September 2011/25
Policy development
Report on survey

This report is for information

This report analyses the results of the 2010 Higher Education – Business and Community Interaction Survey for UK higher education institutions, referring to the academic year 2009-10.

Higher Education – Business and Community Interaction Survey

2009-10

Higher Education – Business and Community Interaction Survey 2009-10

To	Heads of UK higher education institutions
Of interest to those responsible for	Knowledge exchange; Innovation; Enterprise and entrepreneurship; Interactions between higher education and business, public and third sectors; Contract and collaborative research; Continuing professional development; Workforce development; Public engagement; Strategic planning; Economic development
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Executive summary

Purpose

1. The Higher Education – Business and Community Interaction (HE-BCI) Survey is in its tenth year and is an essential source of information on knowledge exchange (KE) in the UK.

2. The exchange of knowledge described here takes place between higher education institutions (HEIs) and the wider world of business and the community.

3. Data reported in this survey provide valuable intelligence for higher education (HE) senior managers, knowledge exchange practitioners and policy makers. The report also provides an in-depth commentary on the extent of, and trends in, knowledge exchange activity in the UK.

4. This report builds on previously published HE-BCI surveys, the most recent of which analysed 2008-09 data and was published in June 2010 ('Higher Education – Business and Community Interaction Survey: 2008-09', HEFCE 2010/14)[1].

5. In this latest survey, the second to be carried out by the Higher Education Statistics Agency (HESA) as part of the formal Finance Statistics Record, HEIs provided data for academic year 2009-10. Data regarding strategy and infrastructure (which are not numeric or financial) will be for the end of the academic year (July 2010).

6. HE-BCI covers a range of activities, from the commercialisation of new knowledge, through the delivery of professional training, consultancy and services, to activities intended to have direct social benefits. 'Business' in this context refers to private, public

[1] All HEFCE publications may be read at www.hefce.ac.uk/pubs.

and third-sector[2] partners of all sizes and sectors, with which HEIs interact in a broad range of ways. 'Community' in this context means society as a whole outside the HEI, including all social, community and cultural organisations, individuals and the wider public.

Key points

7. Data collected for academic year 2009-10 show a continuing increase in the overall exchange of knowledge between UK HEIs and the public, private and third sectors. The growth rate – in cash terms – for the UK is around 4 per cent, from £2,966 million in 2008-09 to £3,086 million in 2009-10.

8. Income in real terms for the main HE-BCI indicators has risen by 35 per cent since 2003-04 from around £2,200 million to £3,086 million (with only regeneration funding showing a decrease due, in part, to the expansion of the European Community).

9. Data are likely to be affected by recent economic trends. The Government's programme of public sector restructuring (including changes to the HE sector) is also likely to have an effect in future surveys. Further data will be needed to understand the effect of these changes on knowledge exchange activity, for example, the difference in time lag between restructuring in the public sector as opposed to private business, where the latter is generally considered to happen more swiftly.

10. Figures for UK nations may reflect the different economic contexts and higher education (HE) funding polices of England, Wales, Northern Ireland and Scotland.

11. International comparisons of KE activities are still very difficult to draw with any degree of certainly given the multitude of factors that must be accounted for. HE-BCI includes comparisons with US universities based on data collected by the Association of University Technology Managers (www.autm.net) on commercialisation of IP. Overall, US universities are more effective at producing licences than UK HEIs, but the UK creates more spin-off companies. Further detail is at Annex B.

Income by partner

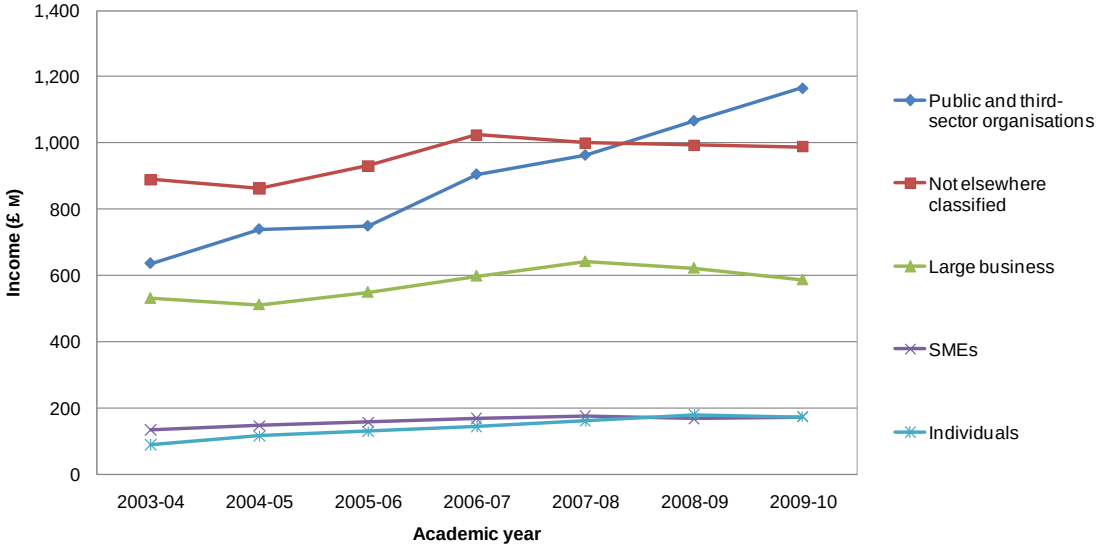
12. Spending by large business fell overall, while small and medium-sized enterprises (SMEs) increased their total spending on engagement with UK HEIs; although, as in the previous survey, the most significant increases have been with non-commercial partners such as those in the public and third sectors, charities and social enterprises etc (see Figure 1).

13. For some indicators, income is not disaggregated to partner categories in order to keep the burden of collection reasonable[3]. Hence, the 'individuals' and 'not elsewhere classified' partner categories both represent activity that could be of benefit to either or both public and private sectors. In particular, the sale of shares in spin-off companies, and a large proportion of collaborative research, are likely to be dominated by

[2] The 'third sector' refers to voluntary and community groups, social enterprises, charities, co-operatives and mutuals.

commercial business, but these are not further disaggregated so are reflected in the 'not elsewhere classified' category.

Figure 1 Total income by partner 2003-2010 (real terms)



Source: HE-BCI Part B Tables 1, 2, 3 and 4c

Income by activity

14. There have been some signs of economic recovery since the last report was produced but the effects of the recession are still being felt and there are, perhaps, fewer clear trends than described in previous reports. This does not mean that the data suggest an overall fall in KE activity – quite the contrary in places.

Research-based interactions

15. Collaborative research income rose by just over 2 per cent from around £732 million to £749 million (see Figures 2 and 3). However, substantial changes had been made to the format of this survey question in 2008-09 so as to disaggregate public, private and in-kind contributions, and HEIs report that they are still making improvements to the way data are captured for this indicator so some caution is required for this year.

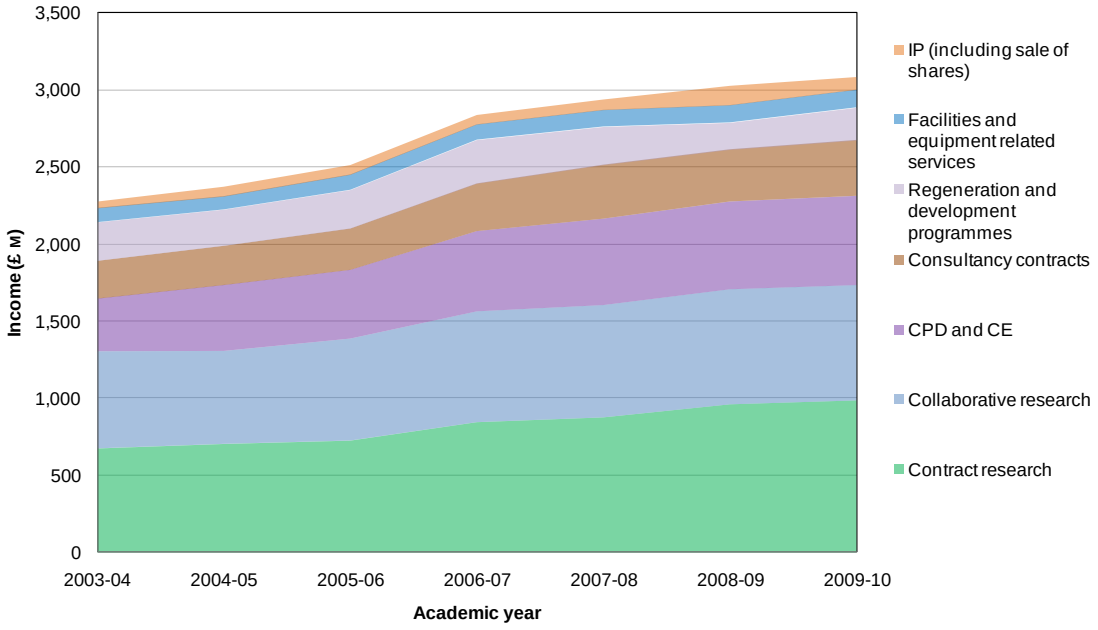
16. The data reported show a slight decrease (around 1.7 per cent from £612 million to around £602 million) in the public contribution to collaborative research as defined in HE-BCI, although this remains the largest share. There was a significant increase in private contributions, both cash and in-kind, although it is likely this also includes improvements in data capture.

17. Contract research income has risen by 5 per cent from £937 million to £983 million. The main increase in income was from non-commercial partners (11.1 per cent) although

[3] Collaborative research, CPD and sale of shares in spin-offs are not collected by partner as for the other main indicators, for reasons of administrative burden. It is safe to assume that much of this income will be from large business, however.

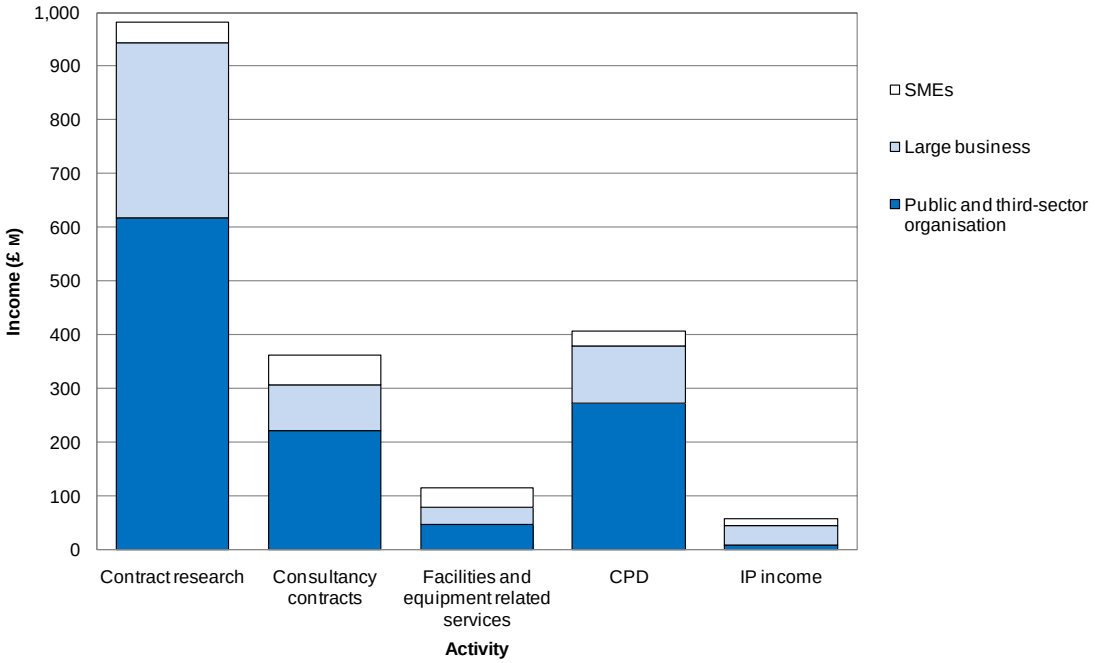
income from SMEs also rose by 1.7 per cent. There was a 5 per cent decrease in income from large business, which may be expected due to the recession.

Figure 2 Selected HE-BCI income streams 2003-2010 (real terms)



Source: HE-BCI Part B Tables 1, 2, 3 and 4c

Figure 3 Income by activity and partner 2009-10



Source: HE-BCI Part B Tables 1, 2 and 4c

Consultancy

18. In 2009-10, consultancy income increased by over 9 per cent to £362 million, from £332 million in 2008-09. As with contract research, the majority of this increase is due to non-commercial partners (16.7 per cent) although SME income also rose slightly (0.2 per cent).

Equipment and facilities

19. Income from use of facilities and equipment (for example, particle accelerators or digital media suites) rose by around 4 per cent overall to £115 million; the majority of this increase was from SMEs, which invested over £36 million in 2009-10, 12.3 per cent more than in 2008-09. However, the large increase in the number of interactions with SMEs suggests that changes in reporting practice by a handful of HEIs may also have contributed, as well as possibly the additional support given from public sources in the recession.

20. Income from non-commercial partners fell by 0.9 per cent showing that the equipment services category does not follow the same trend as contract research and consultancy.

Education and continuing professional development

21. Continuing professional development (CPD) income has grown by 69 per cent since 2003-04, a testament to the fact that society no longer sees HEIs as organisations that are relevant only between school and the workplace.

22. Income from CPD and Continuing Education activity rose by around 4 per cent from £559 million in 2008-09 to £580 million in 2009-10. The majority of the increase was from non-commercial partners (over £27 million, 11.3 per cent) although income from SMEs rose by a higher proportion (13.3 per cent, from £25.5 million to nearly £29 million). Income from large business fell by around £6.5 million (-5.8 per cent) and income from individuals fell by over £3 million (-1.9 per cent).

23. The total learner days delivered to all clients fell by 8 per cent from nearly 4 million during 2008-09 to around 3.7 million in 2009-10.

Regeneration

24. Income from regeneration programmes rose overall for the first time in a number of years, from £172 million in 2008-09 to over £213 million in 2009-10, an increase of 23.7 per cent.

25. The largest increase in absolute terms was from Regional Development Agency (RDA) programmes which increased by 24 per cent to £93 million (although this income is, of course, likely to reduce following the wind-down of the RDAs in England). There were higher proportion increases across other indicators but also reductions suggesting no clear trend up to the present.

Intellectual property and enterprise

26. Income from intellectual property grew by 88 per cent over the period 2003-04 to 2009-10, soundly challenging the historic assumption that the UK is not improving at turning its world-class research into social and economic benefits for the nation.

27. Exploitation of intellectual property (IP) has generally increased since 2008-09:

a. Disclosures and new patents granted have increased by 2.3 per cent and 26.6 per cent respectively. Although there was a slight drop in the number of new patent applications (down 4.1 per cent from 2008-09 to 2009-10), patent data should always be viewed over a longer time series because of the time lag between applications and grants. The cumulative patent portfolio of the UK HE sector increased by 3.7 per cent from 14,276 to 14,800.

b. Total licence numbers increased overall, although this includes a slight drop in the number of software licences; SMEs, commercial business and non-commercial clients all increased the number of non-software licences taken to use IP generated in UK HEIs.

c. Income from IP (excluding sale of shares in spin-offs) has also increased – by 2.4 per cent – from £56 million in 2008-09 to nearly £58 million in 2009-10.

d. Spending on the protection of IP also rose by nearly 6 per cent from £28 million to over £29 million.

e. Numbers of new spin-offs[4] (companies based on HEI-generated IP) rose substantially from 191 in 2008-09 to 273 in 2009-10. This indicator has been volatile over the last decade, because it tends to reflect the end-point of research that may have been conducted 10 to 20 years previously whereas the actual flotation will be affected by the immediate economic environment, such as the availability of seed funding.

f. A more stable indicator of the success of new IP-based enterprises is the number of companies that have survived three or more years. However, this indicator has dropped for the first time due to the impact of the recession, with 969 three year-old or older companies reported (a drop of 1 per cent from 982). However, the total number of active firms has increased by 1 per cent to 1,340.

28. New enterprises (start-ups) that are not based on IP have increased since 2008-09, with 65 new companies started by HEI staff and 2,357 by new or recent graduates, up 23 per cent and 12 per cent respectively in 2009-10. Start-ups active for three or more years also increased in 2009-10, by 12 per cent and 15 per cent for staff and recent graduates respectively.

[4] This figure includes companies in which the HEI maintains a stake and those sold outright.

Social, community and cultural activities

29. HE-BCI also collects data on public events run by HEIs. These illustrate the wide-ranging civic, community and cultural contributions that HEIs make, though they describe only a small part of that range.

30. Over 984,000 people attended free public lectures in 2009-10, representing a 31 per cent increase from 2008-09.

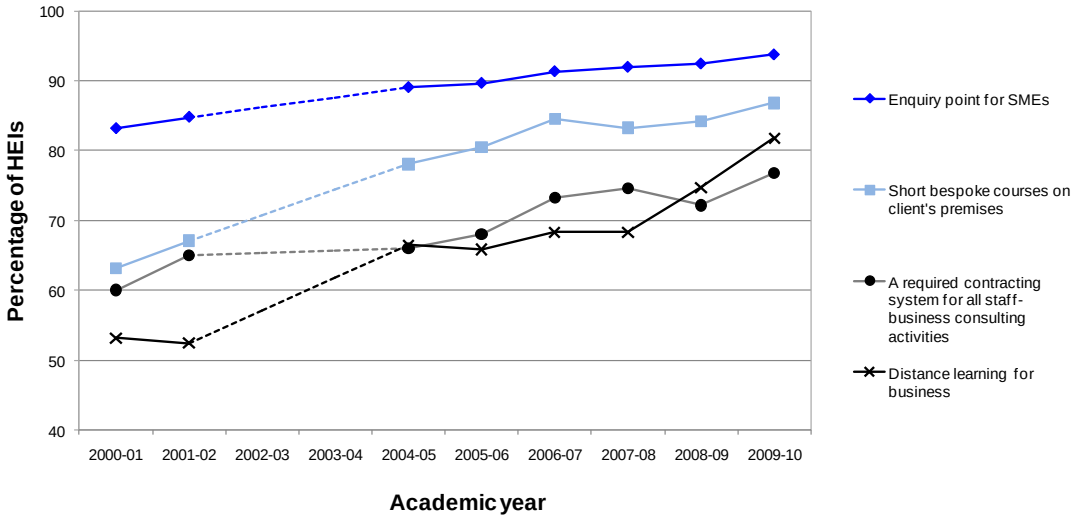
31. For performance events (for example music, dance and drama) more people pay to attend events (over 1.7 million attendees) than attend free performances (around 1 million). Free exhibitions attracted over 7 million visitors and almost 780,000 paid to attend exhibitions in 2009-10.

Strategy and infrastructure

32. Looking at performance to date, there are clear signs that the UK HE sector is adept at responding to demand by improving infrastructure and increasing its output. If spending is assumed as a proxy for impact, this suggests that HE is making a very significant contribution to the modern knowledge economy.

33. Following a slight dip last year, selected infrastructure indicators have recovered to above their 2008-09 levels. Further data will be required to confirm this, although it should be noted that provision is still significantly higher than the early HE-BCI surveys. It is likely that there will be further movement around these indicators, given national and sub-national changes to policy and funding such as the wind-down of RDAs and changes to HE arrangements.

Figure 4 Selected strategy and infrastructure indicators 2000-2010



Source: HE-BCI Part A Questions 11 and 29 (data for 2002-03 and 2003-04 are assumed – see paragraph 43).

Action required

34. This report is for information. No action is required.

Background and context

35. The aims of the annual Higher Education – Business and Community Interaction (HE-BCI) Survey are:

- to provide data on the continuing development of interaction between higher education institutions (HEIs) and business and the community
- to provide reliable and relevant information to support the continued public funding of this, the third stream[5] of HEIs' activity in the UK
- to give HEIs good benchmarking and management information
- to develop a source of indicators at the level of the individual HEI, some of which will be useable to inform funding bodies' allocation of continued funding.

36. HE-BCI data for academic year 2009-10 were collected and validated by the Higher Education Statistics Agency (HESA) on behalf of all UK HEIs and the national funding bodies. The overall process, including this report, is overseen by the HE-BCI Stakeholders Group which includes: UK higher education funding bodies; the Department for Business, Innovation and Skills (BIS); the Research Councils; and other representative bodies such as Universities UK, GuildHE and the Confederation of British Industry.

37. This is the second time that HESA has carried out this survey and, although some variations in practice relating to data capture, and the turbulent economic context, mean that this report contains a number of caveats, the overall data set is considered informative and fit for purpose[6].

38. This is the tenth annual HE-BCI Survey and, as such, is essential intelligence for all those interested in higher education (HE) and the knowledge economy. Data from HE-BCI are used to develop policy by a wide variety of bodies and to inform funding decisions for knowledge exchange and related activities in England, Wales and Northern Ireland; the Scottish Funding Council is currently developing further use of these data in policy and funding (the Scottish Agricultural College has been excluded from the survey to date although will be included from 2010-11 onward, see paragraphs 62-63). Data are also valuable as management information and support benchmarking for a range of organisations, notably HEIs and their funding partners. They also provide a basis for international comparisons in some activity areas (for more detail, see Annex B).

39. There were no substantial changes in process for this survey, although the turbulent economic context has provided many challenges in terms of interpretation of data. The UK HE sector is excellent but diverse and, hence, any attempt to draw together detailed information on the many and various social and economic contributions is difficult without imposing an unreasonable level of administrative burden. For these

[5] The other two streams are teaching and research.

[6] Only summary data are included in this report; full data can be obtained from HESA (www.hesa.ac.uk).

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reasons, caution may be needed in viewing some data and trends in this report although any specific concerns are highlighted in the text.

40. Analysis is based on all data returned in each year rather than a direct, institutional, like-for-like comparison. This provides the most complete proxy for activity in the UK but can be affected by changes in the number of responding HEIs due to mergers and other developments in the sector.

41. Standard practice in the HE-BCI survey is to present the current and previous year's data in cash terms but to adjust for inflation on any time series of three or more years. Given the fall in Gross Domestic Product (GDP) during 2007-08, figures have been inflated to provide a true comparison. GDP was, however, broadly unchanged between 2008-09 and 2009-10. Again, care should be taken when viewing some graphical displays of time series against collected data because the GDP inflators are updated for each survey. This approach will be common across HE-BCI reports.

42. The survey was originally designed as a single questionnaire. But for reasons of ease and efficiency, the data from 2002-03 onwards were collected through complementary processes: Part A for strategic and infrastructural data and Part B for financial, numeric (time-bound) data. Data from Part A are a snapshot taken at the end of the survey year, meaning they are as up-to-date as possible. Previously Part A data were displayed as being a year ahead of financial data for similar reasons but this approach was felt to add more in terms of complexity than in aiding use.

43. The time series for Part A was recalculated in 'Higher Education - Business and Community Interaction Survey 2006-07' (HEFCE 2008/22)[7] to improve the usefulness of these data so they could be more usefully compared to financial and numeric data. The figures themselves have not been changed, only the way in which the period they were collected is displayed. However, the years for which Part A data were not collected are represented with dotted lines in any relevant graphs.

44. It will also be of benefit to consider in the near future how to revise and improve the strategy and infrastructure indicators (Part A) given that many of them reflect the position and direction of knowledge exchange from some 10 years ago. Of course, there are many useful data that form some of the core time series but the survey must be dynamic in order to justify its continued collection.

45. Most data under Part B are collected by partner type: commercial – small and medium-sized enterprises (SMEs), and large businesses; and non-commercial – public and third sector. For some indicators (collaborative research, regeneration and sale of spin-off shares) data are not available by partner and are shown as 'not elsewhere classified' although they will doubtless include elements of the main categories.

46. HESA provides free copies of HE-BCI data to all UK HEIs, but others may be required to purchase full tables.

47. HESA includes all HEIs who respond to the Finance Statistics Return; this publication excludes the University of Buckingham and University Campus Suffolk

[7] All HEFCE publications are available in full at www.hefce.ac.uk/pubs.

because they are distinct from the majority of publicly funded HEIs in the UK. Their activity levels will have a negligible effect on overall income indicators but may affect proportion calculations (for example, to change rounding).

48. Submission of HE-BCI data was not a required condition of knowledge transfer grant funding (in Scotland) during the 2009-10 academic year so a minority of Scottish HEIs chose not to respond. For more information see www.hesa.ac.uk.

Economic context

49. We have highlighted in previous HE-BCI reports that results need to be seen in the context of wider economic conditions that may impact on HEIs' interactions with their partners. We noted then that UK Gross Domestic Product (GDP) growth has been low or negative for the last two survey cycles.

50. Although it can be argued that during recessions, companies should spend more rather than less on innovation, it is clear that many also need to reduce or delay expenditure, particularly on high-risk projects, and that this may happen in advance of the effects of the wider downturn. It is likely that the reduced spending by large business seen in this survey supports this point although it is clear that these reductions have been relatively limited.

51. UK GDP growth was at 1 per cent or less for the 2009-10 academic year, suggesting that the value of knowledge exchange (KE) continues to increase faster than overall economic growth[8]. It is notable that much of this increase is due to spending by non-commercial partners. While the benefit of new knowledge is established for much of the public sector (such as health and defence) the growing role of the third sector in the UK is also clearly benefiting from engagement with HE given many areas of mutual interest and activity.

52. There have been a number of policies established across the UK to help businesses, especially SMEs, during the recession. Some of these have been providing reduced (or even free) support from HEIs such as training or consultancy; it is likely that this is reflected in data where there has been a large increase in the number of interactions without a corresponding increase in income.

The UK nations

53. Figures for England, Wales, Northern Ireland and Scotland vary, reflecting the different economic contexts and HE funding polices.

England

54. HEFCE's third stream of funding began in 1999 with the introduction of support for HEIs to foster culture change and increase capacity for knowledge exchange. The long-term aim was to embed knowledge exchange within HEIs' missions. Funding for knowledge exchange is distinct from that for teaching and research, although KE itself builds upon both.

[8] For more information see www.ons.gov.uk/ons/taxonomy/index.html?nscl=Economy

55. HEFCE's third-stream funding was initially made through the HE Reach-out to Business and the Community (HEROBC) initiative; this was succeeded by Higher Education Innovation Funding (HEIF) from 2002 to the present.

56. In 2009, we commissioned a thorough evaluation of our progress to date against the aims of our third-stream (HEROBC/HEIF) programme[9]. The evaluation concluded that much progress had been made toward the intended culture change of the programme, driven by sustained policy interest from Government, dedicated HEFCE funding, and dynamic and supportive HEI leadership.

57. Using external KE income generated into HE as a proxy for the impact created in the economy and society, the report concluded that to date, for every £1 of HEIF, between £4.9 and £7.1 of external KE income into HE has been generated. The report also provided estimates of the additionality of HEIF for different clusters of HEIs, providing evidence to support efficiency and effectiveness calculations, and which can help inform understanding of the links between funding inputs and outputs for different forms of knowledge exchange.

58. Reflecting HEFCE's long-term approach to knowledge exchange, to embed it within HEIs' missions, and the Government's new policies and priorities for economic growth, HEIF 2011-2015 has been refined from previous rounds of KE investment. The level of HEIF for 2011-2015 has been maintained at that of the last year of HEIF4 (£150 million); however, following reform, funding is now more focused on performance. As a consequence some HEIs will gain significant funding and others lose funding, including some HEIs that will now not be funded. This may affect results reported in the survey in future years. Further details are available at www.hefce.ac.uk/econsoc/buscom/heif/.

Wales

59. The Welsh Government's long-term strategy for higher education in Wales is predicated on two priorities: supporting a buoyant economy and delivering social justice. The Welsh Government's current economic development policy 'Economic Renewal: a new direction'[10] also sets out a key role for Wales' higher education sector.

60. The Higher Education Funding Council for Wales (HEFCW) supports institutions' knowledge exchange activities via an Innovation and Engagement (I&E) Fund, which enters a new three-year cycle in 2011-12. A total of £8.2 million will be made available for I&E funding in 2011-12, with £6 million to be allocated by formula and £2.2 million via a competitive bidding process for collaborative projects only. Institutions were due to submit their new I&E strategies and associated collaborative bids by the end of July 2011.

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[9] 'Evaluation of the effectiveness and role of HEFCE/OSI third stream funding: Report to HEFCE by PACEC and the Centre for Business Research, University of Cambridge' (HEFCE 2009/15).

[10] Available in full at http://wales.gov.uk/topics/businessandeconomy/help/economicrenewal/;jsessionid=cnTLTnSdMGBdpLp4dxpNvQLMWdSgCQQtnmsHkpJVKl1SV8rcThMQ!-566280234?lang=en

61. HEFCW continues to deploy its I&E Fund alongside further support for HEIs' knowledge exchange activities, which is provided by the Welsh Government's Academic Expertise for Business programme.

Scotland

62. The Scottish Funding Council recently announced new arrangements for institutions to report on their knowledge exchange activities ('New arrangements for higher education institutions' reporting of knowledge exchange activity and outcomes', Circular SFC/16/2011[11]). The new arrangements request information on the use of the Council's Knowledge Transfer Grant and the outcomes and impacts of institutions' knowledge exchange activities.

63. The new arrangements arise from a consultation on knowledge exchange funding and reporting in May 2010 ('Knowledge exchange: funding from the Horizon Fund from academic year 2010-11', SFC/01/2010C). A further outcome from this process was that the Council made completion of the HE-BCI survey a condition of grant for receipt of the formulaic allocation from academic year 2011-12.

Northern Ireland

64. In Northern Ireland, third mission/knowledge transfer activities are primarily promoted via the Northern Ireland Higher Education Innovation Fund (NI HEIF). The objective of NI HEIF is to encourage the higher education sector to increase its capability to respond to the needs of business (including companies of all sizes) and the wider community, with a clear focus on the promotion of wealth creation. The long-term aim of this funding is to improve Northern Ireland's innovation performance as a key element in raising productivity and delivering economic growth.

65. The first two rounds of NI HEIF (which commenced in 2004) were a joint initiative of the Department for Employment and Learning (in Northern Ireland) and Invest Northern Ireland. However, following a full evaluation of the programme commissioned in 2009-10, NI HEIF 3 is now being taken forward solely by the Department for Employment and Learning as the policy lead for university core funding.

66. The funding for NI HEIF 3 has been maintained at £3 million per year over three academic years, commencing 2010-11, and has been allocated to Queen's University Belfast and the University of Ulster on the following basis:

- 20 per cent – Foundation Funding split equally between the two institutions and focused on strategic/longer-term planning
- 80 per cent – Formula Funding split on the basis of the performance metrics for the two most recent academic years for which published data are available. These metrics are the same metrics as used for NI HEIF 2, thereby, critically, facilitating a degree of continuity between NI HEIF 2 and NI HEIF 3.

[11] SFC publications are available at www.sfc.ac.uk/news_events_circulars/Circulars/circulars_page.aspx

67. The funding for NI HEIF 3 is predicated on the submission by the universities of Knowledge Transfer Strategies to be agreed with the Department in consultation with the Department of Enterprise, Trade and Investment and Invest NI.

68. NI HEIF is complemented by the 'Connected' programme (www.connected.ni.org) which enables the HE and further education sectors to join together to identify and meet, in a co-ordinated and holistic fashion, the knowledge transfer needs of businesses in particular, and the wider community.

69. The programme was originally launched by the Department for Employment and Learning in 2007 following extensive consultations with key stakeholders, and was re-launched as Connected 2 in 2010. It has a budget of £1 million per year over four years and is delivered by Queen's University Belfast and the University of Ulster, in partnership with Colleges Northern Ireland. The Department believes this funding initiative to be the first of its kind in the UK.

Next steps

70. Because the HE-BCI Survey is a formal part of HESA's official Finance Statistics Return it may be considered that the data are embedded within normal HE processes. However, as with most data returns, there are still improvements to be made in terms of process and content. These will be balanced against the need to maintain consistency and comparability of survey data (an area where HESA has significant experience), and the need to respond to changing policy dynamics. The stakeholder's group will continue to provide input to the development of the survey[12]. The stakeholders will continue to work with HEIs, policy makers and other organisations, locally/regionally, nationally and internationally, to develop better measures for economic and social impact, and useful indicators for performance.

71. The stakeholders continue to develop the use of international benchmarking data. This includes work with the European Commission[13] and a previous project led by PraxisUnico to consider comparisons of commercialisation activity with data from the Association of University Technology Managers in the USA. Such projects enable international comparisons and benchmarking at national and institutional levels, so stakeholders get greater value from the data in terms of policy development and insights toward improved performance.

Analysis

72. Although there have been some signs of economic recovery since the last report was produced it is clear that effects of the recession are still being felt, particularly where public and private organisations have reduced expenditure and even staff resource. In

[12] Note that the reports focus on those HEIs supported in their knowledge exchange mission by UK funding bodies and therefore exclude a handful of other HEIs included in the Finance Statistics Return.

[13] For more information see http://ec.europa.eu/invest-in-research/policy/ipr_en.htm#3

line with the public sector more generally, similar developments are in train across the HE sector and there are, perhaps, fewer clear trends than described in previous reports.

73. This does not mean that the data suggest an overall fall in KE activity – quite the contrary in places. However, more research would be needed to fully understand why some partners of HEIs have increased activity across some activities while others have not; and why some HEIs report increases whereas, perhaps similar, HEIs report opposite results. For example, SMEs have increased activity in some areas which may be surprising given the recession, but there is also evidence of reduced spending by public and third sector partners, despite the data representing a period before the full weight of government spending cuts had been felt (although this effect is likely to be influential across a number of surveys in the future).

Strategy and infrastructure

74. Data relating to strategy and infrastructure collected for 2009-10 mostly show consistent development, although there has been more movement than in some previous years because of the combined effects of changes in the economy and in HE-BCI process.

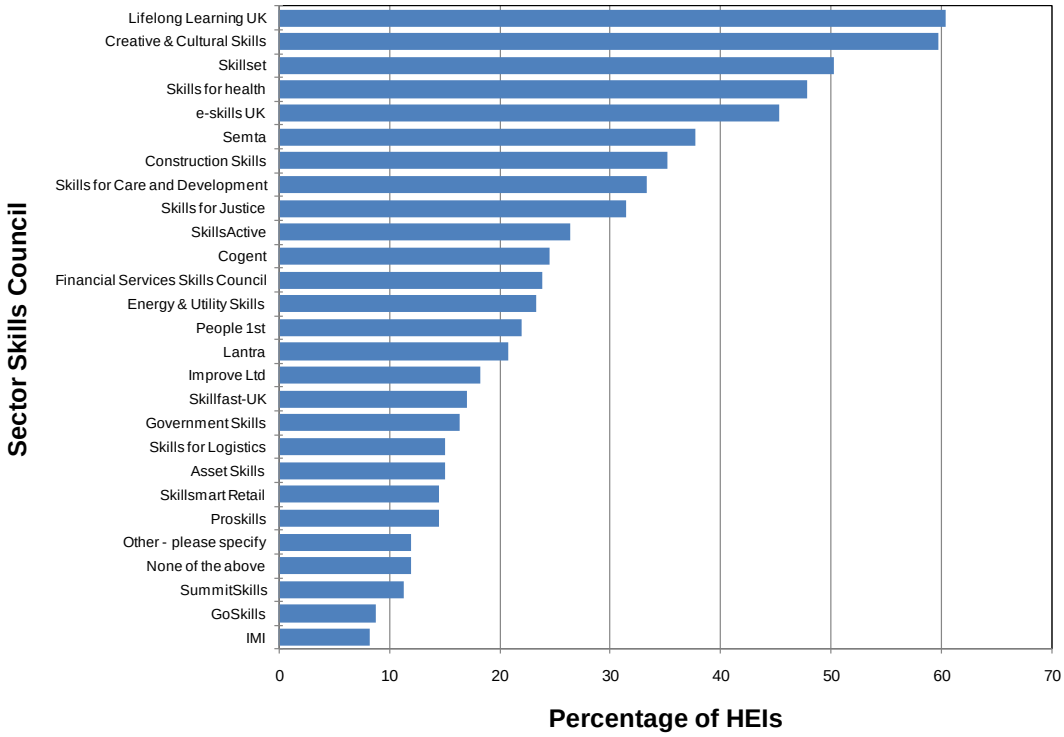
75. The clear commitment to providing ‘access to education’ as one of the main economic impacts of HEIs is still apparent. There has been a slight change by several HEIs to focus away from regional priorities with both ‘local partnerships’ and ‘regional skills needs’ decreasing, while ‘supporting SMEs’ has been selected as a main priority by six more HEIs than the previous year.

76. ‘Education’ is still the Standard Industrial Classification (SIC) most cited by institutions in terms of external engagement (153 of 158 HEIs). ‘Human health and social work activities’ and ‘arts, entertainment and recreation’ are also both still selected by the majority of HEIs. While there are no pronounced changes overall, there has been a 4 per cent increase in the total number of SICs selected, suggesting greater engagement across the economic spectrum.

77. Although there have been some developments in relation to the Sector Skills Councils, the overall picture remains broadly similar to previous years. Figure 5 shows that ‘creative and cultural’, ‘education’ and ‘health’ are active with the largest proportion of HEIs. However ‘Lifelong learning UK’ and ‘Skillset’ have increased engagement with HEIs, suggesting that UK HEIs are well placed to provide direct knowledge exchange as people look to up-skill or re-skill in response to changes to the economy.

78. These data reflect action from HEIs and each HEI may select as many Sector Skills Councils as are relevant; the data do not reflect depth of interaction. Given the balance in the UK between specialist and multi-disciplinary HEIs, there are more HEIs by number with relevant expertise in some sectors than in others: specialist HEIs tend to focus on science or arts, and as these subjects are also offered by the majority of larger HEIs, they will be cited more often than, for example, Law. In other sectors (such as engineering) there may be fewer specialist HEIs but still much concentrated activity in university departments.

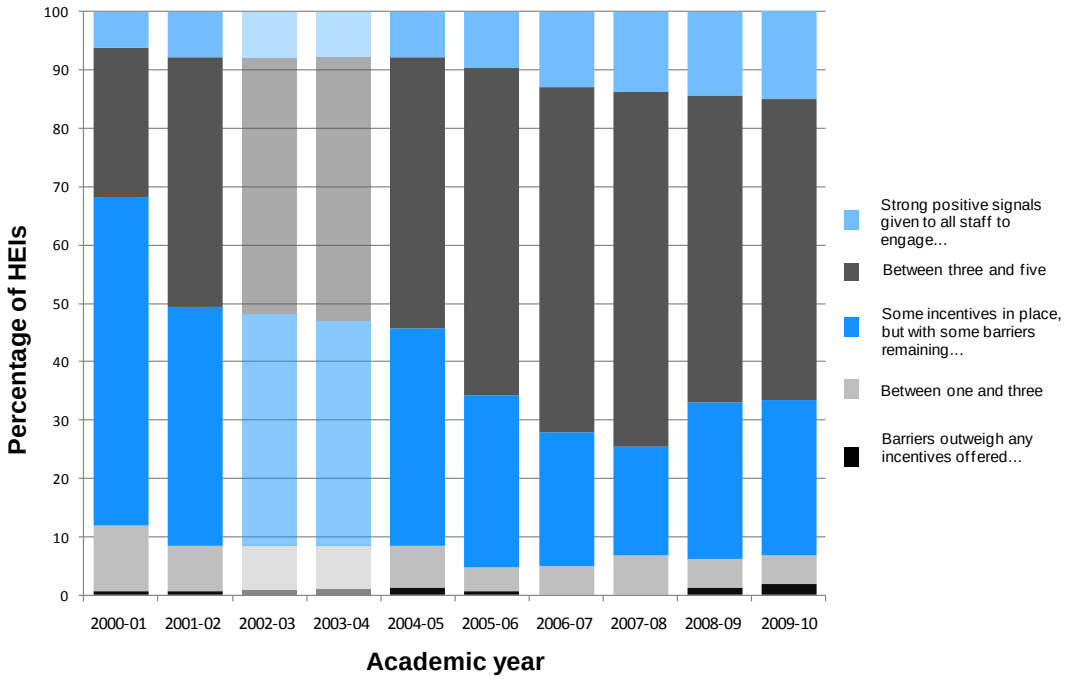
Figure 5 Engagement with Sector Skills Councils



Source: HE-BCI Part A Question 5

79. There have been slight changes at both ends of the spectrum in terms of incentives offered by HEIs to their staff to engage with external partners beyond teaching and research (Figure 6). This is likely to be explained by HEIs focusing more on particular strengths given the overall pressure and concerns over funding. It should be remembered that the UK sector includes many specialist HEIs who will not pursue growth on all fronts but always focus on their distinctive contribution. It is also clear that other HEIs have increased their commitment to KE via their staff, perhaps in order to diversify their income further.

Figure 6 Incentives for staff to engage with business and the community 2000-2010



Source: HE-BCI Part A Question 8 (data for 2002-03 and 2003-04 are assumed – see paragraph 43)

80. A similar, five-point benchmark assessment of the extent to which business support strategy is embedded at HEIs shows an increase in those selecting the top category (from 43 to 54 HEIs) and a 12 per cent increase overall when the top two categories are taken together (from 73 per cent in 2008-09 to 82 per cent in 2009-10).

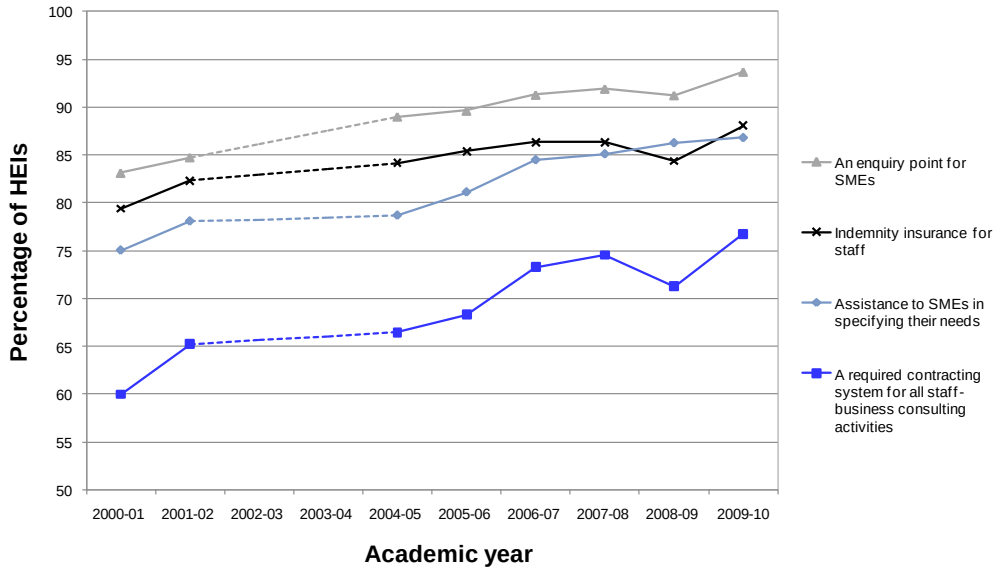
81. Before the inception of dedicated knowledge exchange funding, there was evidence that the time it took to identify and engage with appropriate academics was a significant barrier to engagement for external clients, particularly small business[14]. Over the last decade HE-BCI has tracked increases in staff dedicated to assisting external partners and facilitating interactions. The 2009-10 data show a slight increase in the number of staff employed in a dedicated business and community role[15] to 7,792 from 7,553 in 2008-09. Data are broadly consistent across the UK nations.

82. Figure 7 shows that, following a dip last year, all four main infrastructure indicators have risen. Indeed, 'enquiry points for SMEs' and 'indemnity insurance for staff' have both now increased to above the levels reported in 2007-08. We will continue to monitor these indicators although there are also efforts to find better proxies.

[14] For more details see 'Industry-Academic Links in the UK' (HEFCE 98/70).

[15] Such staff are often embedded across the HEI in many roles from careers advice and guidance to research contracts, for example.

Figure 7 Selected infrastructure indicators (2000-2010)



Source: HE-BCI Part A Question 11 (data for 2002-03 and 2003-04 are assumed – see paragraph 43)

83. Not all HEIs have sufficient technology to warrant a dedicated unit of specialist staff (such as IP lawyers) to commercialise research, which has led to a growth of collaboration between HEIs and private sector intermediary organisations. In 2008-09 the majority of HEIs (59 per cent) reported in-house capability in this respect; 11 per cent relied solely on an external partner; and 13 per cent of HEIs had both internal and external options. The latest (2009-10) data suggest that diversification has continued: the proportion of HEIs with both internal and external facilities has increased to 22 per cent with a corresponding decrease in internal or external options (54 and 9 per cent respectively).

84. For wider external interactions (consultancy and CPD, for example), there has been a similar change with slightly more HEIs having both an internal department and an external vehicle (such as a wholly owned company). The proportion of HEIs with one or both of these options has risen from 84 per cent in 2008-09 to 91 per cent in 2009-10, and the rise appears to be common across the UK. Specialist colleges frequently have no dedicated function.

85. The collection of data regarding how IP rights are managed shows little change from the previous survey although there are slight increases in each category. Many HEIs have more than one option available, so responses sum to more than 100 per cent. The fact that 17 HEIs consider the indicator to be inapplicable is not unreasonable given that course material and publications fall under different IP processes – usually copyrights – which do not require processes of application and assessment as in the case of patents.

86. The highest response (96 HEIs) is IP rights handled by an external organisation, but 56 HEIs selected ‘in-house/collaborative’ with other HEIs and 81 noted ‘other’ actions

taken. In 82 per cent of HEIs, staff are rewarded for the IP they produce, which is a similar proportion to that seen in 2008-09.

87. There have been slight changes in the total number of HEI governors reported in the survey but the proportions remain unchanged from 2008-09: 33 per cent come from a public sector background, 36 per cent have a history in commercial business and 12 per cent are from social, community and cultural (SCC) organisations.

Research-based interactions and intellectual property

88. Research-based interactions cover a very wide spectrum of activities from collaborative research (perhaps the most distant from market) though to the commercialisation of ideas and the establishment of new companies (close to market). Although income from IP is a useful measure of an HEI's strategy in commercialising its research, collaborative research may be more useful for understanding the value of long-term relationships between HEIs and the economy and society. Collaborative research is often multi-disciplinary and individual to the context of project and partners; it is rarely linear in process. To complement other sources of data, HE-BCI collects data on a specific subset of collaborative research, in that income should only be returned where the activity has a defined aim and there is input from at least three parties (the HEI; an external partner, commercial or otherwise; and a public project-funder).

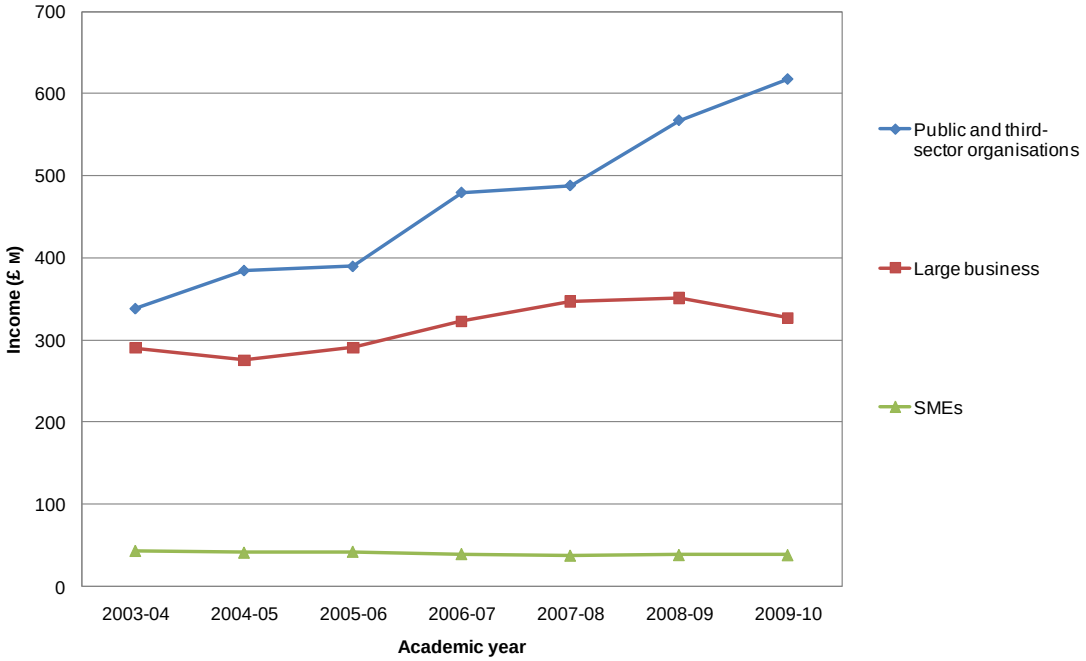
89. Many organisations that partner with HEIs note that direct engagement in collaborative research activities is particularly valued for sparking new ideas and approaches.

90. The total reported income for collaborative research rose from £732 million in 2008-09 to £749 million in 2009-10, an increase of around 2.3 per cent.

91. Reported data show a dip in the amount of public funds associated with collaborative research as defined in HE-BCI, but increases in both cash and in-kind contributions (up 35 and 17 per cent respectively); however the public element still outweighs the private cash contribution tenfold. Some caution is advised in considering these data: they are complex to disaggregate and return because this is only the second year of collection. Funding for projects with BIS/Research Council input was roughly static (up by 0.25 per cent) while central government and EU projects rose by around 9 per cent each. A very broad range of public funders (such as the Technology Strategy Board) may potentially be included in the category labelled 'other' which fell by 36 per cent, although, within this, there was an increase of 37 per cent in cash contributed by external partners.

92. Contract research is a more direct transaction where the impact is assumed to be mainly on the side of the external partner rather than providing the mutual benefits of collaborative research. Total income from contract research rose by around 5 per cent from £937 million in 2008-09 to £983 million in 2009-10. Figure 8 clearly shows that the majority of this increase came from spending by non-commercial partners (up 11 per cent from £556 million to £618 million) although SMEs also increased their spend by 1.7 per cent from £37.6 million to £38.3 million.

Figure 8 Contract research income 2003-2009 (real terms)

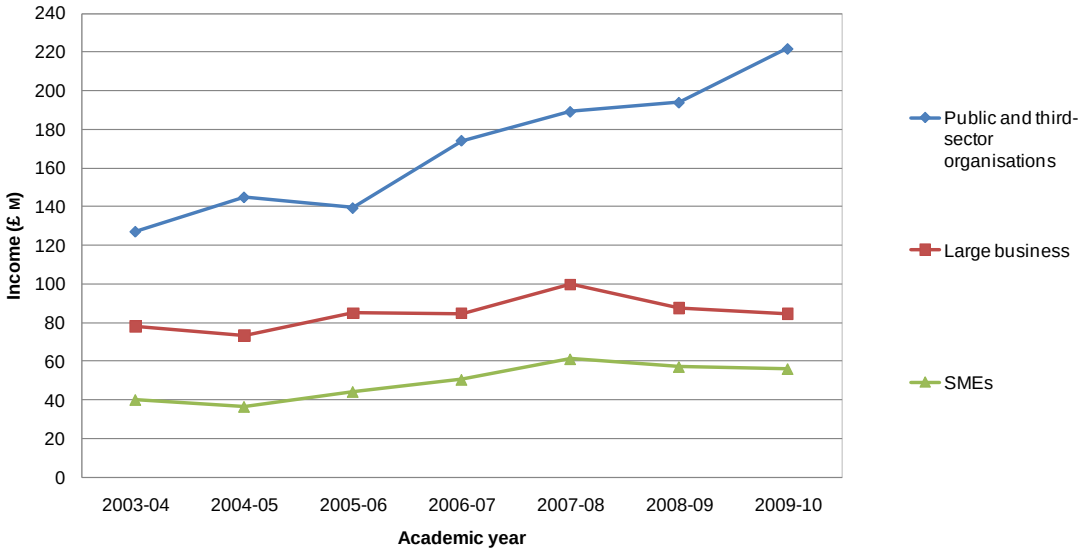


Source: HE-BCI Part B Table 1b

93. Innovative application of existing knowledge (for example, across industry sectors) is defined as 'consultancy' and this may be the preferred method to access expert advice and less tangible knowledge. The knowledge itself may not be new, but it can often provide more immediate innovation. Indeed, this may be a useful route for the development of 'open innovation' practice where IP rights are less important than the usefulness of the knowledge to a particular situation or problem.

94. Consultancy has increased over 9 per cent overall from £332 million to £362 million although – similarly to contract research – the increase comes from SMEs and non-commercial partners (0.2 and 16.7 per cent respectively) while income from large business fell by 1.2 per cent, as shown in Figure 9.

Figure 9 Consultancy income 2003-2010 (real terms)

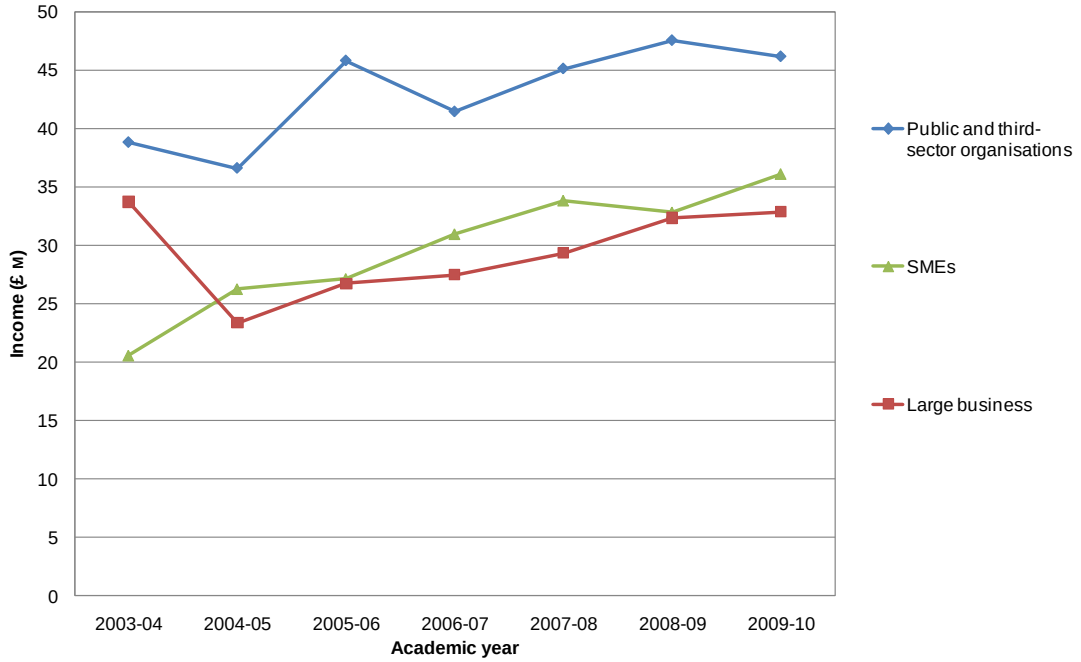


Source: HE-BCI Part B Table 2a

95. HEIs also possess specialist equipment and facilities to support their teaching and research activities. By providing access to these resources for partners, there are many benefits including income, relationship building and, for the external partner, access to facilities that they may not otherwise have the scale to secure in-house.

96. Overall, income from facilities and equipment grew 4.3 per cent, from £110 million in 2008-09 to £115 million in 2009-10 (see Figure 10). SMEs and large business both invested more in these services than in the previous year (12.3 and 3.8 per cent respectively) while there was a slight drop in non-commercial spending (-0.9 per cent). There was also a dramatic increase in the number of interactions under this indicator – 64 per cent overall and 175 per cent from SMEs. It is likely that some of this increase is due to improved reporting, but validation checks suggest that there is also real growth, which may also be related to increased recession support.

Figure 10 Facilities and equipment 2003-2010 (real terms)



Source: HE-BCI Part B Table 2b

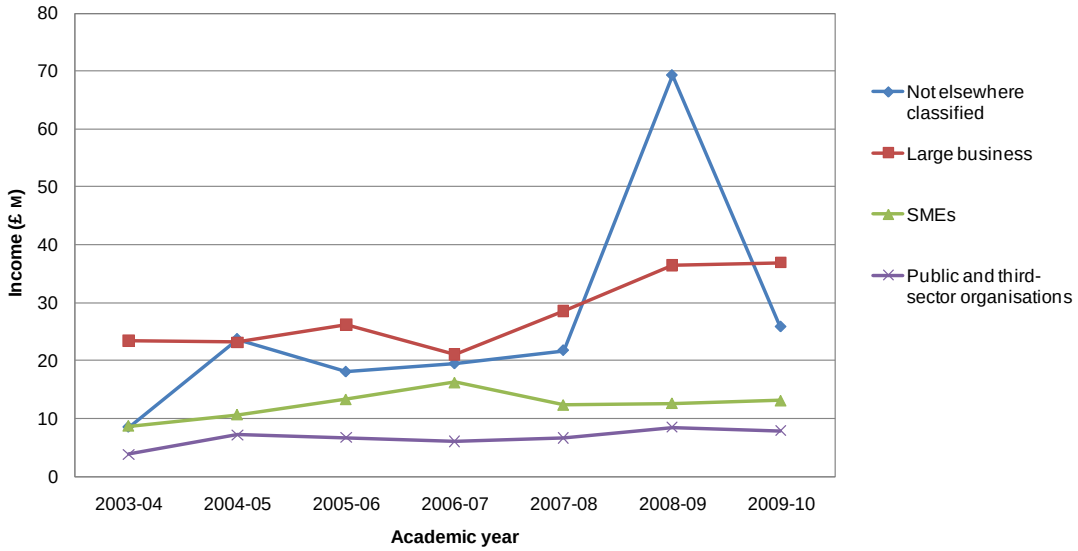
97. The translation of basic research into exploitable technology is a long process and further time is then required for the technology to prove itself in the marketplace. The last HE-BCI report ('Higher Education – Business and Community Interaction Survey: 2008-09', HEFCE 2010/14) noted the spectacular success of one English institution that accounted for nearly half of all UK IP income due to the sale of a particularly well-established company (see paragraph 100 below). As expected, following that, there is an overall drop this year in total IP income from over £124 million in 2008-09 to around £84 million in 2009-10. However, when that one instance is removed from the calculation, the overall income from IP has actually increased by around 15 per cent, from £72 million to £84 million. Figure 8 includes all IP income and demonstrates that the overall trend for income remains positive.

98. When we look at the net income from licensing (that is, excluding the sale of spin-off companies) there is an increase of 2.4 per cent from £56.5 million to £57.9 million. Data are collected separately for software and non-software licences because the former, typically, have shorter life-spans and lower values although this does not mean they are less important. For example, incremental improvements to software can be made far more readily than, say, changes to the engine of a passenger jet. Software licence income increased dramatically from both large business and non-commercial partners but decreased from SMEs. The opposite effect is seen in non-software licence income where only SMEs have increased their expenditure.

99. Given that IP can include a broad range of activities, reflecting the diverse specialisms of UK HEIs, data are also collected as 'not elsewhere classified' (and hence can be from public or private partners) in consideration of administrative burden. Figure 11 shows an increase in expenditure by large business and decreases from other partners. It appears there are no clear trends in the data as collected, which is not

surprising given that complexity, time requirements and economic flux will all influence the data.

Figure 11 Income from intellectual property 2003-2010 (real terms)

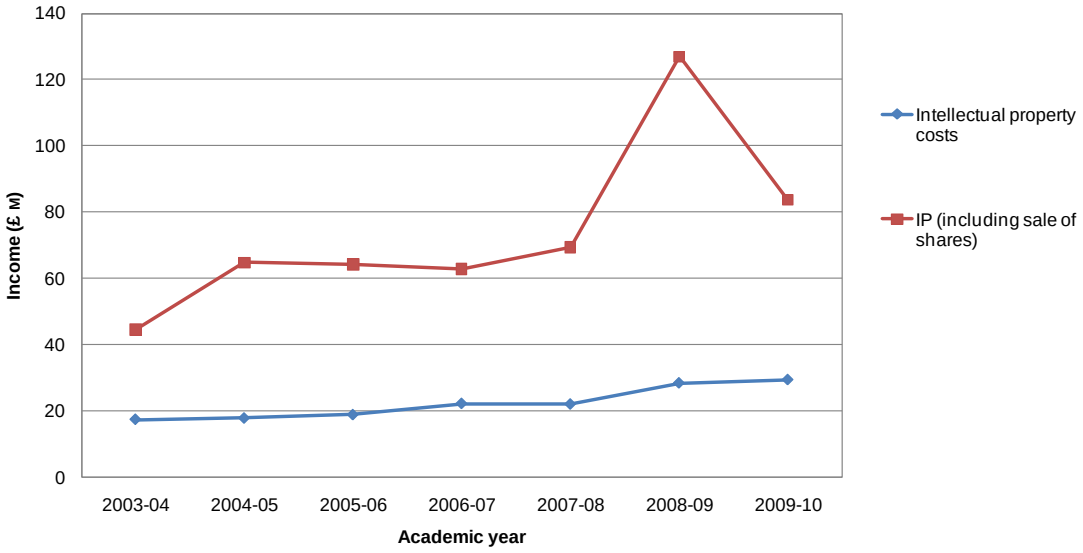


Source: HE-BCI Part B Table 4c

100. As noted in paragraph 97, last year's major increase in income from the sale of shares in spin-off companies – from around £66 million to nearly £125 million – was accounted for mostly (42 per cent) by one English HEI selling its share of a well-established company. It would be extremely unlikely that such successes would occur every year and, as expected, there has been a drop this year to around £26 million. However, the overall trend (omitting last year) in income remains positive, being higher than the approximately £21 million that was received by UK HEIs from the sale of spin-off companies in 2007-08.

101. HEFCE 2010/14 also noted a 32 per cent increase in IP protection costs from £21 million in 2007-08 to £28 million in 2008-09 (see Figure 12); data for 2009-10 continue to show an increase, but at less than 6 per cent, to a total of just under £30 million. These figures include formal fees for patents and specific staff costs associated therewith (for example, patent lawyers). Therefore, they are useful data for a variety of reasons but reflect only a small part of the cost of research and development.

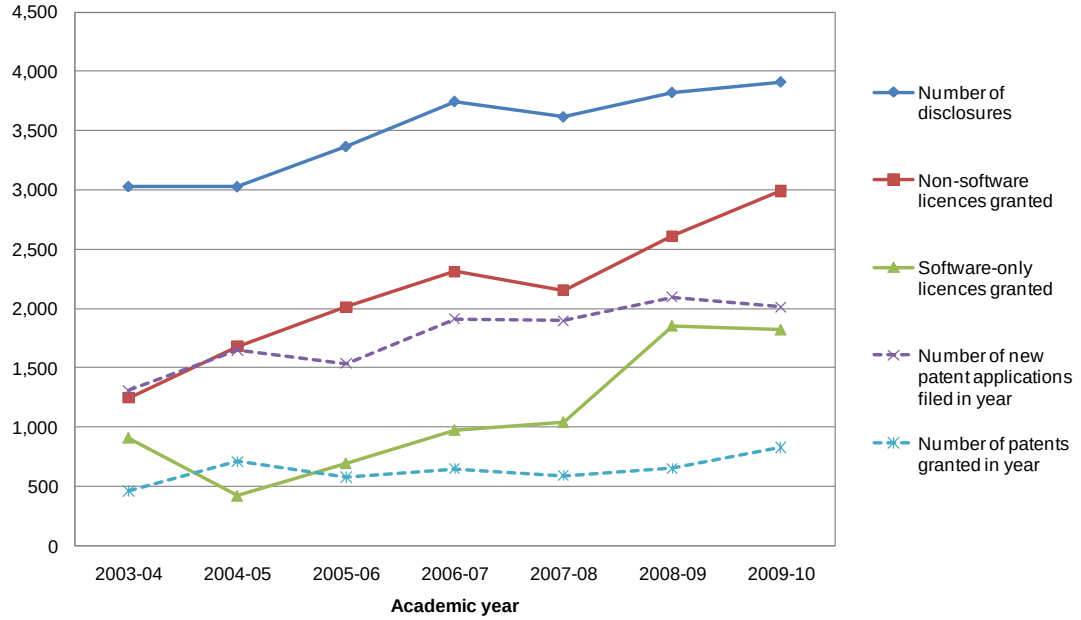
Figure 12 Income and expenditure on intellectual property 2003-2010 (real terms)



Source: HE-BCI Part B Table 4c

102. Figure 13 shows that there have been increases in the number of formal disclosures (2 per cent) and patents granted (26 per cent) in 2009-10, while the number of new patent applications fell by 4 per cent. These data are broadly consistent with previous data: HEFCE 2010/14 showed an increase in patent applications. We can also see here a decrease in software licence activity but with an increase in activity not based on software. Again, while the trend is not consistent, the long-term trend is still positive. More time will reveal whether there will be an effect from the recession on this area and related changes in strategy and expenditure by HEIs and their external partners.

Figure 13 Disclosures and patent numbers 2003-2010



Source: HE-BCI Part B Tables 4a and 4b

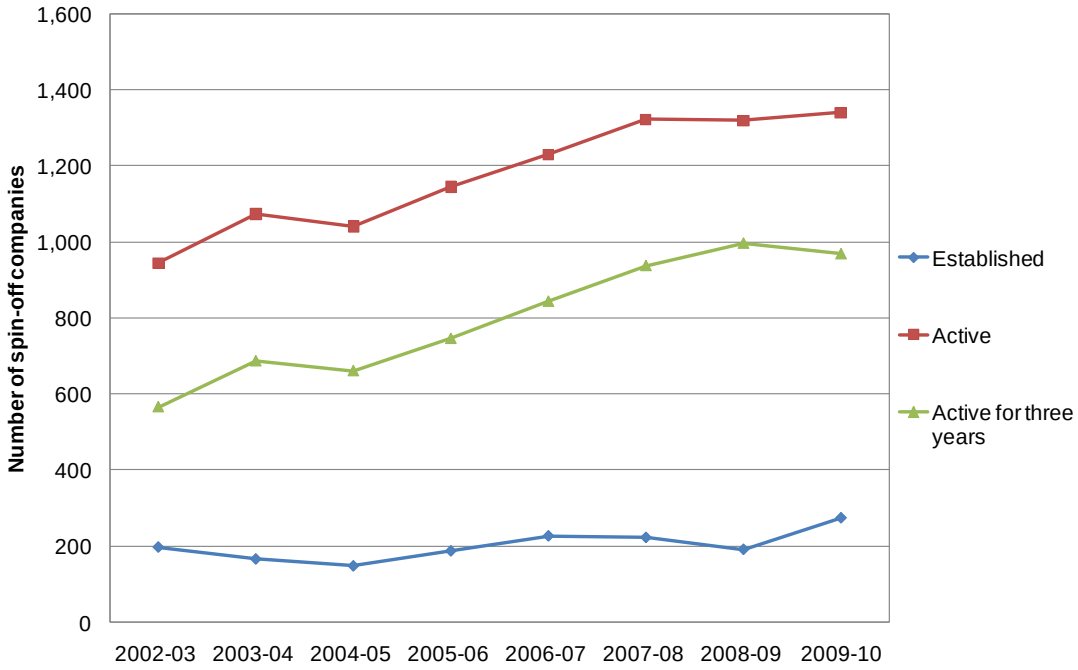
103. Although the licensing of new inventions to an established company is usually the most efficient way of exploiting IP, in some contexts (such as when there is a lack of suitable clients) creating a spin-off company is the best option. Spin-offs are unlikely ever to be the main option for exploiting IP, but for some particularly promising ideas they can be the best way to maximise impact and value for the HEI and for the economy more broadly.

104. Data are collected regarding formal (based on IP) spin-off companies where the HEI maintains (some) ownership – usually the majority of cases – and those that are sold outright; this is useful to see the balance between these methods (Figure 14). For total spin-off numbers these two data sets are summed. Recent years have seen some fluctuation in the number of new companies formed but a steady increase in those surviving for three or more years. The 2009-10 data show a drop in the number of three year-old or older companies for the first time, from 982 to 969, while the number of new companies formed rose 42 per cent, from 191 to 273. Again, it should be noted that the majority of these companies will be formed on IP discovered long before the recent recession and further data will need to be viewed before a trend can be clearly established.

105. HE-BCI also collects further performance data such as staffing levels and turnover of the companies and the total amount of external investment received. However, these data in particular must be viewed with caution because they are complex and often incomplete, due to commercial sensitivity and the necessary external nature of companies once spun off. (Formal spin-offs – based on IP – should not be compared with the company vehicles sometimes established by HEIs to manage their commercial activity.) If we limit analysis to spin-offs with HEI ownership, then estimated turnover of

companies has risen by 6.5 per cent from £697 million to £742 million and external investment has risen from £548 million to £588 million (7.4 per cent). Figures for companies with no HEI ownership show large changes in data returned by a small handful of HEIs, some of which is understood to be due to changes in accounting methods; there is no evidence to suggest that the overall trend is negative but further years of data are needed before the figures can be used reliably.

Figure 14 Spin-off companies formed 2003-2010



Source: HE-BCI Part B Table 4d

106. In terms of enterprise, start-up companies (new businesses not based specifically on IP) set up by HEI staff increased by 29 per cent since 2008-09; start-ups surviving three or more years increased by 6 per cent; while both total staffing and turnover fell in 2009-10 by 55 per cent and 18 per cent respectively compared to the previous year. However data on company formation must be treated with caution: they are likely to be incomplete, because HEIs are still developing systems to capture data that, by definition, do not exist within central systems because the businesses are external to the institution. Data on graduate start-ups are discussed in paragraph 113.

Social, community and cultural activities

107. Most HEIs see SCC activities as an element of their knowledge exchange, and public and community engagement as part of their core mission. However, use of financial income as a proxy for impact is less appropriate for SCC activity than for research-based interaction and hence there are not such robust ways of describing and measuring HEI commitment to SCC work. Much work has been done to identify the levels of maturity and impact of HEIs' activity on the economy and society but few

measures have presented themselves as useful across the spectrum of engagement. Current measures in HE-BCI look at the commitment made by HEIs and count attendees at public events. Although imperfect, these are useful as markers of the importance of such events; these events include a substantial contribution to society from public lectures by pre-eminent academics which may address a wide range of matters, including new understandings of the past, as well as music and dance recitals.

108. There are increases across the spectrum of public events reported to HE-BCI for both free and chargeable events:

a. Free public lectures have increased 31 per cent in terms of attendees (to nearly 1 million in 2009-10) and 10 per cent in terms of academic time (to over 13,000 days).

b. The same indicators for chargeable public lectures fell (by 7 per cent in terms of attendees to around 137,000 and by 5 per cent in terms of staff time to 2,713 days).

c. Performance events where a fee is charged for admission rose on both indicators (although data suggest a 55 per cent increase in staff time to 14,471 days with only a 3 per cent increase in attendees to 1.7 million).

As discussed in paragraph 107, these data are very difficult to collect consistently across the sector because they encompass a broad range of activities and are not currently directly used in funding.

109. To illustrate the significant scale of HEI commitment to SCC work: assuming a basic academic consultancy rate of £500 per day, the value of the total academic time devoted to public events has risen from over £46 million in 2008-09 to nearly £53 million in 2009-10 with a ratio of roughly 3:1 in favour of free events.

110. Where HEIs benchmark their public and community engagement strategy against a five-point scale, over 60 per cent of HEIs selected either of the top two categories, an increase from around 56 per cent in 2008-09.

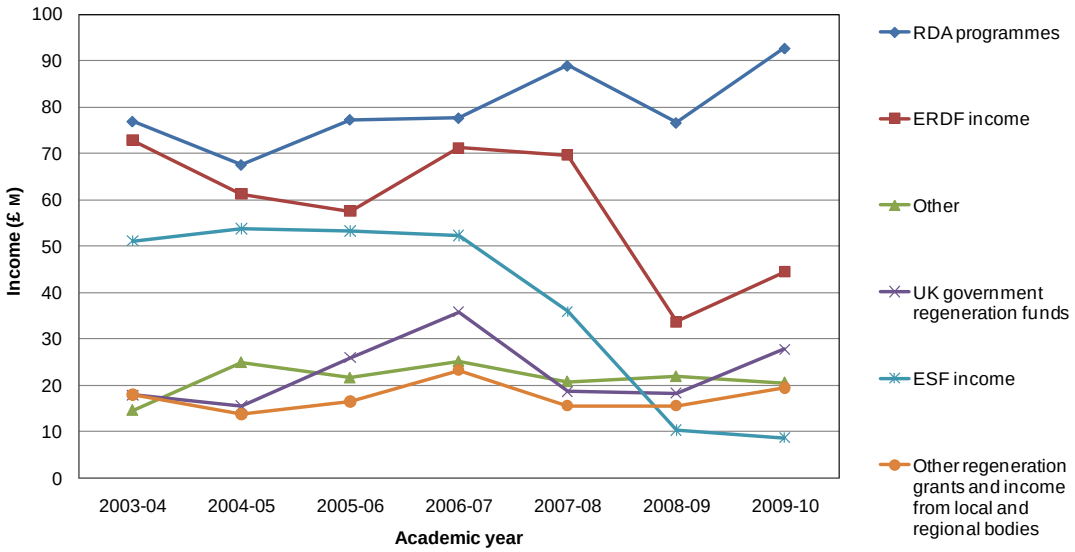
Regeneration

111. Regeneration activity covers a wide range of interactions from urban renewal to community development. UK HEIs have continued to respond to these economic and social needs, particularly in the recession, where they can add value, for example by offering reduced-cost training to newly redundant individuals or more advice and training to graduates entering an uncertain job market. HEIs are also involved in large-scale European structural regeneration projects, providing the intellectual input to public services and programmes. The wind-down of RDAs in England will, of course, have a clear effect on this indicator in future surveys, and it is also likely that the loss of such a significant stream of support will have broader effects across other knowledge exchange activities.

112. Total regeneration income has increased for the first time in a number of years. This may be a short-term response to the economic downturn in the UK and across Europe. Total income rose from £172 million in 2008-09 to £213 million in 2009-10

(24 per cent). Figure 15 shows spending by Regional Development Agencies increased as did spending from the UK central Government, which is likely to reflect recession-related activity. European Social Fund income continued to fall although at a slower rate than the previous cycles, reflecting changes with the expansion of the EU. Data in future years in England will likely be affected by changes in sub-national growth policy.

Figure 15 Regeneration income 2003-2010 (ream terms)



Source: HE-BCI Part B Table 3. Note: ERDF – European Regional Development Fund. ESF – European Social Fund.

Education and continuing professional development

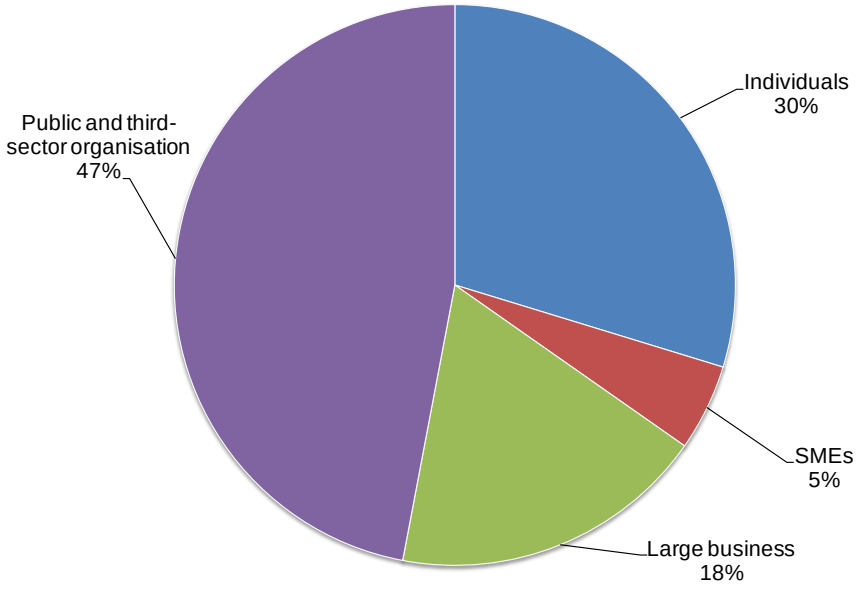
113. As knowledge exchange activity is embedded across HEIs there are many opportunities to share infrastructure across different activities; and in the case of new company formation, access to resources such as business advice/mentoring and access to investment may be used for all new enterprises (see also paragraphs 103-106). Graduate start-ups (companies formed within two years of graduation which may or may not be IP-based) increased by 4 per cent while the number surviving three or more years rose by 26 per cent. Reported staff levels in these start-ups increased by 27 per cent, while turnover reduced by 6 per cent.

114. As noted in paragraph 105, caution should be taken with figures related to enterprises because they are difficult for HEIs to track effectively given that the data are only available where volunteered. It is also likely that some start-ups were formed as social enterprises and further developments to the survey are being considered to capture data in the most useful way.

115. As mentioned in paragraph 75, HEIs tend to see education as their primary economic impact; while much provision provides academic credit toward an award or qualification for undergraduates and postgraduates, UK HEIs offer a range of courses for those either in employment or looking to retrain. Some CPD is relatively formal, perhaps

to keep up with the latest methods (for doctors or accountants, for example); other CPD is more task-focused, such as selecting particular modules from an MBA course to tackle a specific business problem. It is, however, very difficult for HEIs to collect complete, accurate data regarding the potential impact of CPD, given that any module may contain learners with a range of motivations.

Figure 16 CPD and Continuing Education



Source: HE-BCI Part B Table 2c

116. CPD income rose by 4 per cent overall from £558 million in 2008-09 to £580 million in 2009-10; however, it is difficult to ascertain a clear trend in these data, as with many other indicators, given that spending by SMEs and non-commercial bodies rose while large business and individuals spent less. These data will include some learning related directly to a business (for example, where the individual is also a sole trader) but also some provided for those out of work and needing to retrain in changing economic times. Total learner days of CPD/Continuing Education (which, it should be noted, are difficult to calculate accurately) fell by 8 per cent in 2009-10 to around 3.6 million; and further data will be needed to understand if this is a trend of fewer courses at higher prices or an effect of changes in accounting (or passing effects of recession support).

Annex A

This annex is available as a separate Excel file alongside this publication at www.hefce.ac.uk/pubs.

Annex B International comparisons, IP-related

1. As in previous years we have compared the Higher Education – Business and Community Interaction (HE-BCI) Survey data with the Association of University Technology Managers (AUTM) Licensing Survey. For 2009-10 individualised institutional data has been available for US universities and we have aggregated these data in our comparisons.

2. Comparing raw data may not be useful in itself because this does not consider the different size of higher education sectors in each country; any useful benchmark must take this factor into account. For this reason some form of scale normalisation is needed to allow a valid comparison. In previous HE-BCI surveys we have used research income/expenditure as the most appropriate proxy for scale, because this information is available both for US and for UK institutions and is clearly linked to the amount of available resources. Benchmarking is also difficult because definitions used may vary between the two surveys.

Table A Commercialisation activity in 2009-10 for the USA and UK within HEIs

	US universities AUTM survey	**UK HEIs Finance/HE-BCI survey**
Total research resource (£M)	30,434	6,265
IP income including sales of shares in spin-offs (£M)	1,123	84
IP income as percentage of total research resource	3.7%	1.3%
Spin-off companies formed	546	273
Research resource per spin-off (£M)	56	23
Patents granted	3,044	827
Research resource per patent (£M)	10	8
Industrial contribution (£M)	2,258	514
% industrial research	7.4%	6.6%
US cashed-in equity/UK Sale of spin-off shares (£M)	15	26
(Cashed-in equity/sale of spin-off shares) as a % total research resource	0.05%	0.41%

Guide to Table A data

3. Some caution must be taken with the comparisons because the US AUTM survey and UK HESA Finance/HE-BCI survey are not identical, and these two use differing definitions and accounting periods because they have differing purposes and scope.

4. The total number of UK HEI spin-off companies in Table A is derived from the HE-BCI survey, including both those with some HEI ownership and those companies that use higher education IP as a basis for their operation.

5. UK HEIs are free to use their total block grant funds from funding councils for either teaching or research as they feel appropriate. Since full expenditure details of the block grant are not collected, it is assumed in this calculation that all of the research block grant funds (from funding councils) and other research income are spent on research. Data are taken from HESA Finance Statistics Return 2009-10, Table 6b: Income analysed by source. This income is taken as the available resource for the UK HEIs.

6. The number of start-up companies formed is divided by the total research resource. The start-up companies defined in the AUTM survey are those dependent on institutions' technology for initiation, and so are equivalent to those spin-off companies recorded in the UK's HE-BCI surveys. Research expenditure is taken over the 2009 US institutions' fiscal years and is taken as being the available resource for US universities.

7. The US AUTM survey allows for confidential returns; these have been excluded because the institution type and number are withheld. However, the impact of their exclusion is small and does not change the ratio figures of IP income as a percentage of research expenditure or the spin-offs formed per £ million of research expenditure.

8. For the UK, HESA research income from industry, commerce and public corporations from UK and overseas sources is used to give the industrial contribution. For US universities expenditure from industry is used.

9. Income from cashed-in equity is available from the AUTM survey and is assumed to be broadly equivalent to the income from the sale of shares in spin-off companies collected in the UK HE-BCI survey.

10. US patents granted from the AUTM survey is compared with the total patents granted from the UK HE-BCI survey.

11. The exchange rate used is annual average spot exchange rate for 2009 from the Bank of England of $1.5665 to £1.

List of abbreviations

AUTM	Association of University Technology Managers
BIS	Department for Business, Innovation and Skills
CPD	Continuing professional development
GDP	Gross Domestic Product
HE	Higher education
HE-BCI	Higher Education-Business and Community Interaction (Survey)
HEFCW	Higher Education Funding Council for Wales
HEI	Higher education institution
HEROBC	Higher Education Reach-out to Business and the Community
HESA	Higher Education Statistics Agency
I&E Fund	Innovation and Engagement Fund
KE	Knowledge exchange
RDA	Regional Development Agency
SCC	Social, community and cultural
SIC	Standard Industrial Classification
SMEs	Small and medium-sized enterprises