July 2012/18

Policy development

Report on survey

This report is for information

This report analyses the results of the 2011 Higher Education – Business and Community Interaction Survey for UK higher education institutions, referring to the academic year 2010-11.

Higher Education – Business and Community Interaction Survey

2010-11

Contents

Higher Education – Business and Community Interaction Survey: 2010-11

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; 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 11th year and is an essential source of information on knowledge exchange (KE) in the UK. Annex A contains the full HE-BCI dataset.

2. The exchange of knowledge described here takes place between higher education institutions (HEIs) and the wider world of business and the community. Out of 163 publicly funded UK HEIs, 159 provided data for this report.

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

4. This report builds on previously published HE-BCI surveys, the most recent of which analysed 2009-10 data and was published in September 2011 ('Higher Education – Business and Community Interaction Survey: 2009-10', HEFCE 2011/27)[1].

5. In this latest survey, the third to be carried out by the Higher Education Statistics Agency (HESA), HEIs provided data for academic year 2010-11. Data regarding strategy and infrastructure (which are not numeric or financial) relate to the end of the academic year (July 2011).

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 and third-sector[2] partners of all sizes, 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 2010-11 show a continuing increase in the overall exchange of knowledge between UK HEIs and the public, private and third sectors. The

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

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

growth rate – in cash terms – for the UK is around 7 per cent, from £3,086 million in 2009-10 to £3,302 million[3]. Over the longer term income has risen in real terms by 41 per cent since 2003-04.

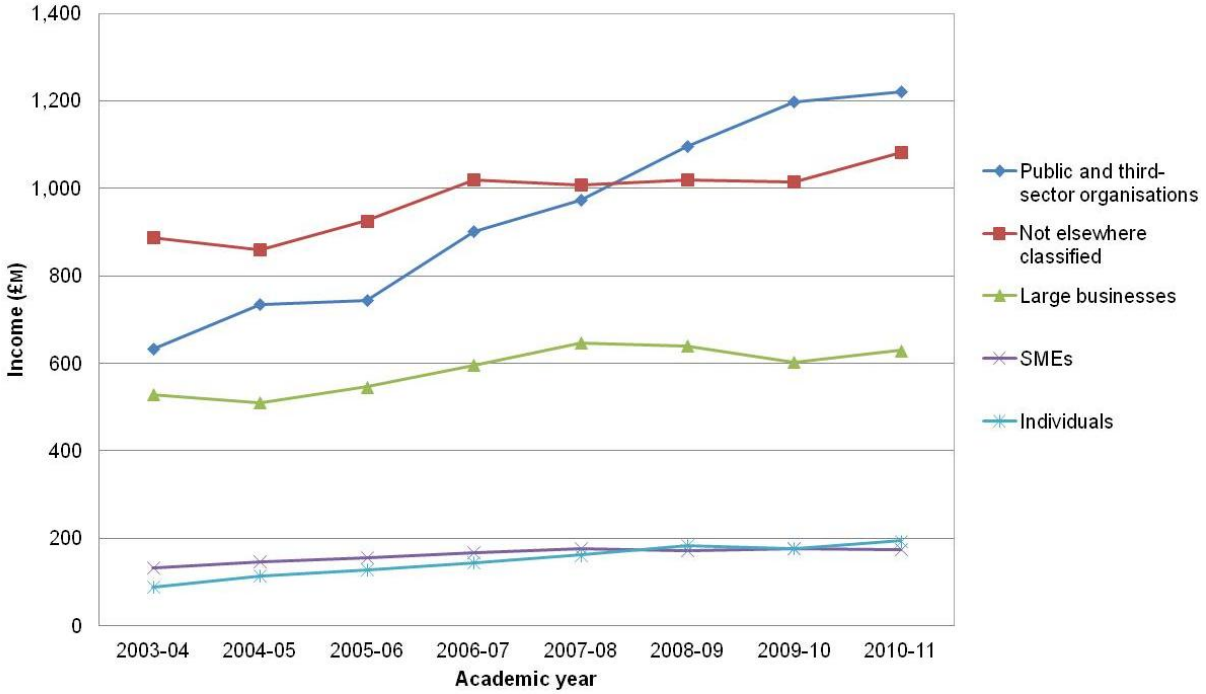
8. This is particularly impressive because (as we have highlighted in previous HE-BCI reports) the results need to be seen in the context of wider economic turbulence and other factors that impact on HEIs' interactions with their partners[4].

9. International comparisons of KE activities are still very difficult to draw with any degree of certainty, due to differences in data available and definitional differences between sources. HE-BCI includes comparisons with US universities based on data collected by the Association of University Technology Managers (www.autm.net) on commercialisation of intellectual property (IP). Overall, US universities are more effective at producing licences than UK HEIs, but the UK creates more spin-off companies per pound of public money spent on research. Further detail is at Annex B.

Income by partner

10. Spending by large business increased overall by 7 per cent from £587 million to £629 million, while small and medium-sized enterprises (SMEs) maintained their total spending on engagement with UK HEIs in cash terms; non-commercial partners in the public and third sectors, charities and social enterprises increased their spending by 5 per cent from £1,166 million to £1,221 million (see Figure 1).

Figure 1 Total income by partner 2003-04 to 2010-11 (real terms)



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

[3] Unless stated otherwise, data refer to changes over the period 2009-10 to 2010-11.

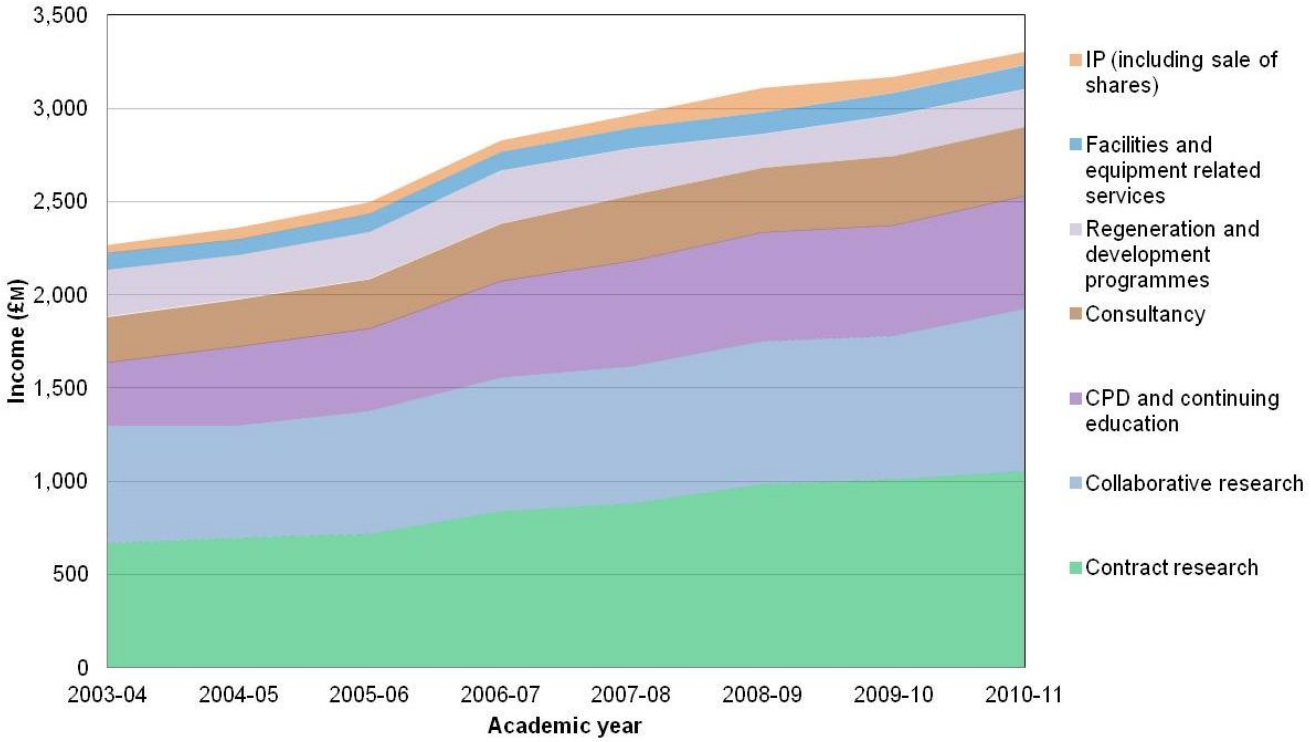
[4] This dynamic is considered further by PACEC, 'Strengthening the Contribution of English Higher Education Institutions to the Innovation System: Knowledge Exchange and HEIF Funding' available at https://secure.pacec.co.uk/documents/HEIF11-15-FullReport.pdf.

Research-based interactions

11. Collaborative research income rose by 16 per cent from around £749 million in 2009-10 to £872 million (see Figure 2). The data reported show an increase (around 10 per cent from £602 million to £663 million) in the public contribution to collaborative research as defined in HE-BCI. There was a significant increase in private contributions of 42 per cent to £208 million, although it is likely this partly reflects improvements in data capture.

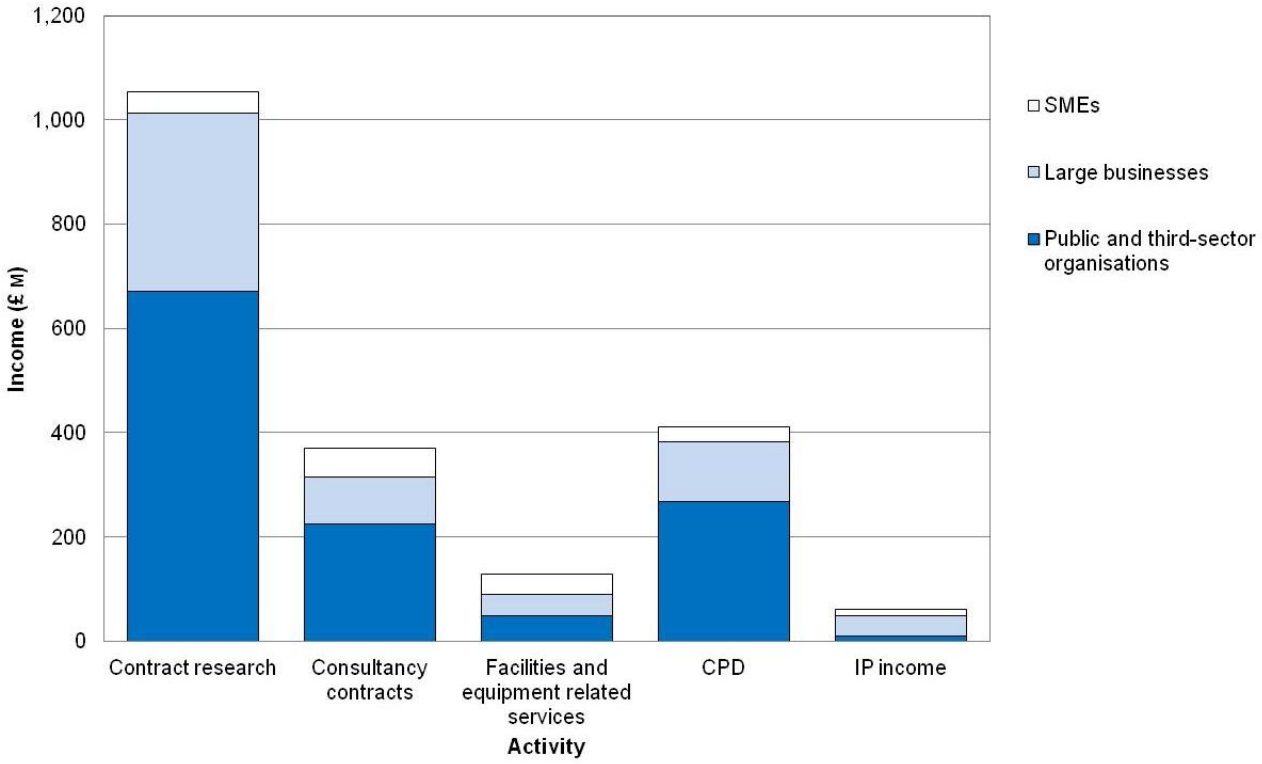
12. Contract research income (Figure 3) has risen by 7 per cent from £983 million to just over £1 billion. The main increase in income was from non-commercial partners (8 per cent) although income from SMEs also rose by 3 per cent. There was a 5 per cent increase in income from large business. This is very encouraging given the economic context, and because the 2009-10 survey found that contract research income from large business had decreased by 5 per cent.

Figure 2 Selected HE-BCI income streams 2003-04 to 2010-11 (real terms)



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

Figure 3 Income by activity and partner 2010-11



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

Consultancy

13. Consultancy income increased by 2 per cent to £370 million from £363 million in 2009-10. Most of this increase was from the large business sector with an increase of over £5 million to £90 million.

Equipment and facilities

14. Income from use of facilities and equipment (for example, wind tunnels or digital media suites) rose by around 12 per cent overall to £129 million; the majority of this increase was from large business, which invested around £40 million in 2010-11, 22 per cent more than in 2009-10. SMEs also increased their investment by 10 per cent to £40 million.

Education and continuing professional development

15. Income from continuing professional development (CPD) and continuing education activity rose by around 5 per cent from £579 million in 2009-10 to £606 million. Income from individuals increased by 13 per cent. CPD income has grown by 72 per cent, in real terms, since 2003-04.

16. Large businesses also increased spending on CPD by 10 per cent. While CPD spending by SMEs reduced by 3 per cent, this nevertheless represents a significant investment (£28 million).

Regeneration

17. Income from regeneration programmes fell, from £214 million in 2009-10 to £203 million, a decrease of 5 per cent. This is not surprising given the wind-down of the Regional Development Agencies (RDA) in England: RDA investment in regeneration programmes decreased by 18 percent to £76 million.

Intellectual property and enterprise

18. Income from intellectual property (including sales of shares) grew by 52 per cent in real terms over the period from 2003-04 to 2010-11. In 2009-10, share sales generated £26 million of income compared to £8 million in 2010-11. We also believe that institutions are waiting for investment conditions to improve before focusing on later investment and sale of technologies.

19. Disclosures[5] and new patent applications have increased by 8 per cent and 12 per cent respectively. Although there was a drop in the number of new patents granted (down by 8 per cent from 2009-10), patent data should 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 10 per cent from 14,800 in 2009-10 to 16,345.

20. New enterprises (start-ups) that are not based on IP have increased since 2009-10, with 87 new companies started by HEI staff and 2,848 by new or recent graduates, up by a third and a fifth respectively. Start-ups active for three or more years also increased in 2010-11, by 27 per cent for staff and 33 per cent for recent graduates respectively.

Social, community and cultural activities

21. 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.

22. For example, over 1.3 million people attended free public lectures organised by HEIs, representing a 38 per cent increase from 2009-10. Over 1.7 million people paid to attend performance events – such as music, film, dance and drama – and 645,000 attended free performances. Exhibitions attracted nearly eight million visitors.

Strategy and infrastructure

23. There was a slight dip last year in some infrastructure indicators, such as the percentage of HEIs offering an enquiry point for SMEs. However, all of these indicators are still at a high level.

Action required

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

[5] See HE-BCI definitions at www.hesa.ac.uk/index.php?option=com_content&task=view&id=2469&Itemid=278

Background and context

25. 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[6] 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 usable to inform funding bodies' allocation of continued funding.

26. HE-BCI data for academic year 2010-11 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: the UK higher education (HE) funding bodies; the Department for Business, Innovation and Skills (BIS); the Research Councils; and other representative bodies such as Universities UK, GuildHE, the Confederation of British Industry and the Technology Strategy Board.

27. Data from HE-BCI are used to develop policy and inform funding decisions for knowledge exchange (KE) and related activities in England, Wales and Northern Ireland. While three Scottish HEIs were not included in the survey this year, the Scottish Funding Council is currently developing further use of these data in policy and funding, and has made completion of the HE-BCI survey a condition of grant funding from 2011-12. 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.

28. This is the third time that HESA has carried out this survey. Although some variations in practice relating to data capture mean that this report contains a number of caveats, the overall data set is considered informative and fit for purpose[7]. Caution may be needed when viewing some data and trends in this report: any specific concerns are highlighted in the text.

29. 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. The latest gross domestic product deflators are used for each survey and the figures in real terms are updated. This approach is common across HE-BCI reports.

30. Most financial income data are collected by partner type:

- commercial – small and medium-sized enterprises (SMEs), and large businesses
- non-commercial – public and third sector

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

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

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.

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

The survey and the wider economic context

32. We have highlighted in previous HE-BCI reports that results need to be seen in the context of wider economic and other conditions that may impact on HEIs' interactions with their partners. In the early years of the HE-BCI survey the economy was fairly stable, and at that time we highlighted that data and trends needed to be viewed in the context of change factors in the HE environment, including the establishment of the survey itself. Since the credit crunch of 2008, we have particularly flagged that wider conditions impacting on the economy and society are likely to influence data and trends, and this may continue for some years. These wider conditions include:

a. The effect of the global credit crunch in 2008, but also economic turbulence in the UK and in the wider global economy since, which may affect the conditions and confidence of business to invest in innovation and skills.

b. The decision made by the UK Government to reduce the budget deficit. In the longer term, this may affect the conditions and confidence of the public and third sectors to invest in knowledge exchange with HE.

c. A number of policies across the UK to help businesses and the unemployed during the recession, which have resulted in reduced or even free support from HEIs for services such as training or consultancy.

d. As part of deficit reduction, the decision in England to wind down the Regional Development Agencies, which have been investors in HE KE, but also clients of HE services. There are now differences across the nations of the UK in their policies on sub-national growth, which may affect demand and supply conditions for HE knowledge exchange.

e. Different policies in the different nations of the UK relevant to HE and knowledge exchange. There have been changes to core funding for KE – for example, in England, Higher Education Innovation Funding has been made more selective since 2011, which may affect the infrastructure and income indicators captured in this survey in future years.

The UK nations

33. Figures for England, Wales, Northern Ireland and Scotland vary, reflecting the different economic contexts and HE funding polices. Annex C provides a background summary.

Next steps

34. The HE-BCI survey is currently being reviewed by the HESA-led HE-BCI Survey Review Group. Later in the year, HESA will consult with the sector on any changes suggested by the group.

Analysis

35. The data suggest some signs of recovery since the last report was produced, particularly in terms of income from the large business sector, which showed a 7 per cent increase. In fact the only sources of income which showed a decrease in cash terms were regeneration and development funding (unsurprising given that this funding is largely derived from public sources); consultancy with large business; and the sale of shares in spin-offs (perhaps here the economic uncertainty is delaying the sale of technologies).

36. The overall increase in SME income reported last year has been maintained: £174 million of investment in 2010-11, with £56 million used for consultancy and around £40 million each for contract research and for facilities and equipment-related services. This suggests that HEIs and small businesses are increasing and deepening their engagement to innovate in their products and services.

Strategy and infrastructure

37. Data relating to strategy and infrastructure for 2010-11 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 the HE-BCI process.

38. 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 of focus away from regional priorities in several HEIs, with both 'local partnerships' and 'regional skills needs' decreasing, while 'supporting SMEs' has been selected as a main priority by six more HEIs than in the previous year.

39. There have been few changes in the incentives offered by HEIs to their staff to engage with external partners beyond teaching and research (Figure 4). We will continue to monitor this, particularly given the wider economic context we discuss above.

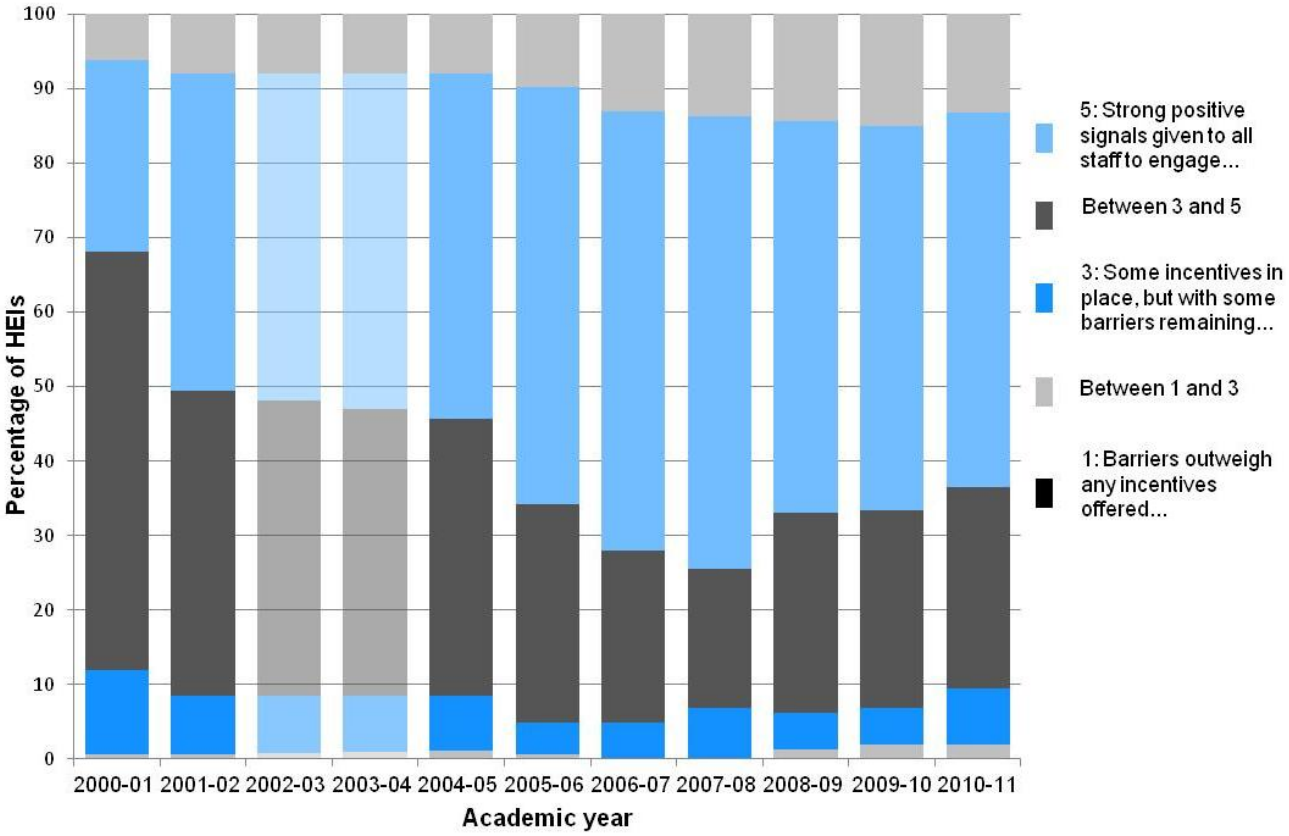
40. A five-point benchmark assessment of the extent to which business support strategy is embedded at HEIs shows an increase in those selecting the top category (with a strategic plan developed as a result of an inclusive process across the whole HEI), from 54 to 62 HEIs.

41. Before discrete HEFCE funding for KE there was evidence that identifying and engaging with academics was a barrier for external clients (particularly small business)[8]. Over the last decade HE-BCI has tracked increases in staff dedicated to assisting external partners and facilitating interactions. The 2010-11 data show a slight increase in

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

the number of staff employed in a dedicated business and community role[9] from 7,768 in 2009-10 to 7,944. Data are broadly consistent across the UK nations.

Figure 4 Incentives for staff to engage with business and the community 2000-01 to 2010-11[10]



Source: HE-BCI Part A Question 8 (data for 2002-03 and 2003-04 are assumed – see HEFCE 2011/25 paragraph 43)

42. Figure 5 shows that, following an increase last year, three of the main infrastructure indicators have fallen slightly, with only 'indemnity insurance for staff' having increased. The changes were relatively small and it could be that the benchmarks are largely being met by institutions where they are relevant. We will continue to monitor these indicators, although there are also efforts to find better proxies.

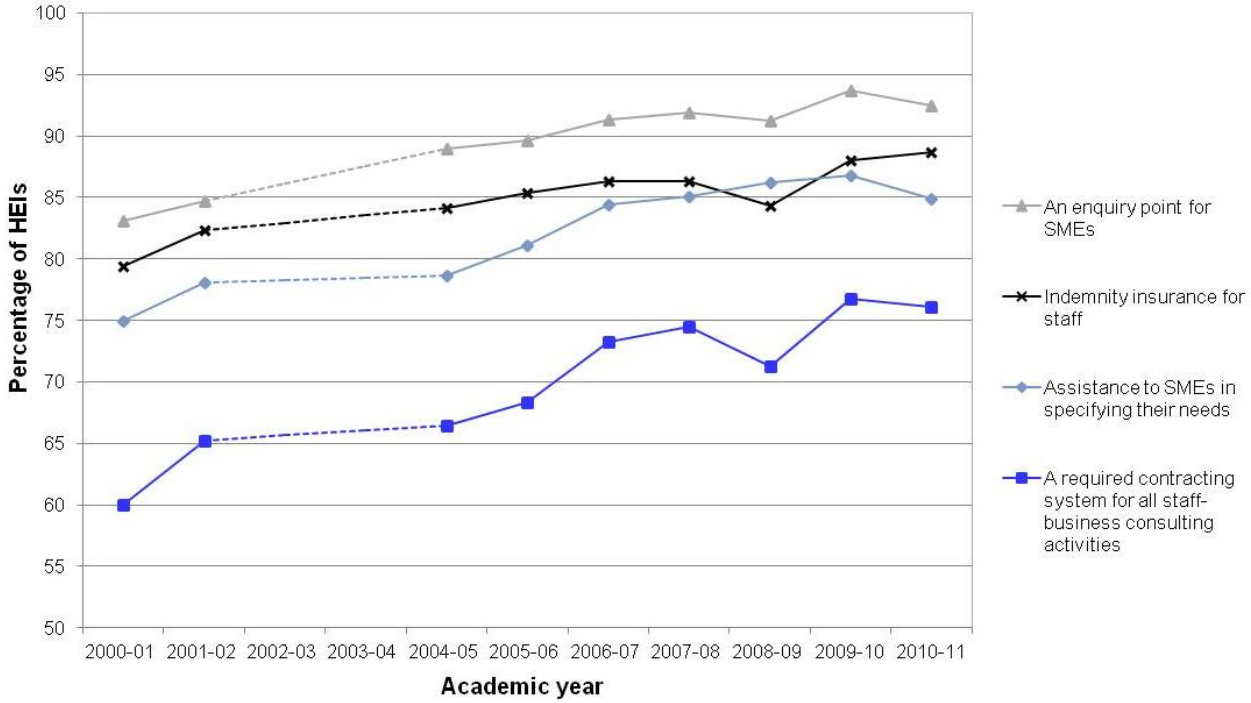
43. Not all HEIs have sufficient technology to warrant a dedicated unit of specialist staff (such as IP lawyers) to commercialise research, which has led to a growth of collaboration between HEIs and private sector intermediary organisations. In 2010-11 around half of HEIs (49 per cent) reported in-house capability; 11 per cent relied solely on an external partner; and 26 per cent of HEIs had both internal and external options. The proportion of HEIs with one or both of these options has remained at 86 per cent in 2010-11.

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

[10] In response to the question 'How would you rate the level of incentives for staff at your HEI to engage with Business and the Community?'

44. The data regarding how IP rights are managed show 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 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 patents do.

Figure 5 Selected infrastructure indicators (2000-01 to 2010-11)



Source: HE-BCI Part A Question 11 (data for 2002-03 and 2003-04 are assumed – see HEFCE 2011/25 paragraph 43)

45. The most common response (97 HEIs) is that IP rights are handled by an external organisation, but 60 HEIs selected in-house or collaborative arrangements (with other HEIs), and 81 noted other actions taken. In 84 per cent of HEIs, staff are rewarded for the IP they produce; this is a similar proportion to that seen in 2009-10.

Research-based interactions and intellectual property

46. Research-based interactions cover a very wide spectrum of activities, from collaborative research[11] (perhaps the most distant from the market) through to the commercialisation of ideas and the establishment of new companies (close to the market). Many organisations that operate partnerships with HEIs note that direct engagement in collaborative research is particularly valued for sparking new ideas and approaches. The total reported income for collaborative research rose from £749 million in 2009-10 to £872 million, an increase of 16 per cent.

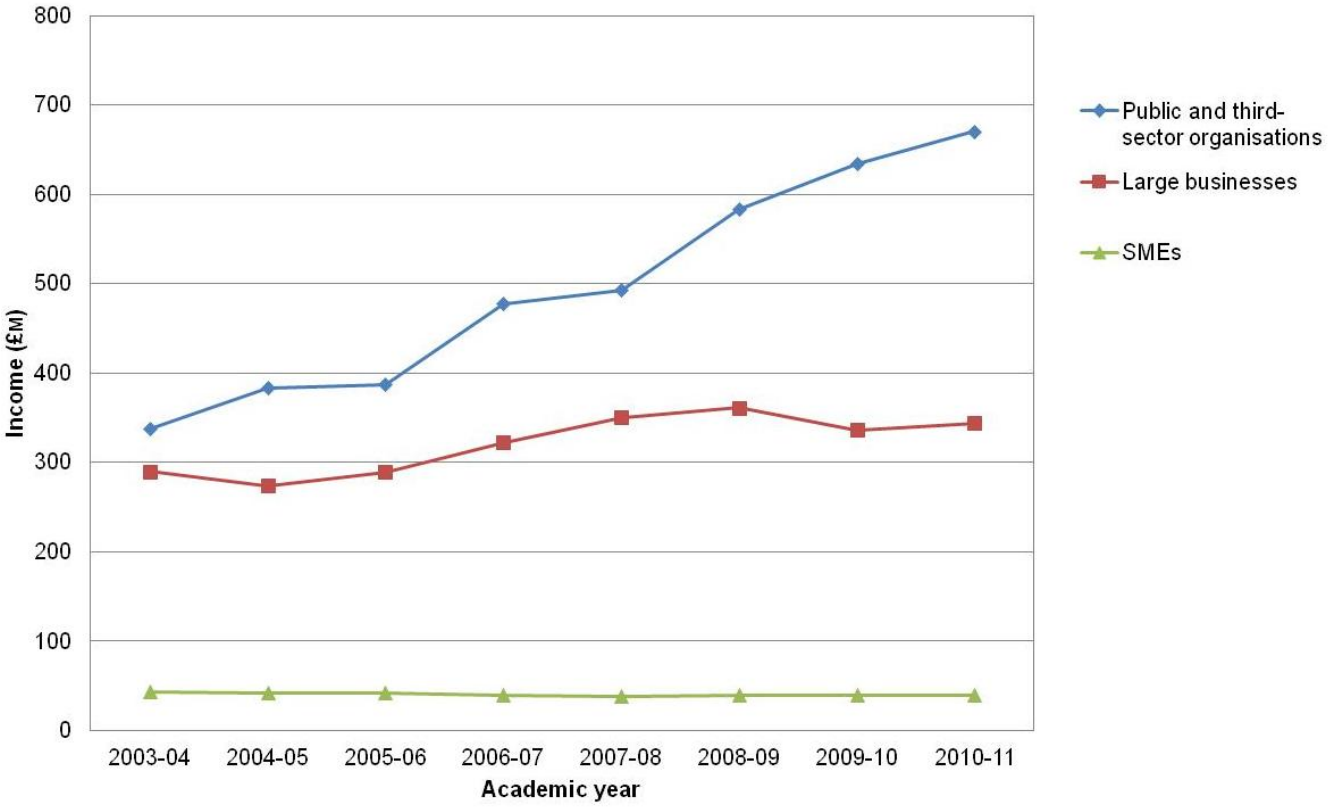
47. Although income from IP is a useful measure of an HEI's strategy in commercialising its research, collaborative research may be more useful for

[11] Collaborative research is academic research undertaken in partnership with other universities or research organisations, with business, with government or with the third sector (charities, for example).

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 a particular project and its partners; it is not 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).

48. 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 7 per cent from £983 million in 2009-10 to £1.05 billion. Figure 6 shows that the majority of this increase came from spending by non-commercial partners (up by 8 per cent from £618 million to £670 million), although SMEs also increased their spending by 3 per cent from £38 million to £39 million.

Figure 6 Contract research income 2003-04 to 2010-11 (real terms)

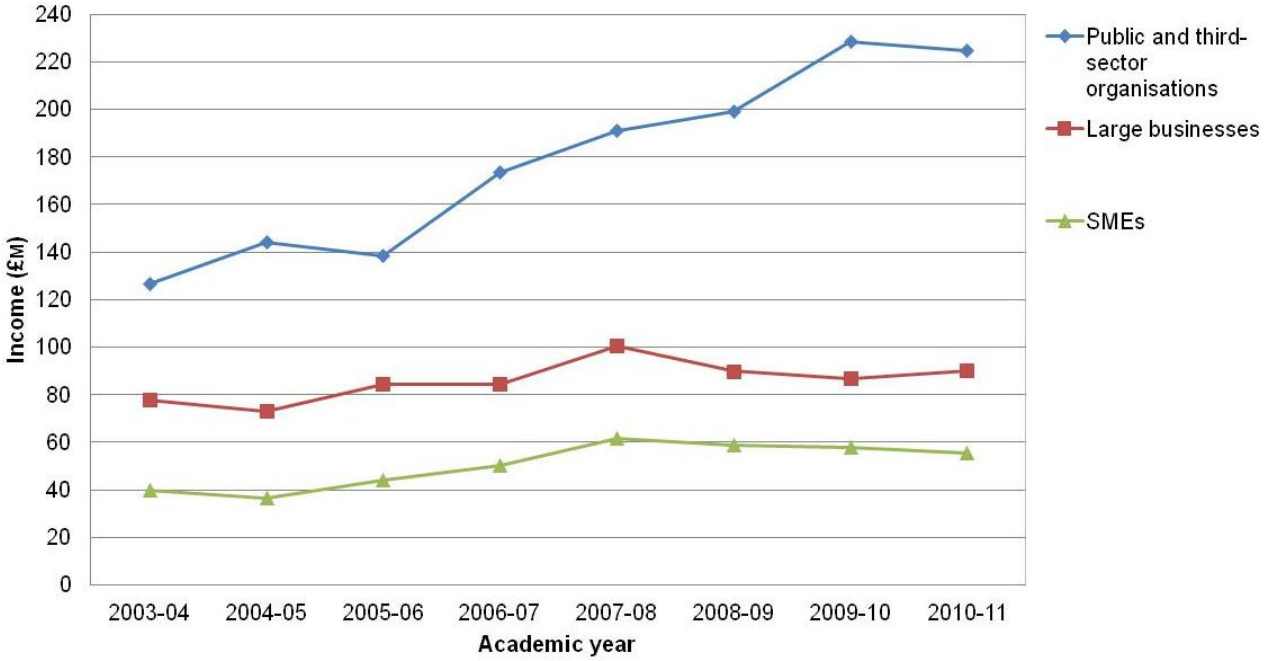


Source: HE-BCI Part B Table 1b

49. Innovative application of existing knowledge 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.

50. Consultancy has increased by 2 per cent overall from £363 million to £370 million (a lower increase than contract research). The rise comes mainly from large business which increased by 6 per cent, as shown in Figure 7.

Figure 7 Consultancy income 2003-04 to 2010-11 (real terms)

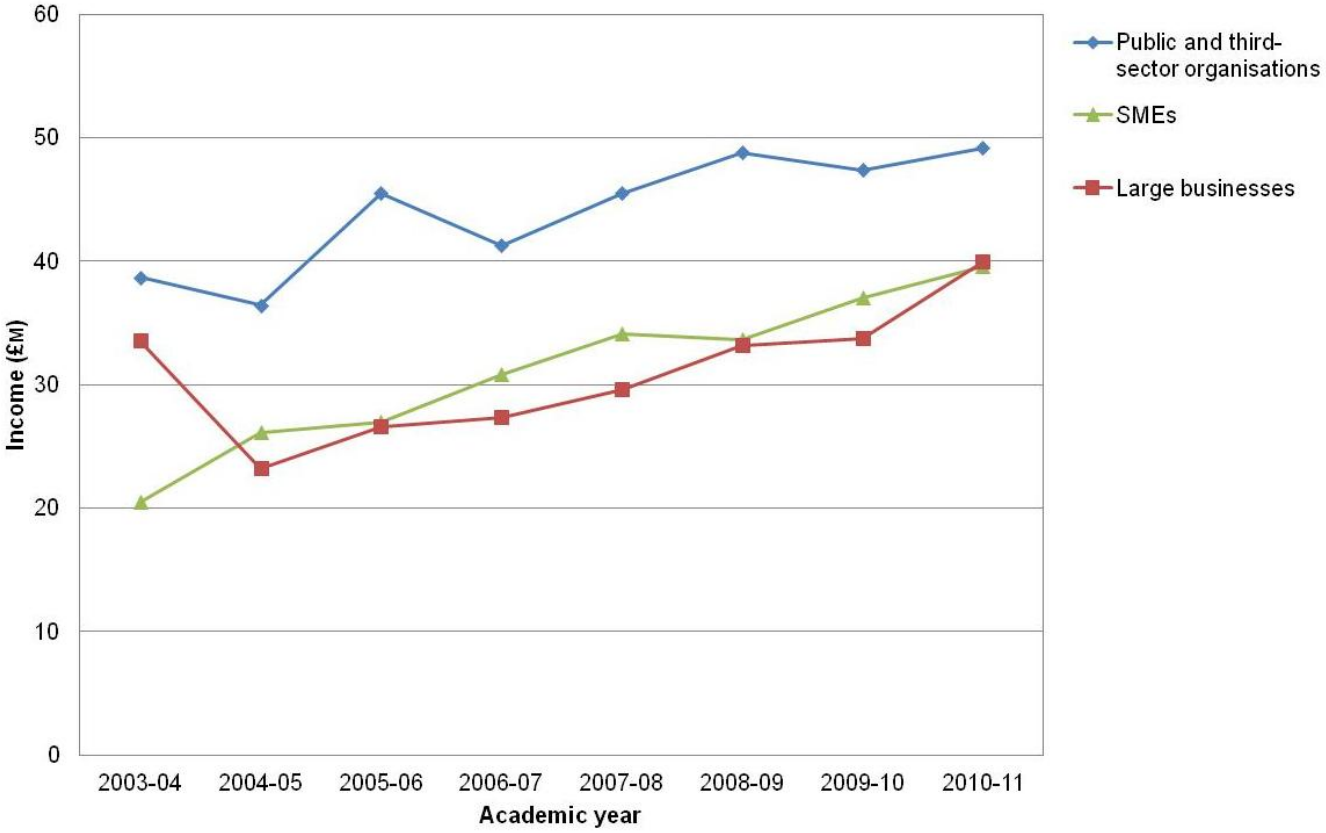


Source: HE-BCI Part B Table 2a

51. HEIs' specialist equipment and facilities, such as wind tunnels and digital media suites, support their teaching and research. There are many benefits from providing access to these resources for partners, including income and relationship building. The external partner enjoys these benefits too, plus access to facilities that they may not otherwise have the scale to secure in-house.

52. Overall, income from facilities and equipment grew by 12 per cent, from £115 million in 2009-10 to £129 million (see Figure 8). SMEs and large business both invested more in these services than in the previous year (10 and 22 per cent respectively) while there was an increase in non-commercial spending (6 per cent).

Figure 8 Facilities and equipment 2003-04 to 2010-11 (real terms)



Source: HE-BCI Part B Table 2b

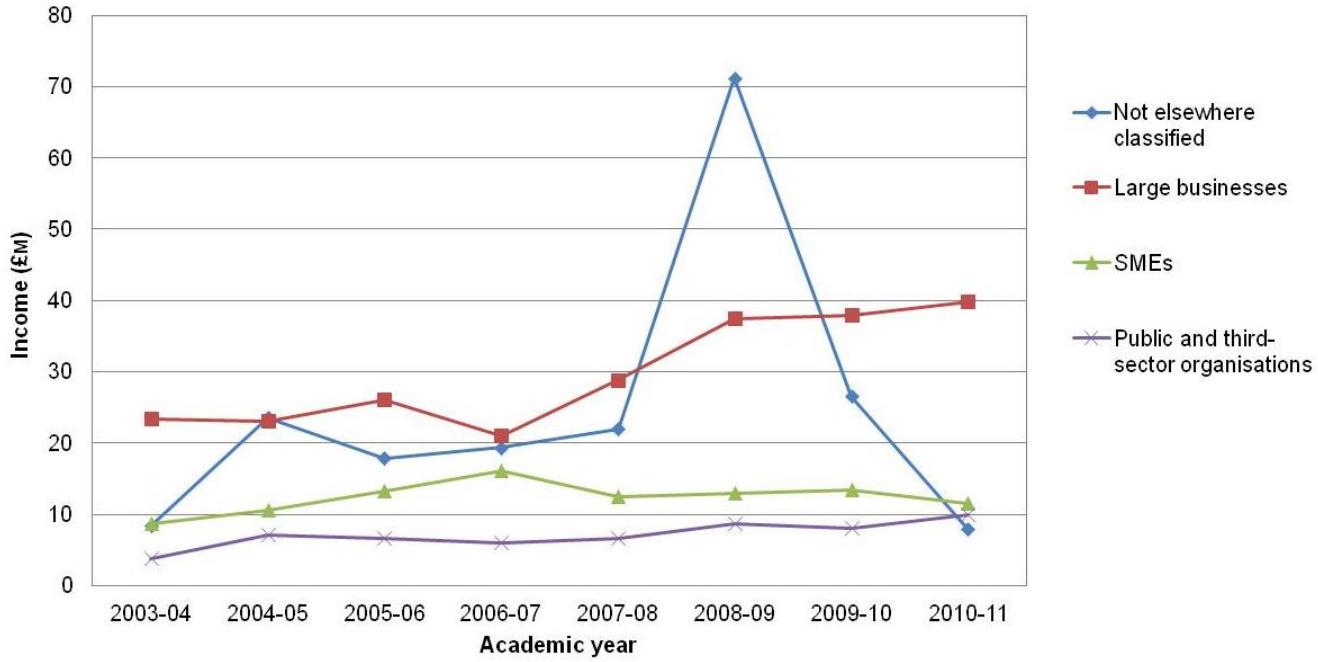
Intellectual property and enterprise

53. 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. In 2008-09 one English institution accounted for nearly half of all UK IP income due to the sale of a particularly well-established company. Figure 9 shows a 17 per cent reduction in 2010-11 due to a decrease in the share sales. As an institution can control when it sells its shares, it could be that some are waiting for improved market conditions to ensure they receive the best possible price from any sale.

54. When we look at the net income from licensing (that is, excluding the sale of spin-off companies) there is an increase of 6 per cent from £58 million to £61 million. Data are collected separately for software and non-software licences because the former, typically, have shorter life-spans and lower values – though 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 SMEs and non-commercial partners but decreased from large businesses.

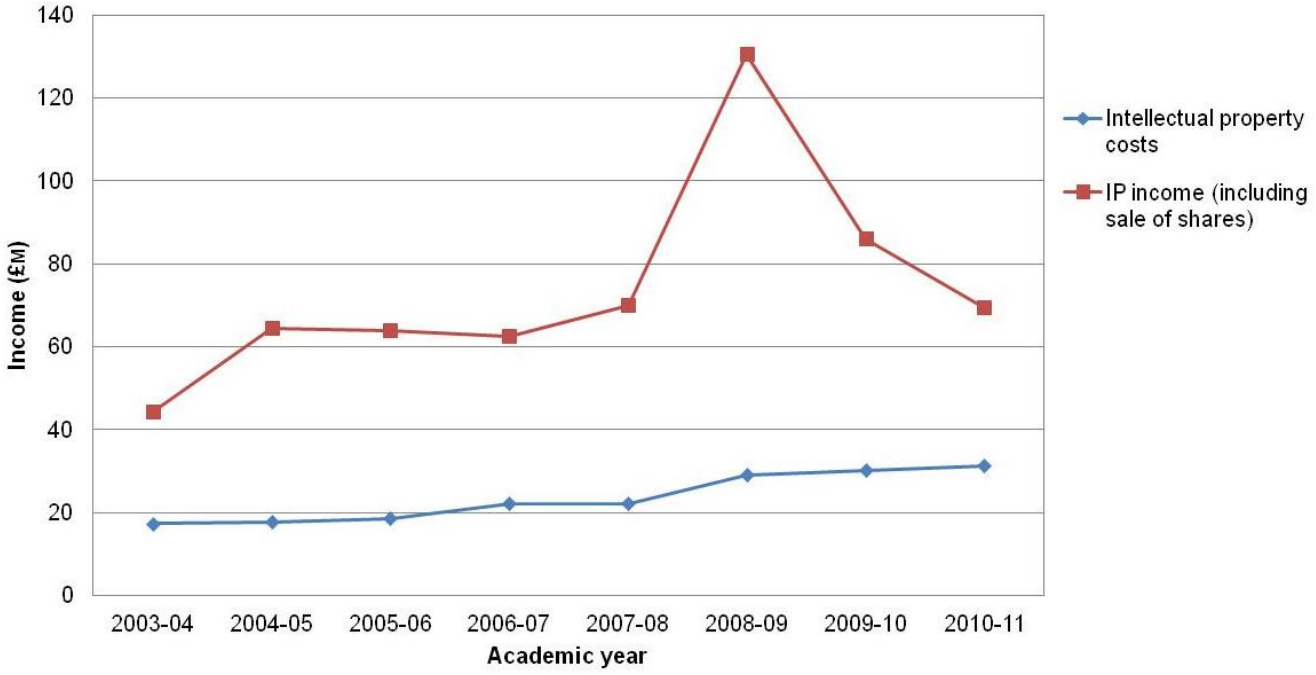
55. Last year's report noted a 6 per cent increase in IP protection costs. Data for 2010-11 show a similar increase (of 7 per cent), to a total of £31 million. These figures include formal fees for patents and specific staff costs associated therewith (for example, patent lawyers). As illustrated in Figure 10, they reflect only a small part of the cost of research and development.

Figure 9 Income from intellectual property 2003-04 to 2001-11 (real terms)



Source: HE-BCI Part B Table 4c

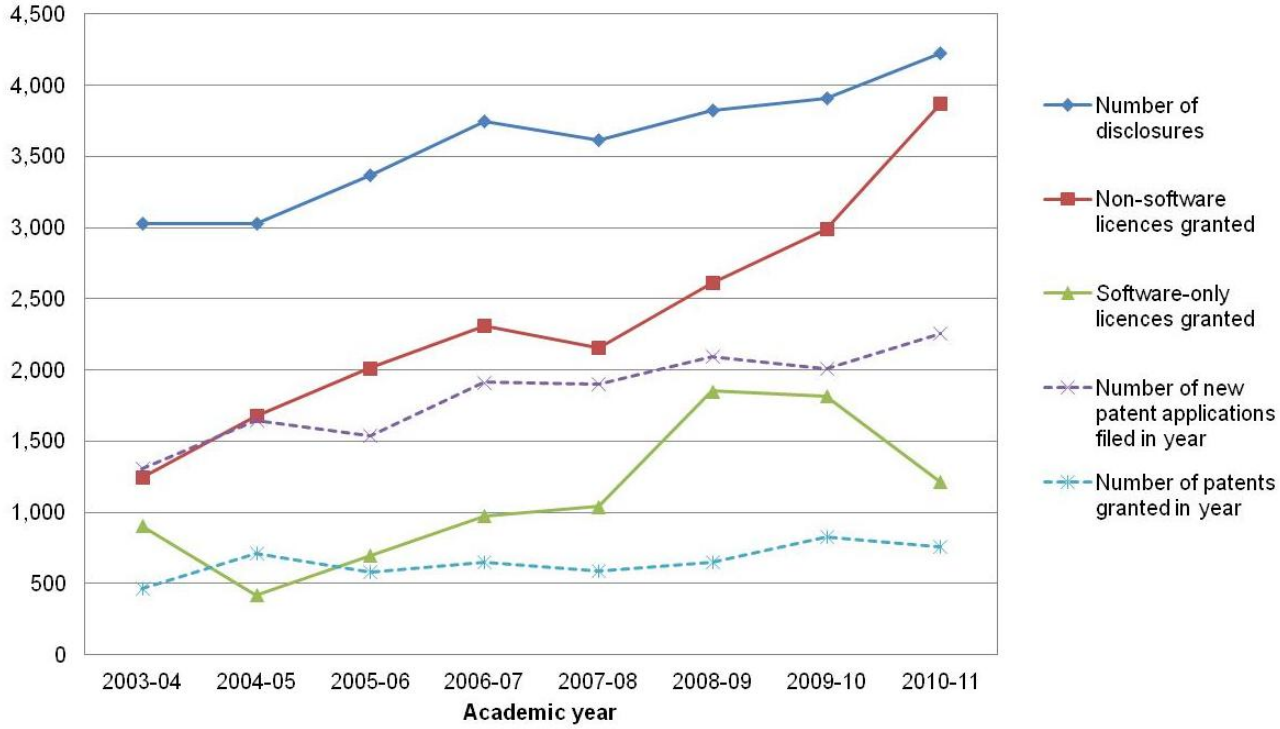
Figure 10 Income and expenditure on intellectual property 2003-04 to 2010-11 (real terms)



Source: HE-BCI Part B Table 4c

56. Figure 11 shows that there have been increases in the number of formal disclosures (8 per cent) and new patent applications (12 per cent) in 2010-11, while the number of patents granted fell by 8 per cent. These data are broadly consistent with previous data. We can also see here a decrease in software licence activity, but with an increase in activity not based on software. The long-term trend is positive despite short-term fluctuations, but the economic turbulence we are experiencing will undoubtedly affect strategy and expenditure by HEIs and their external partners.

Figure 11 Disclosures and patent numbers 2003-04 to 2010-11



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

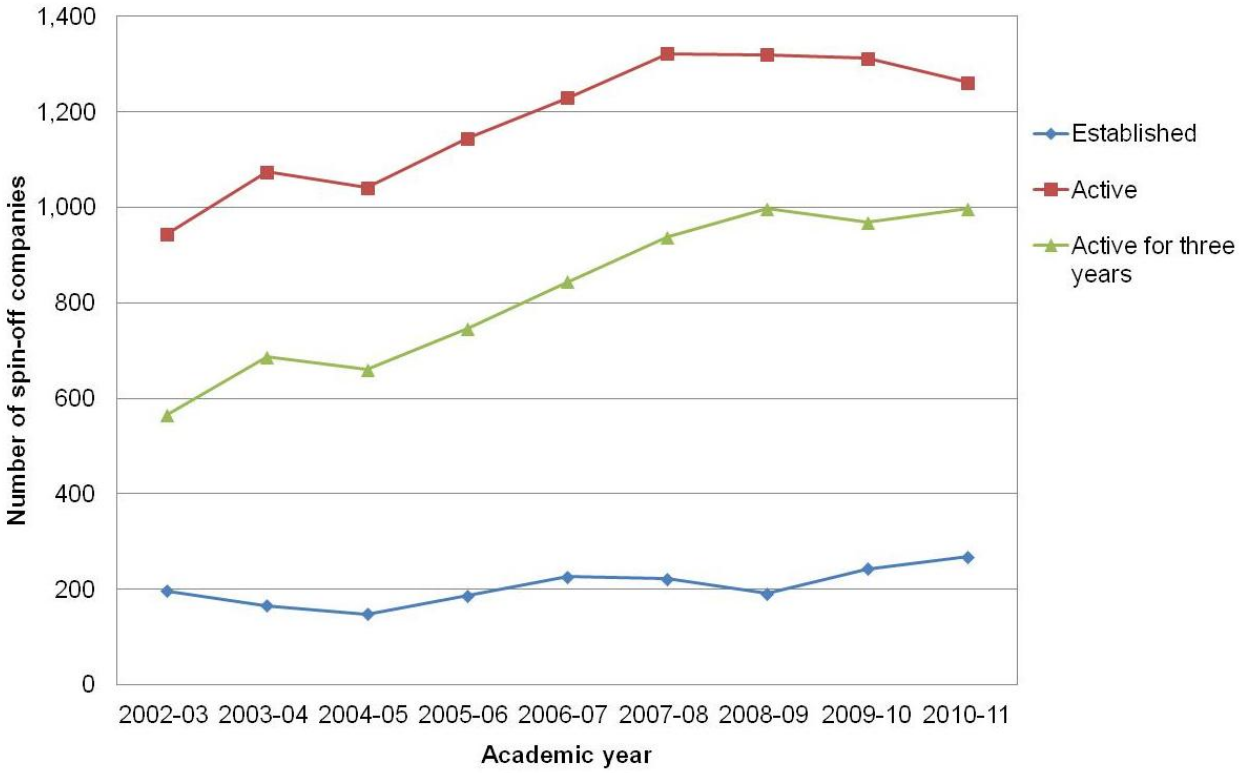
57. Although the licensing of new inventions to an established company is usually the most efficient way of exploiting IP, in some contexts (such as when there is a lack of suitable clients) creating a spin-off company is the best option. Spin-offs are unlikely ever to be the main option for exploiting 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.

58. Data are collected regarding formal spin-off companies based on IP where the HEI maintains some ownership – the majority of cases – and on those that are sold outright; this is useful to show the balance between these methods (Figure 12). 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 2010-11 data show an increase following a drop in the number of three year-old or older companies in 2009-10 (969 to 997), while the number of new companies formed rose by 9 per cent, from 246 to 268[12].

[12] Note that the majority of these companies will be formed on IP discovered long before the recession; economic turbulence and the non-linear process of exploitation of IP mean that no clear trend can be identified.

59. If we limit analysis to spin-offs with HEI ownership, then estimated turnover of companies has risen by 19 per cent from £742 million in 2009-10 to £918 million, and external investment has risen from £588 million to £783 million (33 per cent).

Figure 12 Spin-off companies formed 2003-04 to 200-011



Source: HE-BCI Part B Table 4d

60. In terms of enterprise, the setting up by HEI staff of start-up companies (new businesses not based specifically on IP) increased by 25 per cent since 2009-10. Start-ups surviving three or more years increased by 21 per cent, while employment increased by 26 per cent. However data on company formation are likely to be incomplete, so must be treated with caution. HEIs are still developing systems to capture data that do not exist within central systems because these businesses are external to the institution.

Social, community and cultural activities

61. HE-BCI looks at the commitment made by HEIs to public and community engagement by counting attendees at public events, such as dance, drama, performance, film and public lectures. Although attendance is an imperfect proxy, we find increases across the spectrum of public events reported to HE-BCI[13], for example:

a. Free public lectures have increased by 38 per cent in terms of attendees (to nearly 1.4 million in 2010-11) and 26 per cent in terms of academic time (to over 18,000 days).

[13] Note that these data are very difficult to collect consistently across the sector because they encompass a broad range of activities and are not directly used in funding.

b. Chargeable public lectures also increased (by 28 per cent in terms of attendees to around 163,000 and by 21 per cent in terms of staff time to 3,133 days).

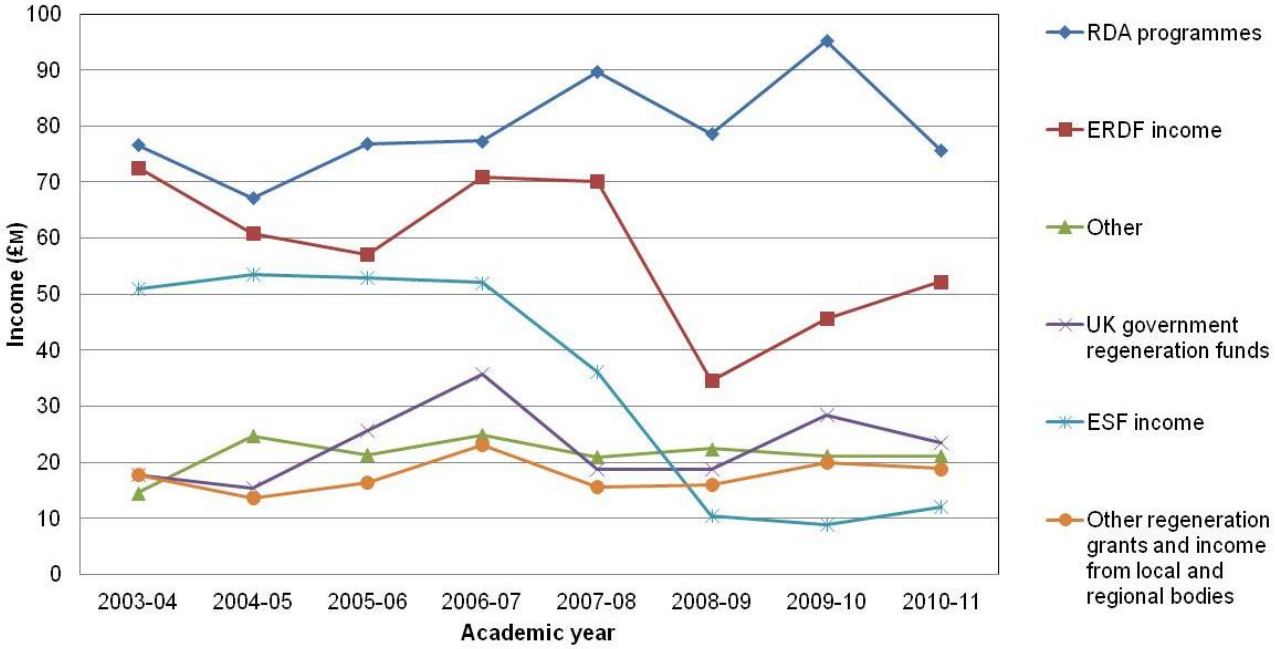
62. To illustrate the significant scale of HEI commitment to social, community and cultural activities: if we assume a basic academic consultancy rate of £500 per day, the value of the total academic time devoted to public events has risen from over £53 million in 2009-10 to nearly £55 million.

Regeneration

63. Regeneration activity covers a wide range of interactions from urban renewal to community development. UK HEIs have continued to respond to economic turbulence by, for example, offering reduced-cost training to newly redundant individuals, or advice and training to graduates entering the labour market. HEIs are also involved in large-scale European structural regeneration projects, providing the intellectual input to public services and programmes. The winding-down of RDAs in England will, of course, have a clear effect on this indicator, and it is also likely that the loss of such a significant stream of support will have broader effects across other KE activities.

64. Total income dropped from £214 million in 2009-10 to £203 million (a fall of 5 per cent). Figure 13 shows how spending by RDAs decreased: data in future years in England will likely be affected by changes in sub-national growth policy.

Figure 13 Regeneration income 2003-04 to 2010-11 (real terms)



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

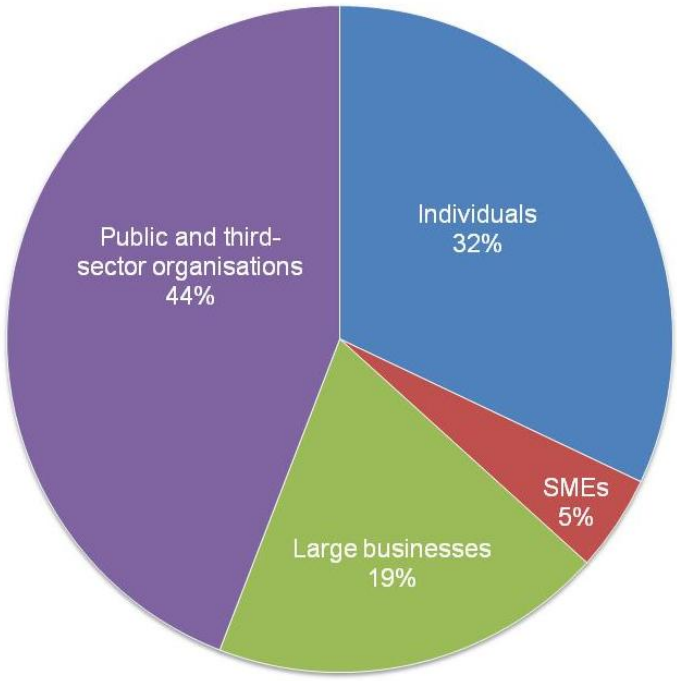
Education and continuing professional development

65. As KE activity is embedded in HEIs there are many opportunities to share infrastructure across different activities. 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. Graduate start-ups (defined as companies formed within two years of graduation which may or may not be IP-based) increased by 21 per cent to 2,848, while the number surviving three or more years rose by 34 per cent to 2,602. There were 87 new staff start-ups (a 34 per cent increase), bringing the total number to 328. These businesses employed 1, 370 full-time equivalent (FTE) people.

66. Some caution should be taken with figures related to enterprises. They are difficult for HEIs to track effectively because the data are only available where volunteered. It is also likely that some start-ups were formed as social enterprises. (HESA is considering further developments to the survey to capture data in the most useful way.)

67. 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, enabling students to retain a licence to practise or membership of a professional, statutory or regulatory body; other CPD is more task-focused, for instance 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 14 CPD and continuing education 2010-11



Source: HE-BCI Part B Table 2c

68. CPD income rose by 5 per cent overall from £579 million in 2009-10 to £606 million; 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 fell while large business and individuals spent more. Total ‘learner days’ of CPD and continuing education (which, it should be noted, are difficult to calculate accurately) fell by 7 per cent in 2010-11 to around 3.4 million. Further data will be needed to understand if this is a trend of fewer courses at higher prices, due to changes in accounting, or a tailing-off of support for business and the workforce during the 2008 credit crunch.

Annex A

Annex A is available as a separate Excel file alongside this publication at www.hefce.ac.uk/pubs/year/2012/201218/

Annex B IP-related international comparisons

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 2010-11 individualised institutional data are 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 (HE) 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 and expenditure as the most appropriate proxy for scale, because this information is available for both US and UK institutions, and is clearly linked to the value of available resources. Benchmarking is also difficult because definitions used may vary between the two surveys.

Table A Commercialisation activity in 2010-11 for the USA and UK within HEIs

	US universities AUTM survey	**UK HEIs Finance/HE-BCI survey**
Total research resource (£M)	33,849	6,364
IP income including sales of shares in spin-offs (£M)	1,142	69
IP income as percentage of total research resource	3.4%	1.1%
Spin-off companies formed	606	268
Research resource per spin-off (£M)	56	24
Patents granted	3,968	757
Research resource per patent (£M)	9	8
Industrial contribution (£M)	2,433	432
% industrial research	7.2%	6.8%
US cashed-in equity/UK Sale of spin-off shares (£M)	22	8
(Cashed-in equity/sale of spin-off shares) as a % total research resource	0.07%	0.13%

Guide to Table A data

3. Some caution must be taken when comparing the two sets of data, because the US AUTM survey and UK HESA Finance/HE-BCI survey are not identical, and 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 those companies with some HEI ownership and those 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 and other research income are spent on research. Data are taken from HESA Finance Statistics Return 2010-11, Table 6b: Income analysed by source. This income is taken as the available resource for 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 fiscal year 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 data on 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 recorded in 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. The number of US patents granted from the AUTM survey is compared with that of total patents granted from the UK HE-BCI survey.

11. The exchange rate used is the annual average spot exchange rate for 2009 from the Bank of England: $1.546 to £1.

Annex C

UK knowledge exchange context

England

1. 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 (KE). The long-term aim was to embed KE within HEIs' missions. Funding for KE is distinct from that for teaching and research, although KE itself builds upon both.

2. 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.

3. In 2009, we commissioned a thorough evaluation of our progress to date against the aims of our third-stream (HEROBC/HEIF) programme[14]. 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.

4. 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 had 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 to inform understanding of the links between funding inputs and outputs for different forms of KE.

5. Reflecting HEFCE's long-term intention to embed KE 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/whatwedo/kes/heif/.

Wales

6. The Welsh government's long term strategy for HE in Wales, 'For our Future', is underpinned by two key priorities – supporting a buoyant economy and delivering social justice. These priorities are also reflected in the Welsh government's new strategic agenda for science and innovation, 'Science for Wales' (which was published on 12 March 2012) and in its recent consultation on the development of a new innovation strategy, 'Innovation Wales'[15].

7. The Higher Education Funding Council for Wales commenced a new three year cycle of Innovation and Engagement Funding (IEF) in the academic year 2011-12, which

[14] '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).
[15] http://wales.gov.uk/docs/det/consultation/120430inovationstrategyen.pdf

provides all Welsh universities with formula funding to support their KE activities. IEF also supports a small number of collaborative KE projects for which funding was allocated on the basis of competitive bids. These collaborative projects include the following three pan-Wales projects in which all Welsh universities are involved:

a. Strategic Insight Programme, which fosters new HE-business interactions by providing academics with short-term placements in public, private or third sector organisations and vice-versa (placements for business or company representatives in HEIs).

b. Enterprise Support Programme, which aims to develop and encourage fledgling entrepreneurs from across the student body in Wales to realise their potential for creating new and innovative businesses, and feed into further support available from the Welsh government's Start-up Service.

c. Chongqing-Wales HE training Consortium, which is developing links between Welsh universities and businesses of all sizes in China's Chongqing province.

8. In 2012-13 Wales will be providing a total of £7.8 million via the IEF, which will continue to be deployed strategically alongside further support for the KE activities of Welsh HEIs provided directly by the Welsh government, including its major Academic Expertise for Business programme.

Scotland

9. The Scottish government published a pre-legislative paper in September 2011 entitled 'Putting Learners at the Centre: Delivering our Ambitions for Post-16 Education'[16]. This set out proposals for reforming the university, college and training sectors in Scotland, and encompasses the full spectrum of post-school activity, from community learning and development to high-level research.

10. One of the key aims of post-16 education reform is to maintain Scotland as a global leader in university research. The pre-legislative paper set out a number of proposals for achieving this. Work is under way on a number of these, including developing an integrated Scottish KE office, committing £10 million in 2012-13 to develop new Innovation Centres, and working with institutions to ensure that IP is made more readily available for free.

Northern Ireland

11. In Northern Ireland, third mission and KE activities are primarily promoted via the Northern Ireland Higher Education Innovation Fund (NI HEIF). The objective of NI HEIF is to encourage the HE 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.

[16] Scottish Government (2011) 'Putting Learners at the Centre: Delivering our Ambitions for Post-16 Education' www.scotland.gov.uk/Resource/Doc/357909/0120943.pdf

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

13. The funding for NI HEIF 3 has been maintained at £3 million per annum 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:

a. 20 per cent foundation funding split equally between the two institutions and focused on strategic longer-term planning.

b. 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.

14. This approach reflects wider UK Government policy which supports the establishment of permanent and predictable funding streams for university-based KE activities, thus allowing HEIs to plan and retain key staff.

15. 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 Northern Ireland.

12. In Northern Ireland, HEIF is complemented by the 'Connected' programme. This enables the HE and further education sectors to join together in order to identify and meet, in a coordinated and holistic fashion, the KE needs of businesses in particular, and also the wider community.

16. Further information on Connected is available at www.connected.ni.org.

List of abbreviations

AUTM	Association of University Technology Managers
BIS	Department for Business, Innovation and Skills
CE	Continuing education
CPD	Continuing professional development
HE	Higher education
HE-BCI	Higher Education-Business and Community Interaction (Survey)
HEFCE	Higher Education Funding Council for England
HEFCW	Higher Education Funding Council for Wales
HEI	Higher education institution
HEIF	Higher Education Innovation Funding
HEROBC	Higher Education Reach-out to Business and the Community
HESA	Higher Education Statistics Agency
IEF	Innovation and Engagement Fund
IP	Intellectual property
KE	Knowledge exchange
NI HEIF	Northern Ireland Higher Education Innovation Fund
PACEC	Public and Corporate Economic Consultants
RDA	Regional Development Agency
SIC	Standard Industrial Classification
SME	Small and medium-sized enterprise