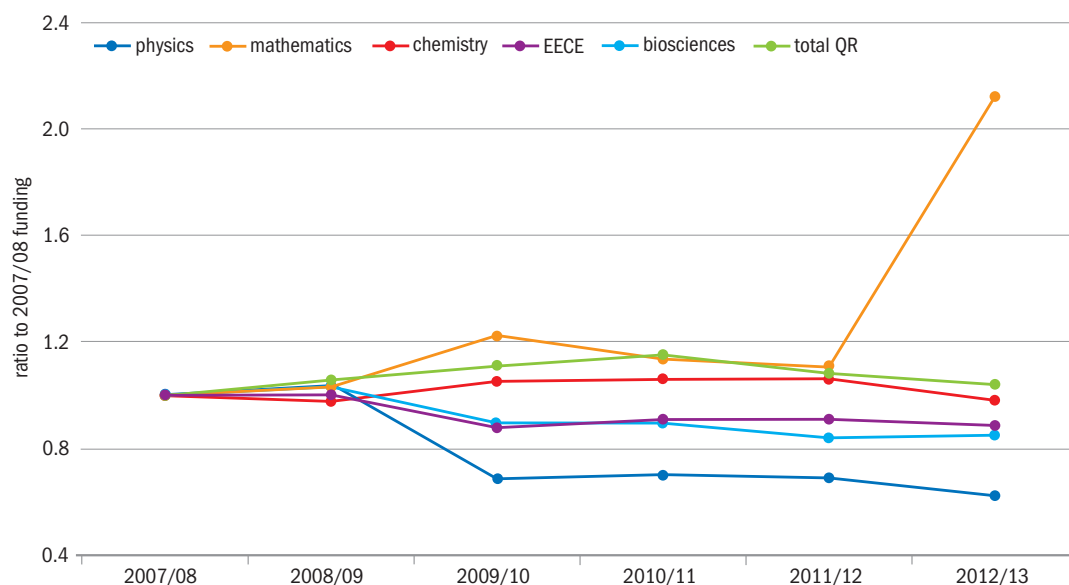
* % changes are calculated using unrounded figures and therefore may differ from the values calculated using the rounded figures presented in the table.

Source: HEFCW

3: Quality-related income of UK HEIs

Source: DELNI

Figure 6: Ratio of DELNI QR income in a given year to that in 2007/08 for selected cost centres in Northern Ireland 2007/08 to 2012/13*



*Values of the QR charity funding contribution for 2012/13 have been calculated using the same protocol used by HEFCE using HESA data on external charity funding and the total size of the charity fund.

Source: DELNI

Table 15: DELNI QR income in selected cost centres 2007/08 to 2012/13

Cost centre	DELNI QR income (£ m)						% change**
	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13*	
Physics	3.19	3.35	2.18	2.24	2.20	1.98	-37.9
Mathematics	0.19	0.20	0.24	0.22	0.21	0.41	112.3
Chemistry	1.55	1.52	1.64	1.65	1.65	1.53	-1.7
EECE	1.86	1.87	1.64	1.69	1.70	1.65	-11.3
Biosciences	1.67	1.73	1.49	1.49	1.40	1.42	-15.0
All cost centres	46.73	49.48	51.92	53.88	50.65	48.69	4.2

*Like HEFCE, DELNI stopped publishing information on the QR charity contribution at the cost centre level for 2012/1. Values of the QR charity funding contribution for 2012/13 have been calculated using the same protocol used by HEFCE using HESA data on external charity funding and the total size of the charity fund.

**% changes are calculated using unrounded figures and therefore may differ from the values calculated using the rounded figures presented in the table.

Total research income of UK HEIs

As shown in **table 16**, research income in physics rose by 54% between 2004/05 and 2011/12: the overall research income in HEIs rose by 52%. The data in **table 17** show that in comparison to the overall picture in UK HEIs, physics is more reliant on external research income, and that over the

period of time under consideration, the proportion of total research income in physics from external sources has increased from 74% to 78% in comparison to that for all cost centres, which increased from 68% to 71%.

Table 16: Comparison of total research income and research income from UK public sources for the physics cost centre and all cost centres 2004/05 to 2011/12

Income source and cost centres	Income (£ m)								% change between 2004/05 and 2011/12*
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	
All cost centres									
External research income from UK public sources	1462	1634	1774	1979	2221	2349	2319	2304	57.6
Quality-related income	1342	1523	1636	1662	1712	1848	1869	1823	35.8
Research income from UK public funds (external research income from UK public funds plus QR income)	2805	3156	3410	3641	3933	4198	4188	4127	47.1
Total research income	4167	4617	5048	5360	5836	6173	6338	6322	51.7
Physics									
External research income from UK public sources	137	154	169	199	225	233	224	209	52.7
Quality-related income**	58	67	71	75	76	77	79	75	29.3
Research income from UK public funds (external research income from UK public funds plus QR income)	195	221	240	274	301	309	302	284	45.7
Total research income	224	253	278	312	345	354	355	343	53.5

*% changes are calculated using unrounded figures and therefore may differ from the values calculated using the rounded figures presented in the table.

**Northern Irish QR income is only included in the physics data from 2007/08 onwards.

Source: HESA research grants and contracts income, HEFCE, SFC, HEFCW and DELNI

4: Total research income of UK HEIs

Table 17: Comparison of external research income, QR income and publically funded research income for the physics cost centre and all cost centres 2004/05 to 2011/12

Income source and cost centres	Proportion of total research income by year							
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
All cost centres: external research income	68%	67%	68%	69%	71%	70%	71%	71%
All cost centres: research council income	22%	23%	23%	25%	26%	26%	24%	24%
All cost centres: quality-related income	32%	33%	32%	31%	29%	30%	29%	29%
All cost centres: UK publically funded research income	67%	68%	68%	68%	67%	68%	66%	65%
Physics: external research income	74%	74%	74%	76%	78%	78%	78%	78%
Physics: research council income	57%	57%	57%	61%	61%	62%	59%	58%
Physics: quality-related income*	26%	26%	26%	24%	22%	22%	22%	22%
Physics: UK publically funded research income*	87%	87%	86%	88%	87%	87%	85%	83%

*Northern Irish QR income are only included in the physics data for 2007/08 onwards.

Source: HESA research grants and contracts income, HEFCE, SFC, HEFCW and DELNI

Conclusions

The research income attracted by the physics cost centre in UK HEIs between 2004/05 and 2011/12 rose by 54% from £224 m to £343 m. Income peaked in 2010/11 at £355 m: it fell by over 3% in the year to 2011/12.

Income from the research councils in physics has risen from £137 m in 2004/05 peaking in 2009/10 at £221 m, before falling to £209 m in 2011/12. Quality-Related/Research Excellence Grant funding has risen from £58 m in 2004/05 to £75 m in 2011/12, with a peak in 2010/11 at £79 m.

In 2011/12 QR income from the funding councils and external research income represented 22% and 78% of total research income in physics, respectively. Overall, 83% of research income in physics was from UK public sources including the research councils. Funding from the research councils represented 58% of

overall research income in physics.

The trend since 2004/05 is for the proportion of research income from public sources to fall. Public income peaked in 2007/08 at 88% of total research income. Research council income as a share of total income rose between 2004/05 and 2011/12, albeit by only 1% overall, and peaked in 2007/08.

Physics remains particularly sensitive to changes in public funding in general and research council funding in particular, and consequently the ongoing public sector spending cuts continue to have potential to affect physics more than other cost centres. Although QR/REG funding represents less than a quarter of physics' research income the 2014 REF exercise is still important in respect of the effect that it may have on physics research funding.

Appendix A: External research income in detail 2007/08 to 2011/12

Table 18: External research income for all cost centres 2007/08 to 2011/12

Income source	External research income (£ m)				
	2007/08	2008/09	2009/10	2010/11	2011/12
BIS research councils, The Royal Society, British Academy and The Royal Society of Edinburgh	1349	1522	1577	1548	1501
UK central government bodies, local authorities, health and hospital authorities	630	699	772	771	802
UK industry, commerce and public corporations	296	312	280	295	285
UK-based charities (open competitive process)	706	771	821	828	855
UK-based charities (other)	118	124	94	122	82
EU government bodies	278	323	375	429	507
EU industry, commerce and public corporations	28	37	45	45	53
EU-based charities (open competitive process)	6	7	8	9	11
EU other	18	23	24	28	29
Non-EU industry, commerce and public corporations	83	89	98	103	124
Non-EU-based charities (open competitive process)	59	87	97	93	96
Non-EU other	75	80	93	95	104
Other sources	52	50	42	102	50
Total*	3698	4123	4325	4468	4498

**Totals may not equal the sum of the figures above due to rounding.*

Source: HESA research grants and contracts income

Table 19: External research income for selected cost centres 2011/12

Income source	External research income (£ m)					
	Physics	Mathematics	Chemistry	EECE	Biosciences	All cost centres
BIS research councils, The Royal Society, British Academy and The Royal Society of Edinburgh	197	56	73	100	206	1501
UK central government bodies, local authorities, health and hospital authorities	11	4	17	10	35	802
UK industry, commerce and public corporations	8	3	20	13	25	285
UK-based charities (open competitive process)	6	3	4	13	186	855
UK-based charities (other)	1	0	1	1	8	82
EU government bodies	35	10	35	30	63	507
EU industry, commerce and public corporations	1	1	3	2	6	53
EU-based charities (open competitive process)	0	0	0	0	1	11
EU other	2	0	1	1	3	29
Non-EU industry, commerce and public corporations	1	0	3	5	8	124
Non-EU-based charities (open competitive process)	0	0	0	0	8	96
Non-EU other	4	5	1	3	11	104
Other sources	1	0	2	1	3	50
Total*	268	84	159	180	563	4498

**Totals may not equal the sum of the figures above due to rounding.*

Source: HESA research grants and contracts income

Table 20: External research income for selected cost centres 2009/10

Income source	External research income (£ m)					
	Physics	Mathematics	Chemistry	EECE	Biosciences	All cost centres
BIS research councils, The Royal Society, British Academy and The Royal Society of Edinburgh	221	51	80	108	227	1577
UK central government bodies, local authorities, health and hospital authorities	12	3	18	13	49	772
UK industry, commerce and public corporations	6	3	16	12	31	280
UK-based charities (open competitive process)	5	5	2	11	171	821
UK-based charities (other)	0	0	0	2	10	94
EU government bodies	24	7	25	18	52	375
EU industry, commerce and public corporations	1	0	2	2	6	45
EU-based charities (open competitive process)	0	0	0	0	1	8
EU other	2	0	0	1	3	24
Non-EU industry, commerce and public corporations	2	1	2	6	7	98
Non-EU-based charities (open competitive process)	1	0	0	1	9	97
Non-EU other	2	4	1	1	11	93
Other sources	1	0	1	2	2	42
Total*	277	76	149	176	580	4325

**Totals may not equal the sum of the figures above due to rounding.*

Source: HESA research grants and contracts income

Appendix B: Sources of external research income

External research income includes all income in respect of externally sponsored research carried out by the HEI or its subsidiary undertaking for which directly related expenditure has been incurred. From 2007/08 research income has been assigned to one of 13 categories that are defined below, how these 13 categories map to the eight categories used up to 2006/07 and which are used in this report is shown in **Table 1** in **section 1.2**.

BIS research councils, The Royal Society, British Academy and The Royal Society of Edinburgh income includes all research grants and contracts income from the research councils sponsored by the Department for Business, Innovation and Skills (BIS), The Royal Society, British Academy and The Royal Society of Edinburgh.

UK-based charities income includes all research grants and contracts income from all charitable foundations, charitable trusts, etc. based in the UK that are registered with the Charities Commission or those recognised as charities by the Office of the Scottish Charity Regulator (OSCR) in Scotland.

Income from UK-based charities is split between those with an open competitive process for the allocation of funds and other charities.

UK-based charities (open competitive process) income includes research grants or contracts income from UK-based charities that was available to more than one HEI through direct competition, awarded to the HEI that demonstrated the highest quality research proposal according to external peer review. It also includes grants where it can be shown that the charity took external expert advice on its choice of HEI, and either the charity had made it known that it was open to grant applications from other HEIs, even though an open invitation to bid for the particular grant was not issued; or the charity restricted the funding opportunity on a reasoned basis in that particular requirements of the project could only be met by a limited number of HEIs

(i.e. where a project required highly specialist expertise or facilities, or a specific regional focus).

UK-based charities (other) includes research grants or contracts income from UK-based charities that does not meet the definition of open competition.

UK central government bodies, local authorities, health and hospital authorities income includes all research grants and contract income from UK central government bodies, UK local authorities and UK health and hospital authorities, except the research councils and UK public corporations. This includes government departments and other organisations (including registered charities) financed from central government funds. Research grants and contracts from non-departmental public bodies (NDPBs) such as the British Council are also included in this source of income.

UK industry, commerce and public corporations income includes all research grants and contracts income from industrial and commercial companies and public corporations (defined as publicly owned trading bodies, usually statutory organisations with a substantial degree of financial independence) operating in the UK.

EU government bodies income includes all research grants and contracts income from all government bodies operating in the EU, which includes the European Commission, but excludes bodies in the UK.

EU-based charities (open competitive process) income includes research grants or contracts income from EU bodies with exclusively charitable purposes, which was available to more than one HEI through direct competition. It also includes grants where it can be shown that the charity took external expert advice on its choice of HEI, and either the charity had made it known that it was open to grant applications from other HEIs, even though an open invitation to bid for the particular grant was not issued; or the charity restricted the

funding opportunity on a reasoned basis in that particular requirements of the project could only be met by a limited number of HEIs (i.e. where a project required highly specialist expertise or facilities, or a specific regional focus).

EU industry, commerce and public corporations income includes all research grants and contracts income from industrial and commercial companies and public corporations (defined as publicly owned trading bodies, usually statutory corporations, with a substantial degree of financial independence) operating in the EU outside of the UK.

EU other income includes all research grants and contracts income from EU-based non-competitive charities and any other EU income not otherwise specified.

Non-EU-based charities (open competitive process) income includes research grants or contracts income from non-EU bodies with exclusively charitable purposes, which was available to more than one HEI through direct competition. It also includes grants where it can be shown that the charity took external expert advice on its choice of HEI, and either the charity

had made it known that it was open to grant applications from other HEIs, even though an open invitation to bid for the particular grant was not issued; or the charity restricted the funding opportunity on a reasoned basis in that particular requirements of the project could only be met by a limited number of HEIs (i.e. where a project required highly specialist expertise or facilities, or a specific regional focus).

Non-EU industry, commerce and public corporations income includes all research grants and contracts income from industrial and commercial companies and public corporations (defined as publicly owned trading bodies, usually statutory corporations, with a substantial degree of financial independence) operating outside the EU.

Non-EU other income includes all research grants and contracts income from all non-EU-based non-competitive charities and any other non-EU income not otherwise specified.

Other sources of income includes all research grants and contracts income not covered above. This includes income from other HEIs where the HEI is the original contractor.

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