

**HIGHER EDUCATION  
BUSINESS INTERACTION  
SURVEY**

**Academic Session 2001/2002**

**Results for Scotland**



Based on data from a survey undertaken by the Higher Education Council for England on behalf of a group of stakeholders including the Scottish Higher Education Funding Council and the Scottish Executive.

## Higher Education – Business Interaction Survey 2001-2002

### Results for Scotland

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## Summary

1. The Higher Education Business Interaction Survey is undertaken annually across the UK Higher Education Sector to collect data on the institutions' strategies and activities pursued during the previous academic year to commercialise knowledge. The Scottish results highlighted in this report are based on responses by 19 Scottish Higher Education Institutions<sup>i</sup> for 2001-02.

2. In 2001-02, as in previous years, Scotland has, according to the survey, been generally more active in knowledge transfer than the UK as a whole. This is due to a combination of three factors:

- Relative to its population Scotland has more Higher Education Institutions (HEIs) and a commensurate higher level of research funding
- Scottish HEIs tend to have a medium or higher Research Profile (RP), measured by their share of research funding relative to total funding
- Individual Scottish institutions are more active on some of the indicators.

3. Second only to the provision of education, Scottish institutions mentioned knowledge transfer as the area through which they make their greatest contribution to economic development, particularly in the areas of medical science & technology, biotechnology and information & communications technology.

4. During 2001-02, Scottish Higher Education Institutions (HEIs):

- signed 967 contracts with businesses, 9% of the UK total<sup>ii</sup> and similar to the previous year, with an average value of just over £40,000
- held 102 CASE (Cooperative Awards in Science and Engineering) awards, only 5% of the UK total
- provided equipment-related services to industry (16 HEIs), involving 443 firms, 7% of all UK firms involved; the value of these contracts was £20 million, 39% of the UK total
- filed 167 new patent applications, 17% of the UK total compared to 12% during the previous year
- had 42 patents granted, 21% of the UK total (previously 12%)
- executed 102 licences, 17% of the UK total, compared to 107 licences (14%) in the previous year
- provided consultancy to 977 firms, averaging 51 firms per institution, compared to 115 consultancies on average per UK institution
- created 23 spin-off companies with some HEI ownership, 12 % of the UK total, 8 fewer than in the previous year
- contributed intellectual property to 34 other known spin-offs and start-ups, 9% of the UK total (31 in the previous year)
- placed 11,293 undergraduates in businesses, 9% of the UK total, compared to 13,289 placements in 2000-01.

5. In response to a question on barriers to commercialisation institutions mentioned lack of resources, including resources from the private sector, lack of demand for intellectual property by the local economy and lack of IPR-related commercial skills among local businesses.

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<sup>i</sup> The Scottish Agricultural College submitted a questionnaire but was excluded from the analysis, because its funding arrangements and specific remit are different from the rest of the sector.

<sup>ii</sup> Here and below this means the total for the UK higher education sector

## **Introduction**

The third Higher Education – Business Interaction Survey (HE-BI) was undertaken during 2003, to cover the academic session 2001-02. The survey was undertaken by the Higher Education Funding Council for England (HEFCE) on behalf of a stakeholder group including the Scottish Higher Education Funding Council (SHEFC) and the Scottish Executive (SE) as well as the other UK funding councils and a number of UK government bodies (Appendix IV).

The UK report can be found at <http://www.hefce.ac.uk/> under ‘Publications’.

### ***Previous surveys***

The SE undertook a survey prior to this for the academic session 1998/99. The key results of that report can be found in the Scottish Economic Report January 2002 (<http://www.scotland.gov.uk/library3/finance/ser5-11.asp>).

The results for 1999-00 are contained in the following statistics note: (<http://www.scotland.gov.uk/about/ELLD/EI/00016585/annex2excel.xlsScotland>).

These were not included in this years report as, due to increased reporting and understanding of the questionnaire by the HEIs, the results for 1999-00 would not provide a meaningful comparison.

A report on the results for the academic year 2000-01 can be found at <http://www.scotland.gov.uk/about/ELLD/EI/00016585/Summary.aspx>

### ***Data collection***

The questionnaire used for last year’s HE-BI survey (academic session 2000-01) was used substantially unchanged this year, to enable direct comparison between the years.<sup>iii</sup> This helps establish the development of an annual information request which allows trends in interaction of HEIs with Business to be readily identified.

This UK-wide survey achieved a 98% response rate in 2002 and improved this year to achieve 100% response rate. Scotland has maintained a 100% response rate over the three years of the survey. In the UK 164 institutions responded of which 19 were Scottish. To aid comparison responses by institutions that became HEIs in August 2001 have been added to last year’s data (they had been excluded from the 2000/01 published analysis). This means that 2000/01 data are based on responses from 160 institutions, 18 of them Scottish. UK institutions have again made progress in providing fuller responses to questionnaires. These changes should be considered when UK comparisons are being made as some changes in the UK figures may actually be due to more complete or more accurate reporting. The report notes where the results are particularly affected in that way.

Due to improvements in data collection systems within HEIs, they were able to provide more accurate figures for 2000-01 in addition to 2001-02 data. These minor revisions have been

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<sup>iii</sup> Specific alterations made are (i) the addition of the business sector ‘Creative & Cultural Industries’ as a category in Question A3, (ii) more definition given to Question D3 to enable greater understanding of the question and (iii) a detailed definition of Spin-off firms is provided before Questions E1-E3.

incorporated into this report, such that a few figures for 2000-01 may vary slightly from that reported last year.

This report summarises the responses to the most significant questions by Scottish institutions, following the sequence of the questionnaire. The HEIs participating are listed in Appendix I, the responses to each question, for the UK and Scotland, are detailed in Appendix II, the abbreviations used within this report are described in Appendix III and members of the Stakeholders Group are provided in Appendix IV.

### ***The Scottish Agricultural College***

The Scottish Agricultural College (SAC) was included in the survey for 2001/02, but has been excluded from the analysis. Funded by the Scottish Executive rather than SHEFC, and with a specific remit to provide advice services to farmers and rural businesses, SAC operates differently from other UK HEIs. The number of clients to which knowledge is transferred is consequently very high (over 10,000 according to the website). Including its data would entirely mask the data of institutions with less developed knowledge transfer activity.

### ***Research Profile***

The UK report divides institutions into three equal groups, higher, medium and lower research profiles, determined by the importance of research income relative to total income. Only 3 of the 19 Scottish institutions have a lower research profile, whereas there were 9 with a medium and 7 with a higher research profile. Institutions with a lower research profile are therefore under-represented in Scotland and those with a medium profile are over-represented. This may explain some of the differences between Scotland and the UK as a whole.

### ***Scotland compared to the UK***

On several measures Scotland is better served by HEIs than the UK as a whole: even excluding the Scottish Agricultural College 11.6% of all UK institutions are Scottish, receiving 11.6% of all UK research income (i.e. directly funded by the Funding Councils and Research Councils) and 11.2% of all UK total income. This despite Scotland representing only 8.5% of the UK population in 2002. Some of the UK comparisons, therefore, partly reflect the better provision of Higher Education in Scotland, rather than the better performance of individual institutions.

## Section A: Institutional Strategy and Economic Development

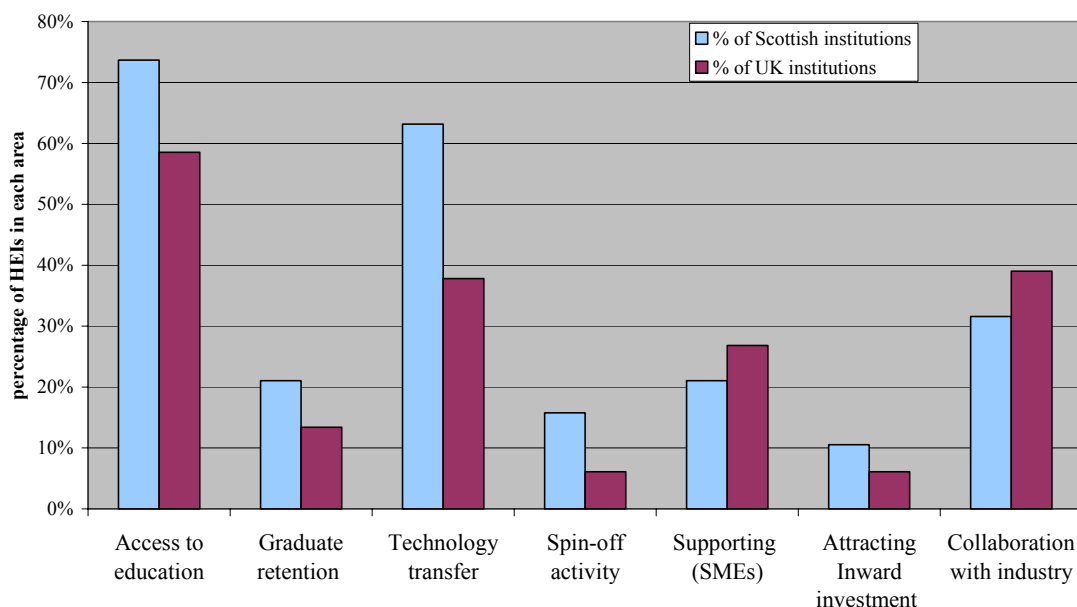
Data obtained for Section A questions reflect the institutions' own assessment of policies and priorities with regards to working with business and other partnerships. This provides an insight into the sector's perceptions of the compatibility of the institutions' own aims and capabilities with the expectations of funding bodies and business partners.

### A1. In what areas do you see the HEI as a whole making the greatest contribution to economic development?

Institutions were asked to pick the three most important areas in which they felt they made the greatest contribution to economic development. Chart 1 illustrates that access to education, technology transfer and research collaboration with industry remain the top three areas in both Scotland and the UK. Access to education replaced technology transfer as the principal area for Scottish HEIs (mentioned by 74% in 2001-02 compared to 61% in 2000-01), as it is in UK overall (59% in 2001-02). Technology transfer continued to be prioritised much more highly by Scottish institutions (63%) than the UK as a whole (38%). Scotland's higher priority for this objective may be influenced, slightly, by the under-representation of lower research profile (RP) HEIs (i.e. 3 in Scotland compared to the expected 6), but the main contributing factor is likely to be awareness of the specific Knowledge Transfer Grant provided by SHEFC.

Chart 1

#### In what area does the HEI see itself as making the greatest contribution to economic development? 2001/2002



### A2. Does the HEI have a strategic plan for business support? Please indicate on a scale from 1-5 which of the following statements most closely accords with your state of implementation in 2001-2002.

The upward trend of Scottish institutions developing more comprehensive strategic plans has continued for 2001-02, with 63% ranking in the top two scores of the benchmark (Appendix II, Question A2, Answers 4 & 5). This is very similar to the figure for UK institutions.

### A3. Does the HEI set out to work more closely with particular business sectors or clusters?

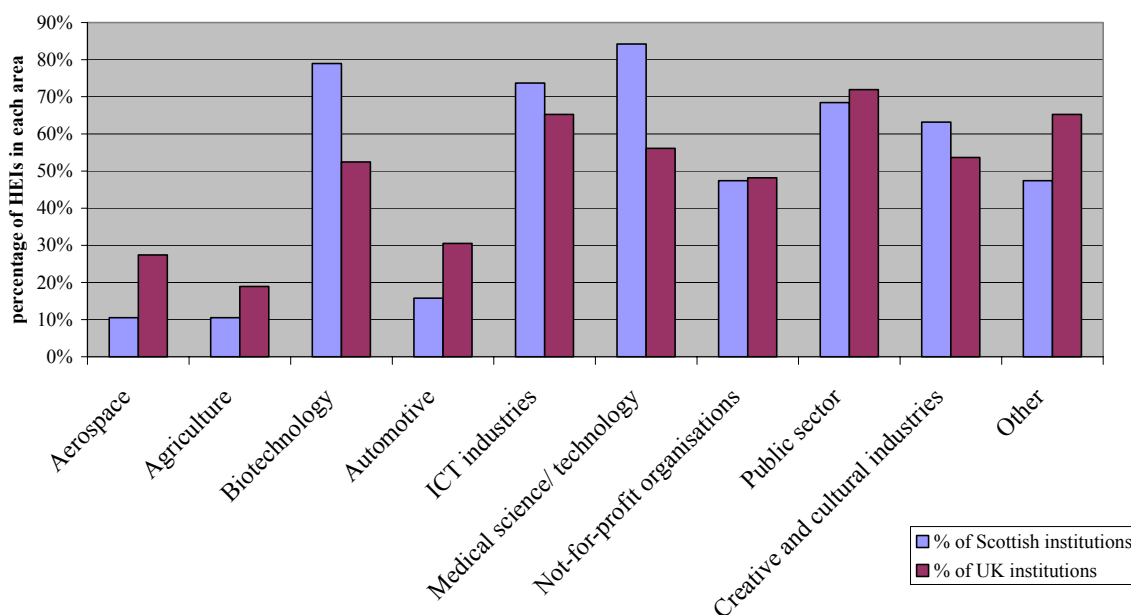
As Chart 2 shows Scottish HEIs continued to have in 2001-02 a higher focus on the medical science / technology sector (84%), biotechnology companies (79%) and information & communication technology (ICT) industries (74%), in comparison to UK (56%, 52%, 65%, respectively). Institutions with a higher and medium RP tend to rate these science and technology sectors more highly. This may explain, in part, why Scotland appears to concentrate more on these clusters, as a higher proportion of institutions in Scotland have a medium or higher RP. The public sector, cited most often by HEIs in the UK (72%), is also important to Scottish HEIs (68%).

‘Creative and cultural industries’ was introduced as a new category in this year’s questionnaire. Again, a high proportion of Scottish HEIs set out to work with this business cluster (63% compared to 54% in UK). This sector works in particular with medium and lower RP institutions. In addition, almost half of Scottish HEIs (47%) reported actively seeking to work closely with not-for-profit organisations and with business from ‘Other’ Sectors. Analysis of the responses to the ‘Other’ section highlighted health/healthcare, environment and, to a lesser extent, sport and media as other possible sectors of interest to UK HEIs.

Overall Scottish institutions seem interested in working with business across a wide range of sectors, with the only exceptions being, as in 2000-01, aerospace, agriculture and automotive sectors. This could be related to the low amount of Research & Development (R&D) undertaken by these business sectors in Scotland. Note that the Scottish Agricultural College, which specialises in giving advice to farmers and agricultural businesses, is not included in the analysis.

**Chart 2**

**Does the HEI set out to work more closely with particular business sectors or clusters? 2001/2002**



**A4. If you answered question A3, please indicate how these priority sectors were determined.**

The area of an HEIs expertise was the primary determinant of which sectors were prioritised in both Scotland (84%) and the UK (90%). Responding to demand, from companies, was also considered highly relevant (68% in both Scotland and UK) by institutions. The number of Scottish HEIs that complied with economic development agencies' regional strategies and who individually identified important regional clusters increased to 47% in 2001-02, from 39% and 33%, respectively, in 2000-01.

**A5. Is the HEI involved in the development and implementation of regional skills strategies in terms of the provision of expertise and data and the involvement of senior HE staff in regional partnerships?**

The majority of both Scottish (58%) and UK (67%) HEIs regard themselves as promoting significant participation by senior HE staff in industrial collaborations and as having removed significant barriers to collaboration (Appendix II, Question A5, Answers 4 & 5).

**A6. Is there business representation on your governing body?**

The number of members on HEIs' governing bodies and the representation from business have remained relatively constant across Scotland. Like in the UK as a whole around 35% of governors of Scottish institutions are from business.

**A7. Which of the following regional/local/other units is of greatest priority in your institution's mission?**

As for the UK in general, government administrative regions and HEI-defined regions were of greatest priority to Scottish institutions (both cited by 42% of Scottish HEIs). There appeared to be no variation across RPs.

Local authority areas or the city/town were still more important to Scottish HEIs (16%) compared to institutions in the UK as a whole (9%) in 2001-02, though to a slightly lesser extent than reported in 2000-01.

**A8. How would you rate the level of incentives for your staff to engage with industry and commerce?**

As in the previous survey the majority of Scottish HEIs believe they provided incentives for staff to engage with commerce and industry. 74% of Scottish institutions, compared to only 51% in the UK, are of the opinion that staff are encouraged to engage extensively in collaboration with industry and that any obstructions have been removed (Appendix II, Question A8, Answers 4 & 5).

## **Section B: Collaborative Research with Business**

### **B1. What was the HEI's income from public-funded collaborative research grants involving business co-funding or formal collaboration?**

Data on collaborative research remain prone to validation concerns due to their complex nature and the diverse range of data capture systems in the HE sector.

### **B2. Approximately how many contracts with businesses were signed during 2001-02 and what was the total value? How many and what was the value of contracts with SMEs?**

The proportion of UK HEI contracts with business signed by Scottish HEIs remained constant in 2001-02 (9%; 967 contracts). The number signed with small and medium-sized enterprises (SMEs) continued to remain very low (2% of UK total; 56 contracts). This may be partially explained by (i) errors in HEI estimates of their business partners' size and (ii) the fact a higher proportion (about two thirds) of contracts of lower-RP HEIs are with SMEs. It is therefore advisable that these figures are treated with caution.

The average value of the contracts was £40,500, about 37% more than the UK average, giving Scotland 12% of total UK contract income.

### **B3. How many CASE awards did the HEI hold (number of students funded) and for how many was the partner in the same region?**

The number of Scottish CASE awards was 102; this represent just over 5% of the UK total. Very few of these were with partners in the same region.

### **B4. What were the numbers of Teaching Company Programmes and Teaching Company Associates, and what proportion were with firms within the same region?**

The number of Teaching Company Programmes and Teaching Company Associates initiated by Scottish HEIs continued to be in line with UK results for 2001-02. A greater proportion were with partners in the same region (80%) in 2001-02 (compared to 51% in 2000-01), which is comparable with the UK figure (75%).

### **B5. Does the HEI provide equipment-related services for industry, such as analysis, measurement and testing?**

Sixteen of the 19 Scottish institutions provided such services, a higher proportion than in the UK as a whole. However the number of firms involved was relatively low (7% of the UK total; 443 firms). Because of services to the offshore industry the value of such contracts is high, £20 million, 39% of the total UK income from such services.

## C: Intellectual Property

### C1. & C2. Do you monitor the number of invention disclosures made each year? If yes, how many disclosures have been made in the last year?

Scottish HEIs continue to monitor the number of invention disclosures more closely than UK HEIs (84% and 70%, respectively), with a similar number of disclosures reported for 2001-02 (306; 12% of UK total) as there was in 2000-01 (302; 14% of UK total).

### C3. Does the HEI exert ownership over intellectual property (IP) by filing patents?

Scottish HEIs continued to file patents as their principal method of exerting ownership over intellectual property (84%) more so than UK HEIs (67%). Higher and medium RP HEIs, which make up 84% of Scottish institutions, seem more predisposed to file patents, possibly explaining the better performance of Scotland in this area. Of these institutions the majority use an external organisation to do so on their behalf (67%).

### C4. How many patents have been filed by or on behalf of the HEI in the last year?

Alterations were made to the text of this question to provide greater clarity as there had been validation and definition concerns with the responses to the 2002 Survey. This has resulted in more reliable figures for 2001-02, but raises issues as to whether comparisons can be made between the years.

As the table shows, Scottish institutions used patents more actively than the UK in general. The number of cumulative patent actions (filed or granted) represent 17% of the UK total (2000-01: 22%), 17% of all new patents were filed in Scotland (2000-01: 12%) and 21% of all patents were granted to Scottish institutions (2000-01: 12%). The last figure is probably more indicative of HEI activity from 4 - 5 years prior to 2001-02. This partly reflects the fact that Scottish institutions tend to be in the middle or upper range of the Research Profile.

Patent Activity	Scotland 2001-02	UK 2001-02	Scotland 2000-01
Cumulative number of patent actions	325	1,907	334
as % of UK	17%	100%	22%
average per institution	17	12	19
New patents filed	167	967	104
as % of UK	17%	100%	12%
Average per institution	9	6	6
Patents granted	42	199	30
as % of the UK	21%	100%	12%
average per institution	2.2	1.2	1.7

### C5. Does the HEI have an in-house capability to seek out licensing opportunities for its IP, or does it use an external agency?

15 of the 18 Scottish HEIs that seek out licensing opportunities for their IP reported having an in-house capability.

**C6. How many licences/options have been executed on the basis of HEI-owned intellectual property over the last year?**

The number of licences executed by Scottish HEIs dropped slightly for 2001-02 (102 licences) compared to 2000-01 (107). However, since the UK figure also dropped from the previous academic year Scottish executed licences represent a greater proportion of the UK total for 2001-02 (17%) than they did in 2000-01 (14%). Of non-software licences Scottish HEIs granted 13% of the UK total. The percentage of licences granted to overseas enterprises was again particularly high in Scotland; around 45% in both 2000-01 and 2001-02.

**C7. & C8. What have been the total revenues from IP in 2001-02? And what were the total costs of IP protection activities in 2001-02?**

There are still some concerns regarding the quality of this data, although it is more reliable now than in previous years. The total revenue from intellectual property commercialisation activities in 2001-02 in Scottish HEIs was £9.9m, excluding income from equipment-related services. This is 30% of the UK total and a two-fold increase on Scottish HEIs revenue in 2000-01. The cost to protect intellectual property was reported as £1.6m, 13% of UK total.

**C9. Is there a requirement within the HEI to report the creation of the following types of intellectual property?**

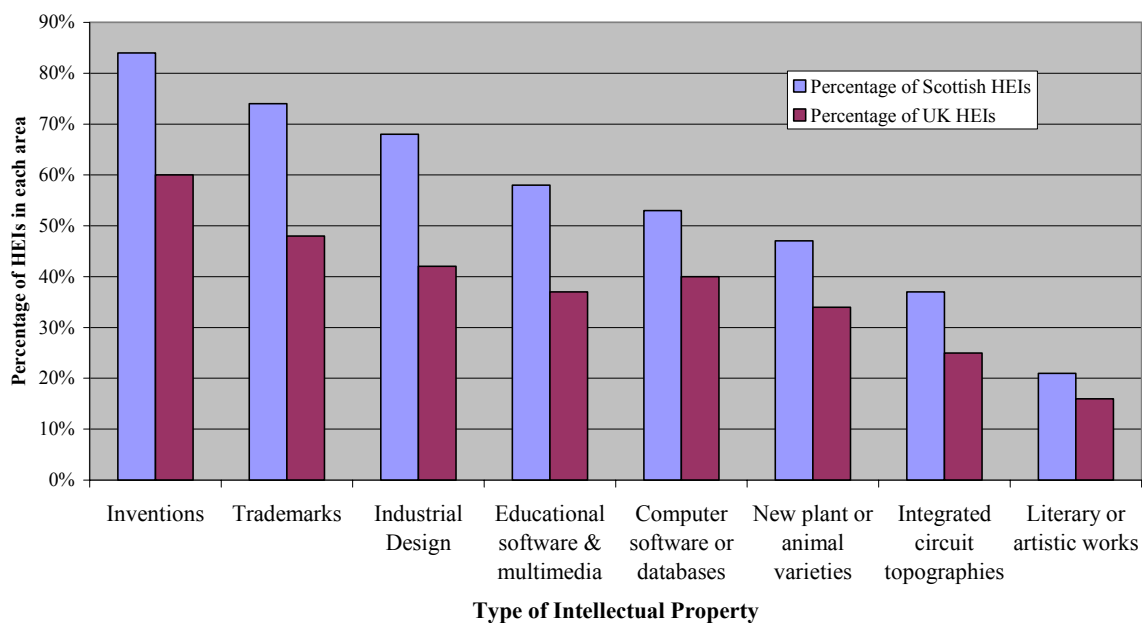
Overall, Scottish HEIs have continued to maintain disclosures of IP across a broad spectrum. There is still higher demand on Scottish HEIs staff to report the creation of intellectual property compared to the UK as a whole, despite increasing numbers of disclosures across the UK:

<b>Intellectual Property requiring disclosure</b>	<b>Percentage of Scottish HEIs</b>	<b>Percentage of UK HEIs</b>
Inventions	84%	60%
Trademarks	74%	48%
Industrial Design	68%	42%
Educational software & multimedia	58%	37%
Computer software or databases	53%	40%
New plant or animal varieties	47%	34%
Integrated circuit topographies	37%	25%
Literary or artistic works	21%	16%

These results indicate that Scotland is performing well in identifying IP as it is created – see Chart 3.

Chart 3

**Percentage of HEIs where IP is required to be disclosed,  
Scotland and UK**



**C10. Are individuals rewarded by the institution for their intellectual property?**

Most of Scotland's HEIs continued to reward individuals for their intellectual property in 2001-02 (89%), similar to the previous year. The percentage of UK institutions rewarding individuals was lower (69%).

## **Section D: Consulting Activities**

### **D1. Does the HEI have a central dedicated unit which provides the following?**

Consultancy activity is a further valuable indicator of the intensity of knowledge exchange, usually paid for at the market rate. There has been little change in the administration of consulting activities in Scotland, although elsewhere in the UK these activities are more centrally organised in 2001-02 than during the preceding academic year.

Scottish institutions are less likely than UK HEIs to provide an enquiry point for SMEs (68% of Scottish institutions) and assistance to SMEs in specifying their needs. They are more likely to require use of a contracting system for all staff-business consulting activities and provide indemnity insurance for staff.

### **D2 and D3. How many firms have been assisted through consulting activities and what percentage have been based in the region? What was the total income from consulting handled through formal HEI channels?**

There has been a 30% decline in the number of firms assisted through consultancy by Scottish HEIs, falling from 1,391 firms in 2000-01 to 977 firms in 2001-02, which represents only 5% of all firms assisted by UK HEIs. On average 51 firms were assisted by each Scottish HEI compared to more than twice as many, 115 firms, per UK HEI. This may reflect the lower R&D<sup>iv</sup> spending of Scottish businesses relative to that in the UK.

The number of contracts from consulting activity handled through formal channels has however remained stable (1,627 in 2001-02 compared to 1,605 for 2000-01), and the total income of these activities increased by half to £15.4 million, representing 13% of the UK total for 2001-02 compared to 10% in 2000-01.

### **D4. Does the HEI have a commercialisation company or department to manage consulting links and other external interactions?**

The majority of Scottish HEIs continued to have an internal commercialisation department to manage consulting links and other external interaction. 15 of the 19 responding Scottish HEIs (79%) have an internal department in comparison to 74% of UK HEIs. Even though the UK as a whole has increased the number of internal departments, it still tends to make more use of external exploitation companies than Scottish HEIs (41% and 26%, respectively).

### **D5. How many staff are employed in commercialisation and industrial liaison offices?**

The number of commercialisation staff has increased in Scotland from 169 (2000-01) to 190 (2001-02). This upward trend has been present across the whole of the UK, and the Scottish staff represents 10% of the UK total.

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<sup>iv</sup> Business Enterprise R&D in Scotland - SE Report (Aug 2003)  
<http://www.scotland.gov.uk/library5/enterprise/berd01-00.asp>

## Section E: Spin-off firms

This chapter examines the establishment of new enterprises created by the HEIs or by HEI graduates or employees on the basis of intellectual property and knowledge arising from academic research. The questionnaire attempts to obtain information about four of the numerous arrangements that may exist:

- i. Spin-off firms established using HEI intellectual property with some element of HEI ownership
- ii. Spin-off companies to which the HEI has assigned or licensed IP, but in which it has no equity
- iii. Start-up companies involving current or former HEI staff as founders where the HEI has neither ownership nor an IP agreement. (In this case the HEI staff must be connected to the HEI immediately prior to formation of the company)
- iv. Graduate start-up companies that have originated through the direct involvement of the HEI or through a dedicated graduate start-up programme.

It is difficult for HEIs to report accurately on spin-off firms as they do not directly manage and/or own the specified companies. It is possible that graduates or employees may have utilised HEI intellectual property without the informal involvement or even knowledge of the HEI. This latter group would be omitted from this survey

Comparison of 2001-02 data with that of 2000-01 suggests that the UK figures have previously been unreliable, as all categories of spin-off, with the exception of graduate start-ups, showed a decline in numbers. The Scotland figures, on the other hand, have been more reliable over the last three years of the survey. Changes with respect to the UK as a whole should therefore be treated with caution as they may only be reflecting improvements in data capture.

**Table E1: Number of new enterprises established using HEI intellectual for the academic years 2000-01 & 2001-02. UK figures are shown in brackets.**

<b>Type of spin-off or start-up established</b>	<b>2001-02</b>	<b>2000-01</b>
i. Spin-offs with some HEI ownership	23 (199)	31 (220)
ii. Formal spin-offs, not HEI-owned	1 (14)	6 (28)
iii. Staff start-ups	1 (35)	5 (60)
iv. Graduate start-ups	32 (337)	20 (238)
<b><i>Total No of spin-offs and start-ups</i></b>	<b><i>57 (585)</i></b>	<b><i>62 (546)</i></b>

The total number of spin-offs/start-ups from Scottish HEIs in the four categories examined was 57 (10% of the UK total) in 2001-02 compared to 62 (11% of the total) in 2000-01. Chart 4 contains the average number of spin-outs and start-ups per institution.

Although, the number of spin-offs with HEI equity decreased to 23 in 2001-02, this still contributed 12% of the UK total, 2 percentage points less than in 2000-01. The percentage reflects the higher number of HEIs in Scotland, relative to population. The category of HEI owned spin-offs is probably reported most accurately by HEIs. These spin-off firms have

continued to thrive with 58 still active and surviving at least three years, representing 13% of the UK total (14% in 2000-01).

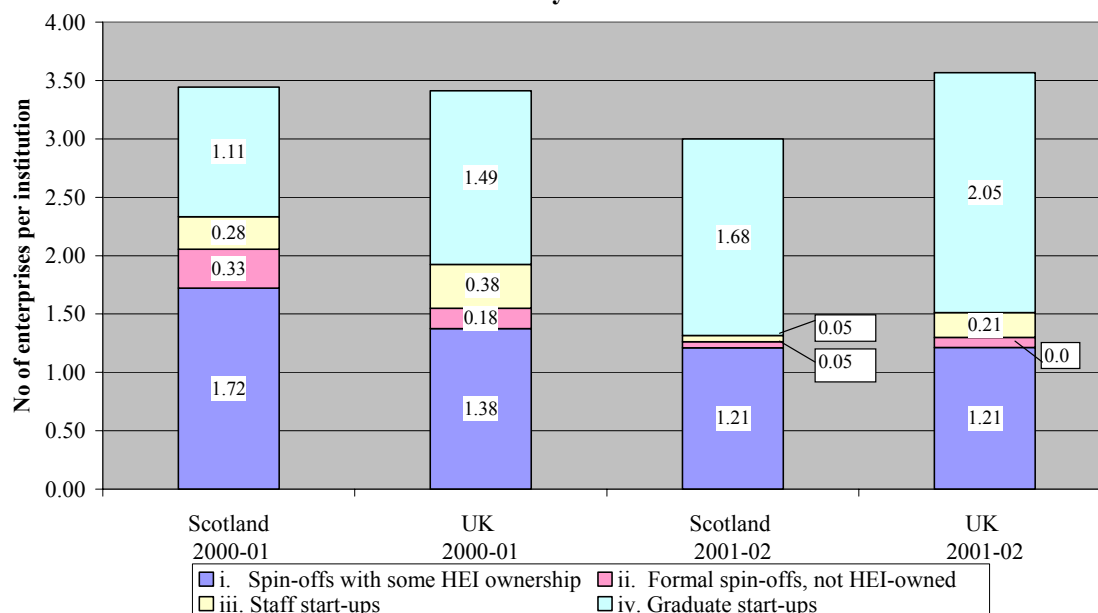
Staff start-ups and non-owned formal spin-offs continued to remain low in Scottish HEIs contributing only 3% and 7% of the UK total, respectively. Although still below average within the UK, the number of graduate start-ups (20) has improved marginally as a percentage of the UK total compared to that reported in 2000-01 (10% and 8%, respectively). There has been an increase in the number of successful graduate and staff spin-offs/start-ups (surviving at least 3 years) from 7 in 2000-01 to 21 in 2001-02, representing 5% of the UK total.

Formal spin-offs without HEI ownership seem to have been less successful in 2001-02, with only 4 (7% of UK total) reported in this category compared to 11 (19% of UK total) the previous year. It should be noted that data for this category will be the most difficult for HEIs to obtain.

These companies combined have increased their number of employees in Scotland from 931 in 2000-01 to 1,397 in 2001-02 (9% of the UK employment in these areas). The mean figures for start-ups and spin-offs per institution are shown in Figure E1. The overall estimated turnover of these spin-off companies rose from £20.3 million in 2000-01 to £34.2 million in 2001-02, 11% of the UK total. The HEI-owned spin-offs income reduced by just over £2 million to £18 million, 7% of the UK total, and all other categories improved greatly. This may be due to the increased quality of the data or a reflection that the surviving companies have also been expanding in size and profit.

**Chart 4**

**Number of new enterprises established per institution using HEI intellectual property for the academic years 2000-01 & 2001-02**



**E2. What has been the income to the HEI from the sale of shares in spin-off companies during 2001-02?**

The income reported from the sale of spin-off shares has been insignificant (£10,000) in Scotland.

**E3. Does the HEI provide support for spin-offs through the following mechanisms, either provided by the HEI or in collaboration with a partner organisation?**

Overall there has been little change in support provided by HEIs to spin-offs. Scotland still shows strong support in comparison to the UK as a whole. The number of Scottish HEIs providing on-campus incubators to business has decreased from 11 in 2000-01 to 10 in 2001-02 while the number providing incubators in the locality has gone up from 8 to 12. Science park accommodation is used much more frequently in Scotland compared to the UK as a whole – 12 of the 19 institutions provide this.

The table below shows the kind of support HEIs are offering.

<b>Percentage of institutions providing (self or through partner)</b>	<b>Scotland</b>	<b>UK</b>
<b>2001-02:</b>		
On-campus incubators	53%	50%
Other incubators in the locality	63%	52%
Science park accommodation	63%	37%
Entrepreneurship training	84%	73%
Seed corn investment	79%	60%
Venture capital	68%	49%
Business advice	84%	82%

## Section F: Training and Personnel Links

### F1. To what extent does the HEI monitor skills needs and sectoral change through labour market intelligence (LMI) and take this into account in planning provision?

In 2000-01 Scottish HEIs had used LMI less intensively than the rest of the UK for planning of provision (28% compared to 39% in the UK). In 2001-02, there has been an increase in strategic development in Scotland with 42% of HEIs employing a monitoring system that was sophisticated or close to that (Appendix II, Question F1, Answers 4 & 5), which is closer to the UK figure of 48%.

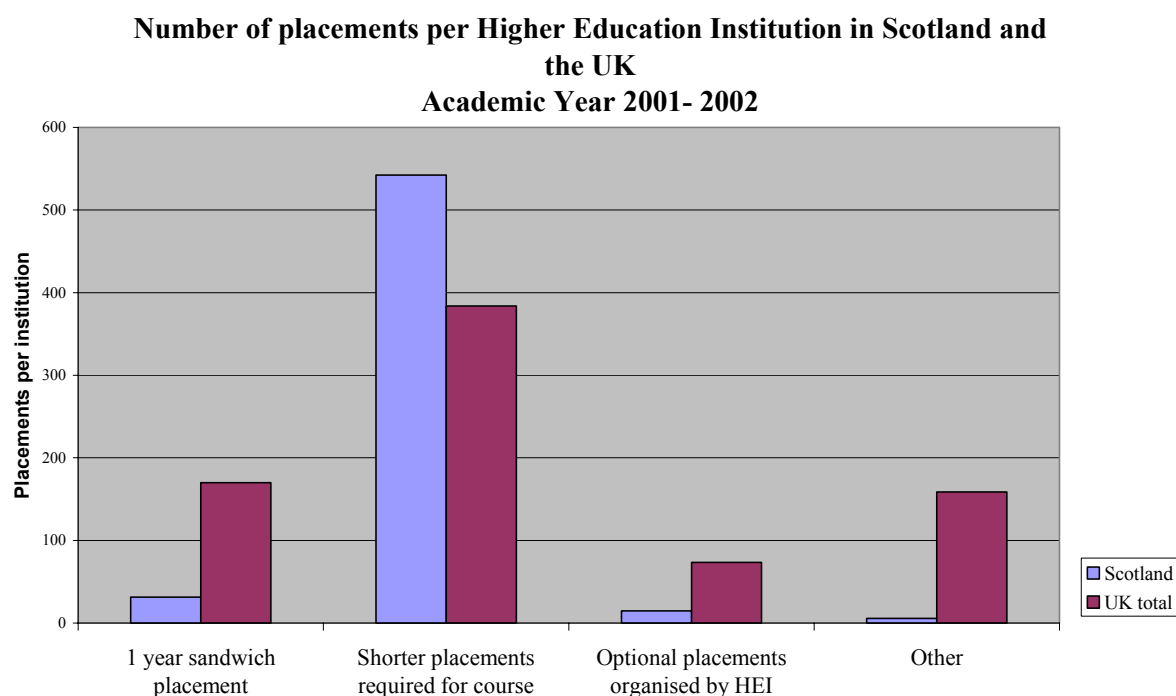
### F2. To what extent do individual courses actively involve employers in the development of content and regular reviewing of the curriculum?

As with LMI, there was an increase, although more marginal, in the number of Scottish HEIs, from 56% (2000-01) to 63% (2001-02), who regularly consult with business on the development & review of relevant curriculum (Appendix II, Question F2, Answers 4 & 5), which is similar to the percentage of UK HEIs with this sort of activity (68%).

### F3. How many undergraduates undertake placements in business?

Overall, fewer placements were provided by Scottish institutions in 2001-02 (11 293) than reported for 2000-01 (13,289, revised figure). This represents a decrease in Scotland's provision of work-based learning as a proportion of the UK total (9% for 2001-02 compared to 13% for 2000-01). There was a small rise in the number of mandatory, short courses offered from 9,942 to 10,303, representing 16% of the UK provision. All other placements saw a marked decline. The average number of undergraduates per institution undertaking placements is shown in Chart 5.

Chart 5



**F4. How are these placements organised?**

Only one Scottish institution organises placements centrally. In all others the individual department or school organises placements. Over half of institutions also allow ad-hoc arrangements by students with businesses. UK institutions use arrangement by a central department or the careers service much more frequently than in Scotland (30% using a central department).

**F5. Does your institution provide the following courses? If so, what was the full-time equivalent (FTE) number of students/participants and what was the total revenue?**

Distance learning for businesses and continuous work-based learning do not tend to be offered by Scottish institutions. Bespoke courses for businesses are less important in Scotland than the UK. Use of bespoke courses at companies' premises is on a par with the UK.

## **Section G: Support for Economic Development Activity**

**G1 and G2. Has the HEI received funding from any of the following programmes in 2001-02? What was your income from various regeneration and regional development programmes in 2001-02?**

Over half of Scotland's institutions have made use of the European Regional Development Fund or the European Social Fund. A third used funding from other EU Community Initiatives or other local or national economic development programmes. The income from these sources, however, was low in Scotland, only reaching 3% of the UK total for ERDF and ESF and 7% for other regeneration grants.

**G3. What role do these programmes play for the HEI? (Please tick the three most important roles only)**

HEIs in Scotland and the UK as a whole saw the role of these programmes in a similar light, except that Scottish HEIs pointed out the role of building strategic links with local industry more often.

**G4. Which of the following statements best describes your partnership arrangements with local and regional bodies? (Please grade your institution on the following scale from 1-5)**

58% of Scottish Higher Education Institutions responded that their partnership arrangements with local and regional bodies are close to being described as "active and creative" with the HEI taking "a leadership position" (codes 4 and 5 of Question G4), that is ten percentage points more than in the previous year. However, 69% of UK institutions felt that their partnership arrangements had reached an equivalent mature status, an improvement by 8 percentage points.

## Section H: Barriers

### H4. Please outline the main barriers and constraints to the commercialisation of intellectual property which your institution generally encounters.

Scottish HEIs made a range of comments which can be categorised as:

- Internal administrative resources and resources for technology transfer
- Institutional barriers
- Comments relating to the local a national economy.

#### Resources:

A small number of institutions commented on the number of commercialisation staff and their expertise in identifying potential commercial partners. The need for project management was mentioned. Most comments related to lack of funding for patents, project development and spin-outs although some commented favourably on ‘Scottish Enterprise Schemes’ and the Proof of Concept Fund. Funding for patent applications was mentioned most often. The time required for negotiation was seen as a barrier.

Several institutions felt lack of funding from ‘industrial partners’ or the ‘private sector’ in general (mentioned by many institutions) were a problem, particularly in the context of the ‘current investment climate’.

#### Institutional barriers:

‘Academic publication’ and being ‘mainly arts related’ or ‘small’ or ‘new’ were mentioned.

#### Comments on the local and national economy:

Some institutions found a ‘lack of demand for IPR products in the local economy’ or the ‘lack of a local ‘customer base’. Risk aversion of capital markets and the perception that Scottish and UK Venture Capitalists are not active at the early stage of a project. One institution found that companies in the UK, especially SMEs, were ‘reluctant to take risks’ or make R&D investments and another commented that local firms lacked ‘deal-making skills’ and ‘knowledge about IPR’.

## Appendix I : Participating Institutions

Scotland:

University of Aberdeen  
University of Abertay Dundee  
University of Dundee  
University of Edinburgh  
Edinburgh College of Art  
University of Glasgow  
Glasgow Caledonian University  
Glasgow School of Art  
Heriot-Watt University  
Napier University  
University of Paisley  
Queen Margaret University College Edinburgh  
Robert Gordon University  
Royal Scottish Academy of Music and Drama  
University of St Andrews  
University of Stirling  
University of Strathclyde  
Bell College of Technology <sup>1</sup>  
UHI Millennium Institute <sup>2</sup>  
Scottish Agricultural College <sup>3</sup>

Notes:

- 1 Included for 2000-01 and 2001-02; Bell College became a Higher Education institution on 1 August 2001
- 2 Included for 2001-02 only; UHI Millennium Institute became a Higher Education Institution during 2001
- 3 The questionnaire returned by the Scottish Agricultural College was not included in the analysis, as its funding arrangements and remit are different from the remainder of the sector; see Introduction.

## **Appendix II: Survey Results**

See separate spreadsheet

## Appendix III: Abbreviations

CASE	Co-operative Awards in Science and Engineering (postgraduate studentships)
CBI	Confederation of British Industry
DfES	Department for Education and Skills
DTI	Department of Trade and Industry
ERDF	European Regional Development Fund
ESF	European Social Fund
ESRC	Economic and Social Research Council
FSR	Financial Statistics Return
HE	Higher education
HEACF	Higher Education Active Community Fund
HE-BI	Higher education-business interaction
HEED	Higher Education Economic Development Fund
HEFCE	Higher Education Funding Council for England
HEFCW	Higher Education Funding Council for Wales
HEI	Higher education institution
HEIF	Higher Education Innovation Fund
HEROBC	Higher Education Reach-out to Business and the Community Fund
HESA	Higher Education Statistics Agency
IP	Intellectual property
KTP	Knowledge Transfer Partnerships (formally TCS)
OST	Office of Science and Technology
RI	Research intensive
RDA	Regional Development Agency
SCOP	Standing Conference of Principals
SHEFC	Scottish Higher Education Funding Council
SME	Small and medium enterprise
SPRU	Science and Technology Policy Research, University of Sussex
TCS	Teaching Company Scheme

## Appendix IV: HE-BI Survey Stakeholders Group

Pat Ambrose	SCOP
Catherine Benfield	HESA
Linda Bradley	DELNI
Tim Bradshaw	CBI
Teresa Cooper	HEFCW
Ian Harrison	DTI
Adrian Hill	HEFCE
Tim Horton	HMT
David Leech	EPSRC
Amber Longstaff	DfES
Helen Mansfield	UUK
Michel McPartlin	SHEFC
Gerhard Mors/Marie Gallagher	Scottish Executive
Glenys Timmons	OST
Adrian Day	Lead officer
Laura Eastman	Lead analyst