

# GROW, EXPORT, ATTRACT, SUPPORT

Universities' contribution to Scotland's economic growth

Universities  
Scotland



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## Preface

Universities are recognised throughout the world as one of the critical drivers of sustainable economic growth. National comparative advantage in highly competitive global markets rests heavily on the capacity of universities to educate and produce knowledge and research that are truly acknowledged as being globally excellent.

An outstanding higher education sector is therefore fundamental to our ambitions for a nation that is both wealthier and where economic success is at the heart of creating a cohesive society which enables individuals and communities to realise their full potential.

### *Looking to the future*

Universities are ambitious for Scotland and proud to be a key part of building a dynamic and strong economy, founded on a fair and inclusive society. As we look to the future, it is essential to Scotland's success that universities are supported on a continuously improving path that allows them to consistently meet the needs of an increasingly demanding global economy. The innovation and dynamism in our education and research needs to be truly world class.

I believe this paper provides a valuable framework for politicians and opinion-formers to understand universities' present contribution and to consider how best to promote universities' contribution to Scotland's economic success.

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**A new framework captures the full extent of universities' contribution to sustainable economic growth in Scotland. It captures four distinct dimensions of the university role in driving prosperity.**

**Universities grow, export, attract and support.**

**New to this framework is the university role in attracting foreign direct investment into Scotland. Scotland's universities have been cited as a major determinant in as many as 45 per cent of all inward investment projects into Scotland in recent years.**

In addition to this, universities continue to deliver on their other functions, with a significant impact as a sector in their own right; a sector that continues to grow the GVA it contributes to Scotland. Universities have a growing export role, with international research income, fees and transnational education a growing business for the sector. Universities support other key sectors of the Scottish economy with close skills and research linkages and growing translation of innovation into small and medium sized businesses across Scotland.

The four dimensions to universities' economic impact sets universities apart from all other sectors in the Scottish economy.

Key elements of the university role in driving sustainable economic growth is:

## Grow

- As an industry in their own right universities contributed £6.7 billion gross value added to the Scottish economy in 2012/13 and supported 142,000 jobs.
- Universities grew their contribution to the Scottish economy by 6.3 per cent over the last year and making universities the third largest industry sector in Scotland, ahead of food and drink, sustainable tourism and the creative industries.
- Universities also create spin-out companies as a product of their research and development. Scotland is now the most successful part of the UK for spin-out creation and universities have grown their competitive edge over the rest of the UK increasing their share of all spin-outs from 19 per cent ten years ago to 28 per cent of all spin-outs now.

## Export

- Universities generated export income of £1.3 billion in 2011/12 of which 60 per cent was from outside of the UK.
- The sector's international export revenue put universities at the top of the second quartile when compared against all other sectors in Scotland.

## Attract

- Universities are cited as a determining factor in almost half of all foreign direct investment (FDI) projects that come into Scotland.
- As a producer of highly-skilled graduates and postgraduates, generator of world-class research and development and found at the centre of industry clusters universities help create the conditions that make Scotland the most attractive place to invest in the UK, second only to London.
- As competition for FDI increases, Scotland's universities are ahead of the game already working according to innovative new models that experts have predicted will become "*critical to the way companies re-invent and evolve products and services.*"

## Support

- Universities work with over 26,000 companies every year to translate the outputs of their research and development into new products and processes for business.
- Scotland's universities have been more effective at engaging with SMEs for innovative purposes than the rest of the UK as 29 per cent of all consultancy undertaken with SMEs in the UK is done by Scottish universities despite being only 11 per cent of the UK's universities.

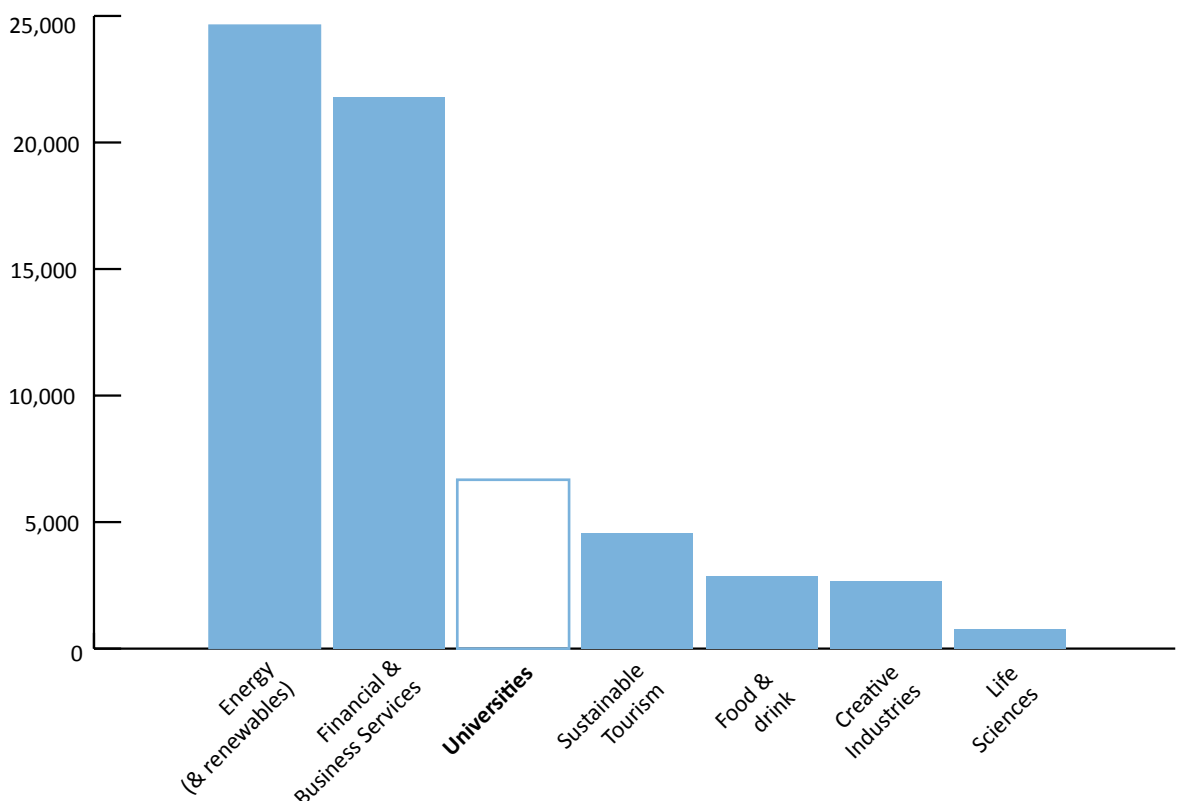
# Grow

Recognised as the seventh key sector in Scotland universities are a significant industry in their own right.

An industry which continues to grow its sources of private and competitively won income, even during tough economic times, increasing its overall gross value added (GVA).<sup>1</sup>

- BIGGAR Economics calculated the GVA from Scotland's 19 higher education institutions. It was estimated to be £6.67 billion in 2012/13.
- This equates to £2,824 for every household in Scotland.<sup>2</sup>
- A GVA of £6.7 billion makes universities the third largest industry sector in Scotland, ahead of the food and drink industry, sustainable tourism, creative industries and life sciences
- The sector's GVA has grown by £373 million, up from £6.3 billion in 2011/12. This represents annual growth of 6.3 per cent.
- The total economic impact for the Scottish university sector in 2011-12 amounts to 142,411 full-time jobs.

Graph 1: Approximate Gross Value Added by Scotland's seven key sectors at basic prices, £million.

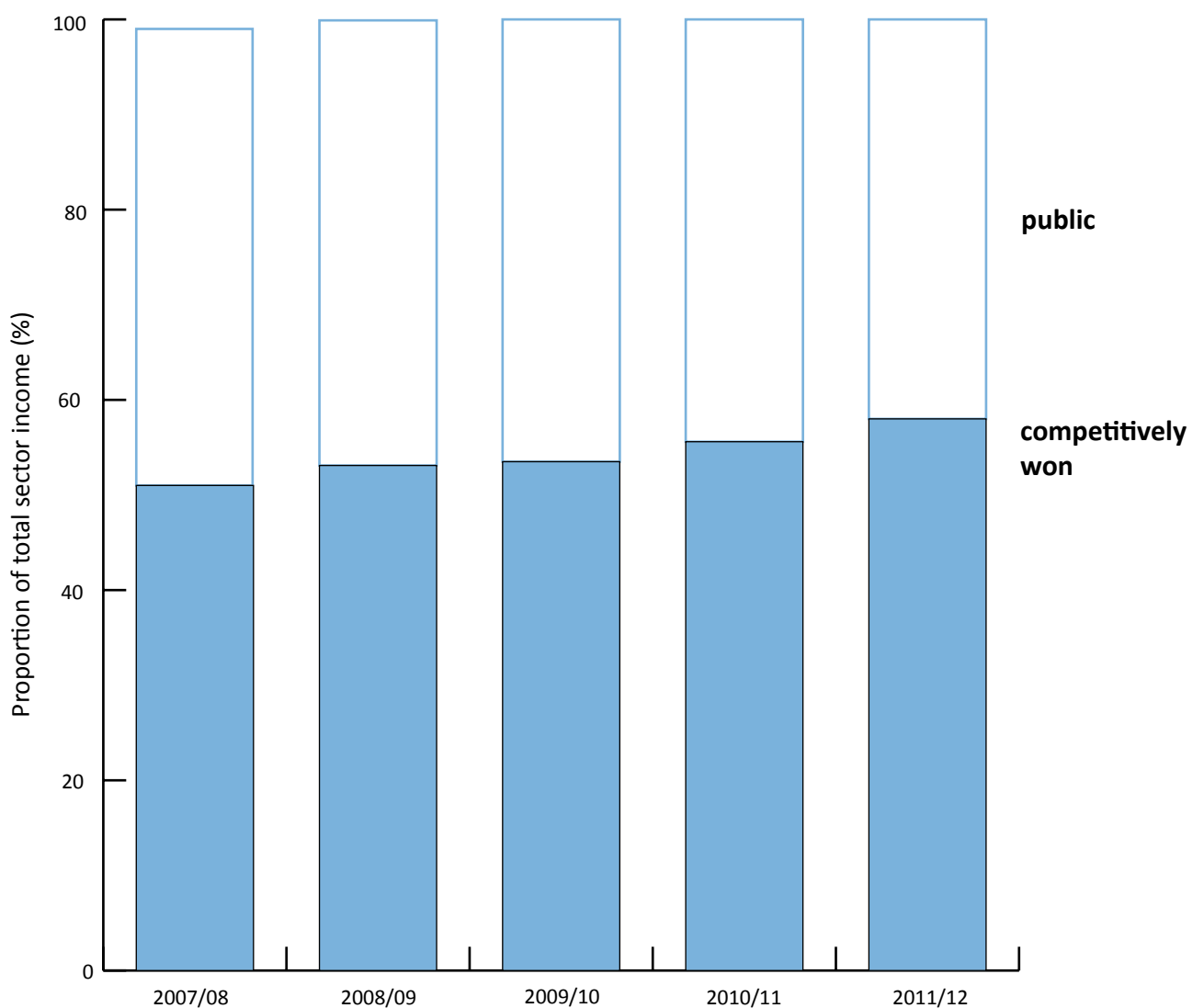


Source: Data for all industries except universities is taken from Scottish Government Annual Business Survey for 2010. ABS data for 2012 will not be available until August 2014. Universities' data is from Biggar Economics for 2012/13. The data for Financial and Business Services is partial data because of gaps in the ABS recording.

Universities receive significant levels of investment from the Scottish Government and this is essential to lever in competitively won resources.

Increasingly over the last ten years and due to steady growth in competitive sources of funding, the proportion of income levered in from private sources has grown relative to the proportion of public investment as shown in graph 2.

Graph 2: Growth of competitively-won income relative to public funding over last five years



# Creating high-growth companies

Scotland’s universities excel at creating new high-growth Scottish companies from their world-leading research and the entrepreneurialism of their staff and students.

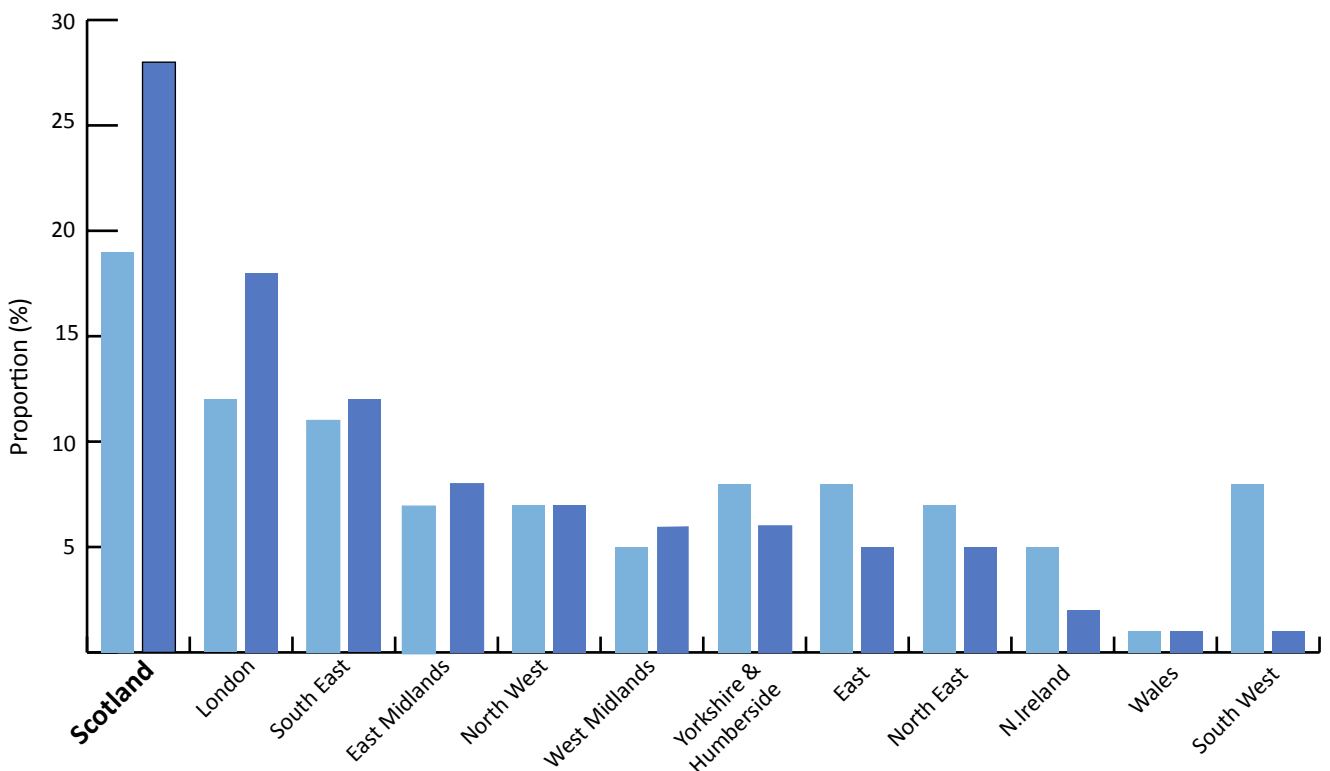
A recent report by PraxisUnico found Scotland to be the most successful region of the UK in the creation of university spin-outs.<sup>3</sup> Spin-outs are companies formed by a university to exploit its intellectual property and are a useful measure in terms of the opportunities a university takes to commercialise the products of its research.

Scotland’s universities account for a 28 per cent share of all spin-out companies formed in the last three years. The nearest rival is London with an 18 per cent share.

Significantly, the report also found Scotland was the only region of the UK that has bucked the trend of slower spin-out creation over the last five years relative to the period 2003-2007. Company formation for all other parts of the UK has dropped off significantly in the last five years. Whereas Scotland’s universities produced 70 spin-outs between 2003-2007 and the same number in the five years from 2008-2012.

As a result Scotland’s universities have grown the competitive edge they had over the rest of the UK ten years ago, increasing their share of all spin-outs from 19 per cent ten years ago to 28 per cent of all spin-outs now.

Graph 3: Proportion of university spin-outs by region in 2000-2 compared to 2010-2011.



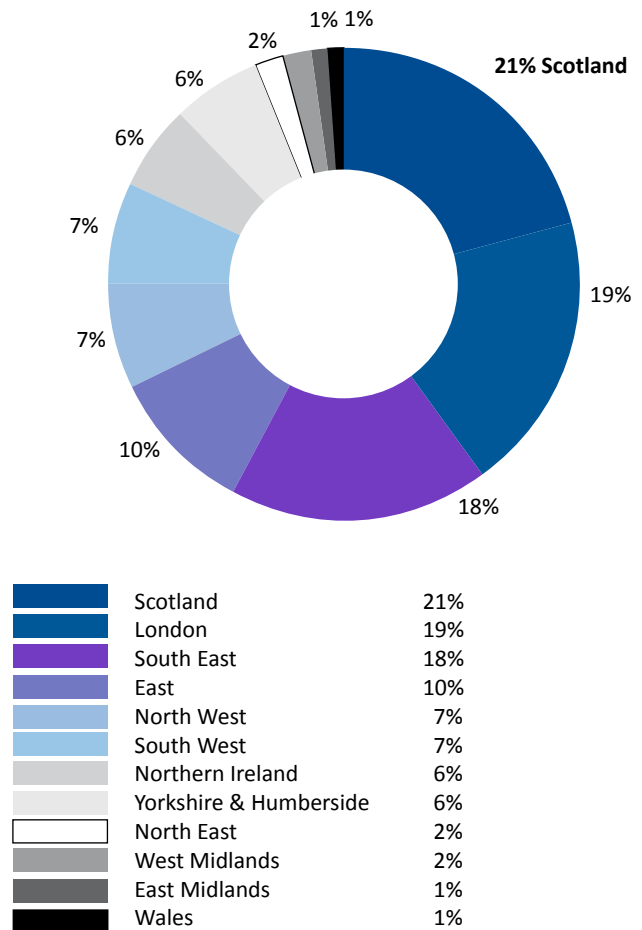
Source: Source: PraxisUnico



Scotland leads the UK, in terms of securing successful exits for its spin-outs, over the last ten years. PraxisUnico tracks the performance of spin-outs in terms of trade sale or flotation.

21 per cent of all successful exits in the last ten years have been spin-out companies from Scotland's universities compared to 19 per cent from universities in London and 18 per cent from universities in the South-East.

**Graph 4: Proportion of successful spin-out exits by region 2003-2012**



Source: Source: PraxisUnico

# Export

Scotland's universities are significant exporters, selling to the world and creating more wealth and jobs in Scotland.

In 2011/12 the total value of revenues generated from university exports was £1.3 billion as compiled by BIGGAR Economics. This uses the same definitions of "exports" as in the Scottish Government's Global Connections Survey.

Scotland's highly internationalised universities are a significant player, exporting more than other key industries such as accommodation and food services, agriculture, forestry and fishing, and the manufacture of basic pharmaceuticals.

Universities' export income is generated from several aspects of university activity including:

- tuition fee income from international (non EU) students and students from the rest of the UK;
- research and knowledge exchange income from partners and businesses outside of Scotland;
- overseas campuses and the provision of transnational education; and,
- international and rest of UK spend and tourist spend in Scotland.

Table 1: University exports to the rest of the UK and internationally by type of activity (£millions)

| Impact                              | Rest of UK<br>£m | Rest of World | TOTAL           | Proportion<br>from rest of<br>UK (%) | Proportion<br>from rest of<br>world (%) |
|-------------------------------------|------------------|---------------|-----------------|--------------------------------------|---|
| University income                   | £88.0            | £325.2        | £413.2          | 21.3                                 | 78.7                                    |
| Student spending                    | £151.4           | £260.6        | £412.0          | 36.4                                 | 63.3                                    |
| Tourism impacts                     | £8.3             | £14.2         | £22.4           | 36.6                                 | 63.4                                    |
| Research                            | £210.3           | £131          | £341.3          | 61.6                                 | 38.4                                    |
| Knowledge exchange                  | £60.8            | £83           | £103.8          | 20                                   | 80                                      |
| Overseas campuses/learning partners | -                | £23.9         | £23.9*          | 0                                    | 100                                     |
| <b>TOTAL</b>                        | <b>£518.8</b>    | <b>£797.7</b> | <b>£1,316.5</b> | <b>39.4</b>                          | <b>60.6</b>                             |

Source: BIGGAR Economics

\*This is likely to represent a significant under-count of the value of overseas learning activity/transnational education.

Table 2: Industry sectors by total export earnings.

|                 | Sectors   |
|-----------------|---|
| Top quartile    | financial and insurance, food & drink manufacturing, whole, retail trade, coke, petrol & chemical manufacturing, utilities, legal, accounting, architecture, engineering etc, mining, quarrying, transportation and storage.                                |
| Second quartile | Admin, transport manufacturing, computer, electronic & optical manufacturing, machinery NEC manufacturing, construction, wood & paper manufacturing, IT & information services, <b>Higher education.</b>  |
| Third quartile  | Accommodation and food services, metals and fabricated metals manufacturing, rubber & plastic manufacturing, agriculture, forestry fishing, education, repair & installation of machinery, scientific R&D, textiles manufacturing                           |
| Fourth Quartile | Pharmaceutical manufacturing, electrical equipment manufacturing, electrical equip manufacturing, other professional scientific & technical, telecommunications, publishing and broadcasting, furniture & other manufacturing, real estate, other services. |

An export income of £1.3 billion sees universities in the second quartile when all industries are ranked according to their export income in 2011 (as shown in table 2).

### International exports

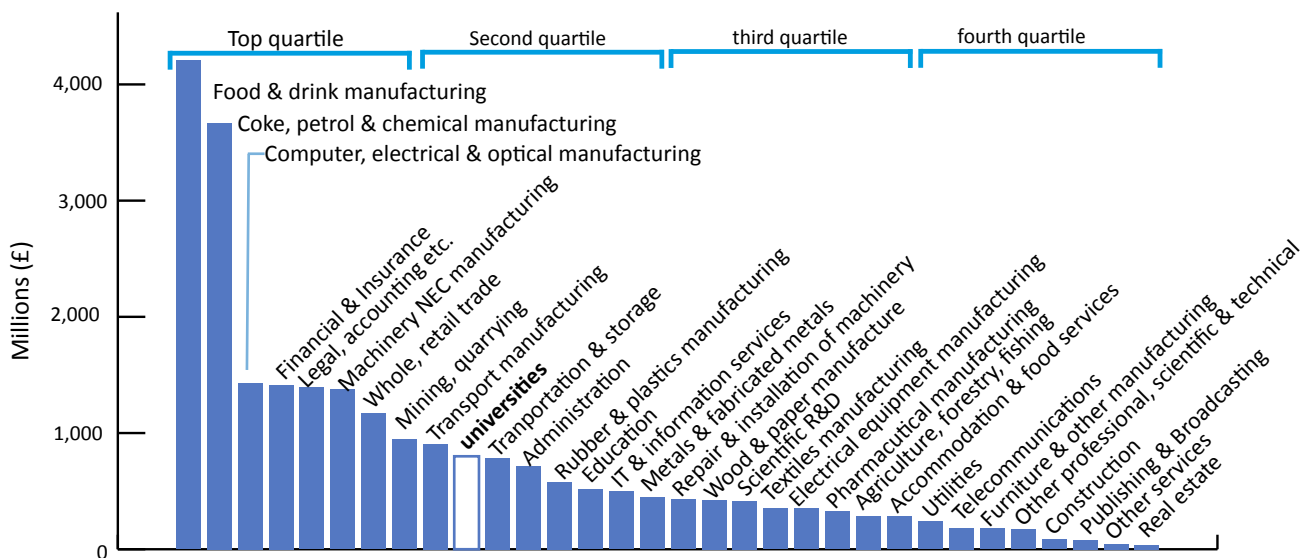
International markets, beyond the UK, are vitally important to Scotland's universities.

60.6 per cent of universities' total export income, or £0.8 billion, is from exports to the rest of the world with £0.5 billion coming from the rest of the UK (excluding Scotland).

This contrasts with the overall pattern of Scottish exports, of which 34.5 per cent is to international markets.<sup>2</sup>

Assessed according to international export value, Scotland's universities are at the top end of the second quartile of all Scottish industries (Graph 5).

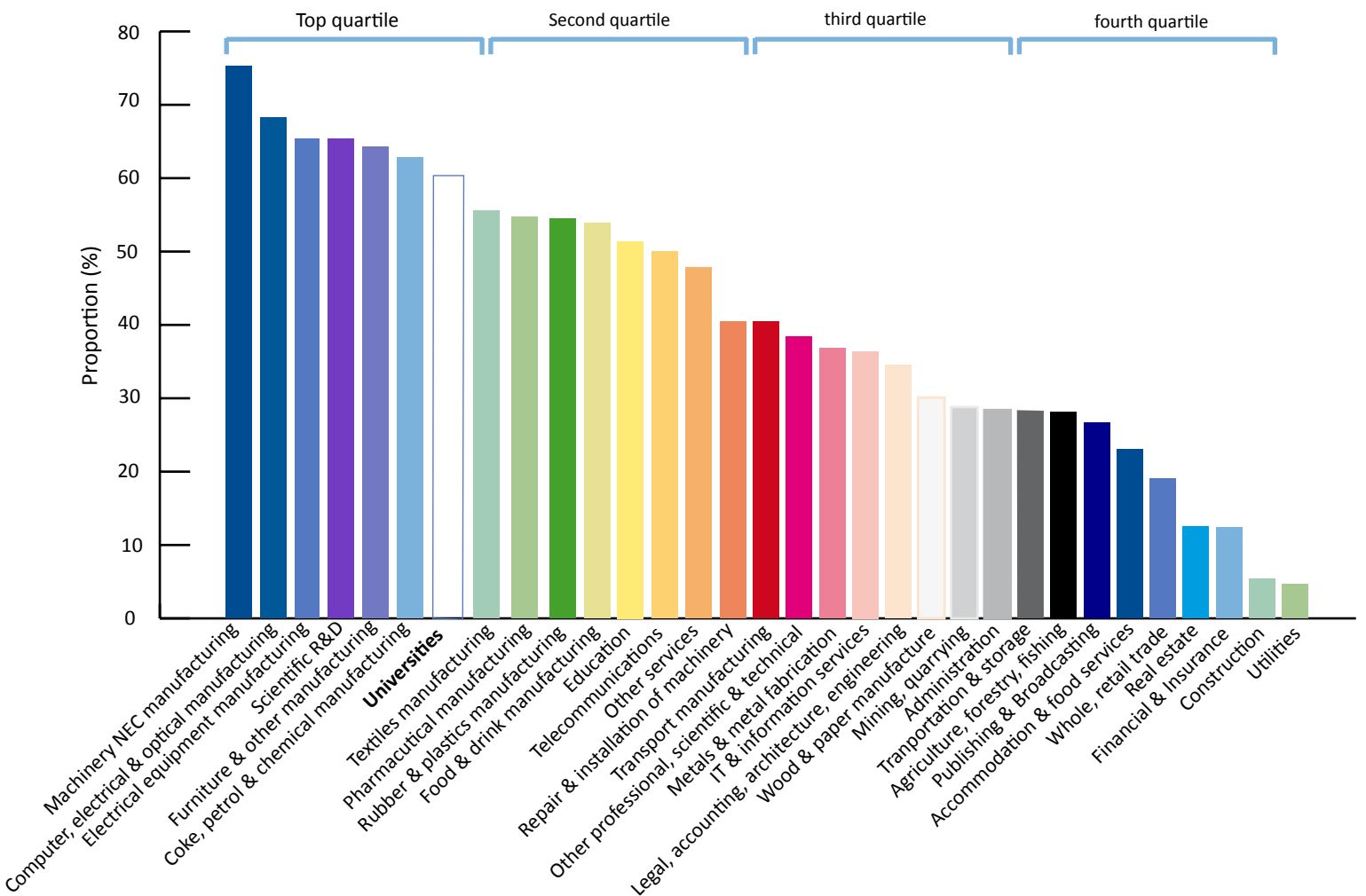
Graph 5: International exports by sector in £ millions



Source: Scottish Government Global Connections Survey. University data from Biggar Economics

The significance of the international export market for universities is evident in graph 6. At 60.6 per cent, universities export a significantly higher proportion of their total exports to the rest of the world than most Scottish industries. Universities are ranked in the top quartile for revenues generated from international exports.

Graph 6: International exports as a proportion of total export revenue (%)



# Attract

Scotland performs very successfully in foreign direct investment (FDI), leading the way in the UK on FDI projects and jobs created from FDI outside of London.<sup>4</sup>

Universities are proud to be amongst the key “pull” factors that contribute to Scotland’s attractiveness to investors with their key outputs of skills and research cited by almost half of the companies as a key reason for their investment in Scotland. The sector’s importance is set to increase as Scotland looks to keep “raising its game” in the face of increasingly globalised world.<sup>5</sup>

An analysis of motivations for investment into Scotland in 2012, in table 3, shows the significance inward investors attach to factors in which universities play a direct role.

Leading the list of motivations is the availability of a skilled workforce. This features as a key driver in more than a third of all investment projects. The presence of universities or researchers is cited as a factor in 6 per cent of projects and 6 per cent of projects also pointed to critical mass and industry clusters as being important to their investment decisions. These factors rate more highly than “regulations and the business environment” and “quality of life”.<sup>6</sup>

Scotland’s prominence in FDI relative to other UK regions indicates that Scotland s performs strongly on the measures that are most important to investors. This is well evidenced where universities are concerned, with Scotland consistently appearing at the top end of the table amongst UK regions when it comes to the pull factors of a highly skilled population, quality of universities, and research strength.

Table 3: Motives behind FDI projects into Scotland

| Motive                                  | Proportion of FDI projects (%) |
|---|--------------------------------|
| <b>Skilled workforce availability</b>   | <b>39.4</b>                    |
| Proximity to markets or customers       | 36.4                           |
| IPA or Govt support                     | 27.3                           |
| Domestic Market Growth Potential        | 21.2                           |
| Infrastructure and logistics            | 9.1                            |
| <b>University research/researchers</b>  | <b>6.1</b>                     |
| <b>Industry Cluster / Critical Mass</b> | <b>6.1</b>                     |
| Lower Costs                             | 6.1                            |
| Regulations or business climate         | 3                              |
| Attractiveness / Quality of Life        | 3                              |
| Other Motive                            | 6.1                            |

Source: fDi Intelligence from The Financial Times Ltd

# Pull factor: The university role in a skilled workforce

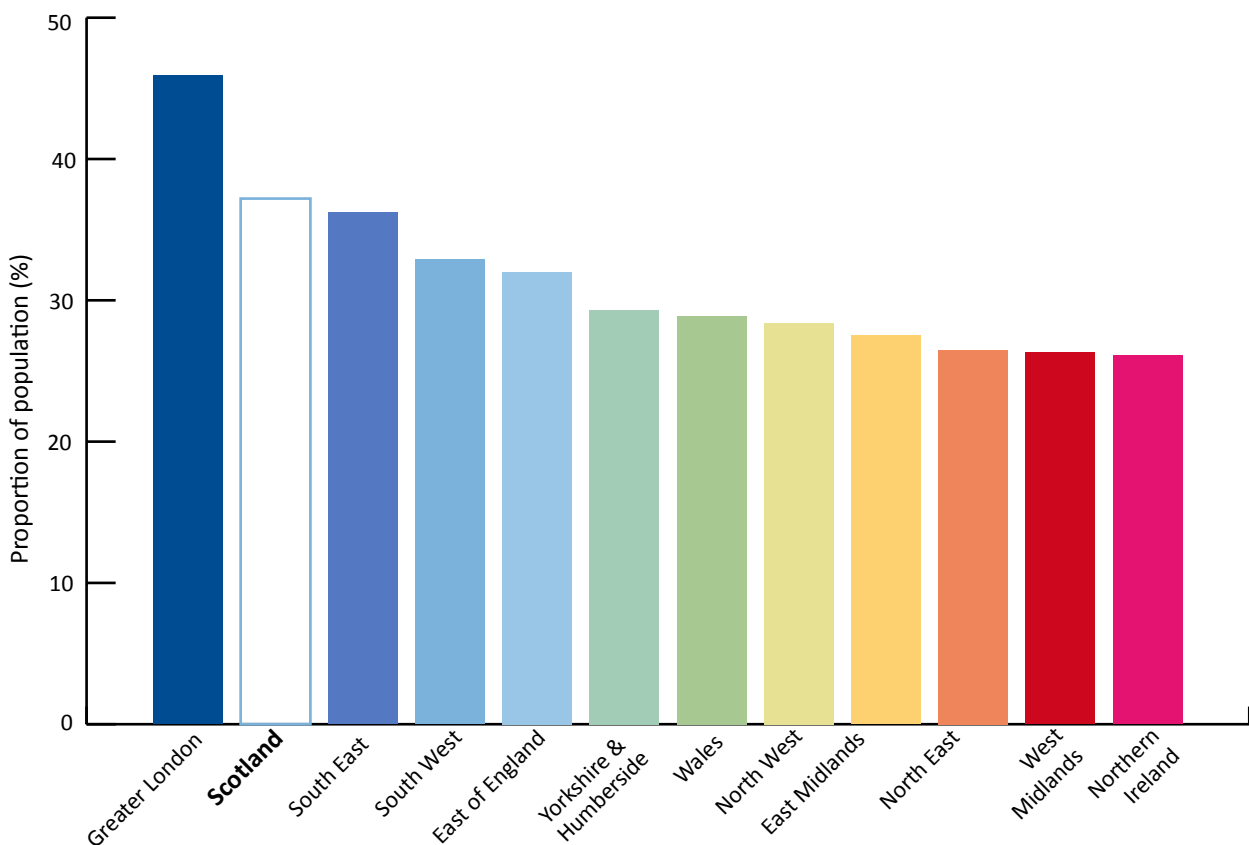
## Statistics

With 19 universities and higher education institutions across the country, Scotland enjoys a well-qualified workforce, an essential ingredient for prospective investors. Many recent multi-national companies choosing to invest in Scotland, in a range of sectors including ICT and life sciences, have cited the graduate workforce as a key determinant.

Data from SDI puts 37.2 per cent of Scotland's 16-64 year old population educated to NVQ4 or above, which puts Scotland second in the UK for its skilled workforce.

A higher proportion of graduates from Scotland's universities go into positive destinations of employment of further study within six months than anywhere else in the UK and graduates from Scotland's universities have the highest starting salaries in the UK.

Graph7: Proportion of the working age population educated to NVQ4\* or above by UK region



Source:

\* NVQ level 4 is National Vocational Qualification. Level four donates certificates of higher education and above.

# Testimonials

## **FMC Technologies, 2011**

FMC Technologies invested £2.2 million in the city of Dunfermline in 2012, expanding its Scottish operations. It will create 70 research, development and manufacturing jobs at its base in the town.

Announcing the investment, the company issued the following statement: *“Our development of technical capability and talent in Scotland is a result of our continuing relationship with the Scottish Government via Scottish Enterprise and Scottish Development International,”* said John Grempe, president and chief executive officer of FMC Technologies. *“We now look to our partners in industry and academia to continue to supply talent not only to our Scottish-based operations, but to our operations globally.”*

## **Cloudreach, ICT Company, invested in Edinburgh in 2012.**

London-based Cloudreach is a fast growth cloud computing consultancy. It opened an office in Edinburgh in 2012 creating 30 jobs.

Director and co-founder of Cloudreach, Pontus Nore said: *“We chose this location due to the fact that Edinburgh is an attractive marketplace for us and we were keen to make the most of its local skill set and high calibre of employees from local universities”.*

## **Daktari, Medical Firm, invested in Inverness in 2013.**

US-based company Daktari announced plans to establish a new base in Inverness in spring of 2013, creating up to 120 jobs. The Inverness base will produce cartridges for hand-held HIV monitoring devices from 2014 onwards, and will form part of the growing life sciences sector in Inverness.

Mr Rodriguez, Chief Executive of Daktari, said: *“Inverness, Scotland, offers companies like ours considerable support and a great location, with a highly educated work force and an ability to expand rapidly to support the demand for our new product”.*

## **SAS, invested in East Kilbride in 2013.**

US-based business analytics and software services provider announced its intentions to expand its research and development operations in Scotland in spring 2013, creating nearly 100 jobs over four years and safeguarding another 126.

Speaking of the company’s expansion in Scotland, Mikael Hagstrom, from SAS said: *“The initial investments allowed SAS to see the real Scottish potential with access to the excellent pool of talent from Scottish universities and its strong culture of innovation”.*

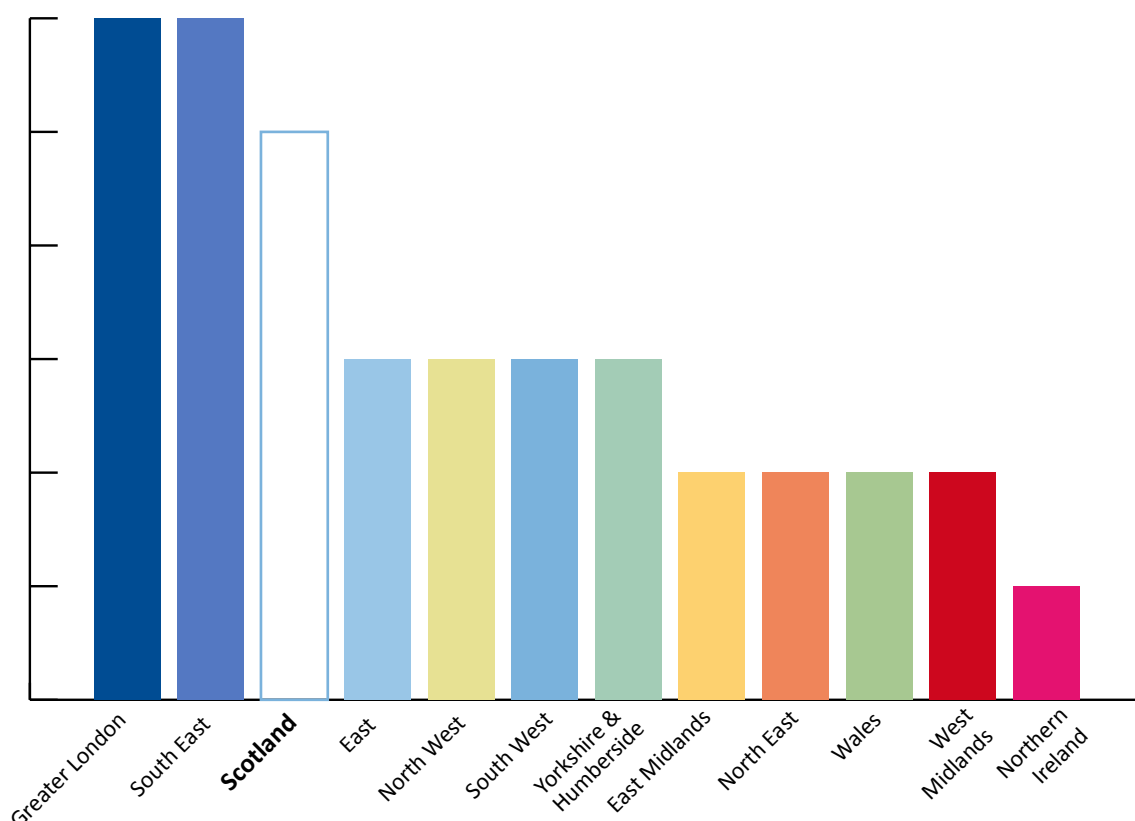
# Pull factor: universities and high-quality research

## The statistics

Global reach is an important asset in the attraction of inward investment<sup>7</sup> and the international standing of Scotland's universities is an integral asset in Scotland's competitiveness. Scotland has five universities in the Shanghai Jiao Tong University world's best universities index.<sup>8</sup> When population is taken into account, Scotland is second only to Switzerland for the highest number of world-class university per head of population.

Every university in Scotland undertakes research judged to be of a "world-leading" nature and 99 per cent of researchers in Scotland's universities work in disciplines where world-leading research is taking place.<sup>9</sup> Scotland is reliant on its university sector to be the driver of the country's research and development with higher education R&D (HERD) comprising a larger proportion of overall R&D (GERD) in Scotland than any other OECD country that reported in 2011.<sup>10</sup>

Graph 8: Number of world-class universities by region of the UK



Source: fDi Intelligence based on Shanghai University - Academic Ranking of World Universities (2012)



## Testimonials

A number of major investors in Scotland since 2011 have cited the quality of research and development available in Scotland as a pull factor:

### **ResHydro, Glasgow, 2013**

US tidal power firm ResHydro announced plans to establish a research and development base in Scotland to further work on a hydrokinetic energy generation device.

Responding to the announcement, the First Minister said the announcement showed the country was *“leading the way”* in the development of marine renewables technology. He added: *“ResHydro’s decision to invest in Scotland and work in partnership with one of our leading universities to further their research and development plans is testament to that.”*

### **Molnlycke Health, Life Sciences, 2012, Edinburgh**

Molnlycke is a world leading manufacturing manufacturer of wound care and single-use surgical products and a service provider to the healthcare sector. The company’s large-scale research and development investment in Scotland in 2011 marked its entry into the diagnostic market, developing products based on an innovative technology platform shown to deliver rapid results to detect antibiotic resistant bacteria. The move is a partnership with the University of Edinburgh and Scottish Enterprise and the company will be based at Edinburgh’s BioQuarter.

Eleanor Mitchell, Director of Commercialisation at Scottish Enterprise said: *“We are operating in a hugely competitive environment and Mölnlycke Health Care’s decision to locate in Scotland is testament to the international reputation of our universities, businesses and skills base.”*

### **Toshiba Medical, 2011, Edinburgh**

In 2011 Toshiba Medical Visualization Systems (TMVS) Europe invested £25.5 million in Scotland. The investment is to drive forward a new research and development programme in healthcare imaging informatics at its Edinburgh facility. It is hoped the company will increase its team in Edinburgh to over 100 people in the first three years.

Fredric J Friedberg, President of TMVS said: *“Toshiba could not be more pleased with its decision to establish a key global R&D center [sic] based in Scotland. Our access to top talent, universities and research collaborators, coupled with the terrific support and vision of the Scottish government has been outstanding.”*

## Pull factor: industry clusters and critical mass

Scotland is home to a number of highly competitive industry clusters. Universities are a central part of such clusters, catalysing their growth. This helps to create an agglomeration effect; an important factor in attracting inward investment.<sup>11</sup> Economists identify a positive and highly significant link between past experience and the location of other investments influencing the location decisions of others.

Scotland is renowned internationally for its strength in a number of sectors including financial services, life sciences, renewables technologies and digital media. The clustering of these sectors in city regions across Scotland creates agglomerations of human capital, research expertise and existing companies, which signals potential for strong returns on investment to other companies. Universities can be found at the heart of industry clusters as shown in table 4:

Table 4: Clusters or agglomerations in Scotland in which universities play a key role<sup>12</sup>

| <b>Sector:</b>    | <b>Cluster location:</b> | <b>Universities:</b>                                  |
|-------------------|--------------------------|---|
| Biosciences       | Dundee                   | University of Dundee and University of Abertay Dundee |
| Biosciences       | Edinburgh                | University of Edinburgh                               |
| Biosciences       | Aberdeen                 | University of Aberdeen                                |
| Informatics       | Edinburgh                | University of Edinburgh                               |
| Digital Media     | Dundee                   | University of Abertay                                 |
| Renewable energy  | Glasgow                  | University of Strathclyde                             |
| Marine renewables | Orkney & Highlands       | University of the Highlands and Islands               |
| Biomedicine       | Glasgow                  | University of Glasgow                                 |

Source: Biggar Economics 2010. Note: this is not an exhaustive list of the industry clusters/agglomerations in which universities play a role. This undersells the true role of universities in industry clusters in Scotland.

## Testimonials

A number of major investors in Scotland since 2011 have cited the success of existing industry clusters predicated on high-level skills and effective research and development as central to influencing their decision. These factors combine to give rise to agglomeration effects. Success breeds success. As noted by Scottish Government Ministers in the following cases:

### **Life Technologies, Life Sciences, Glasgow, 2012**

The company, announced plans to expand its Inchinnan plant which acts as a headquarters for Europe, the Middle East and Africa. The company develops cell cultures to for research and development and acts as partner to pharmaceutical companies. The expansion builds on the 500 jobs already at the plant.

Scotland's Deputy First Minister, Nicola Sturgeon said: *"This investment is a welcome boost for Scotland's economy and I'm delighted that Life Technologies have decided to expand their facility at Inchinnan. Scotland's life sciences research is rightly regarded as among the very best in the world and developments like this help to continue to build on that enviable reputation for the future."*

### **Samsung Heavy Industries, Fife, 2012**

Samsung invested £157 million and the creation of 500 jobs in Scotland is, in the words of the First Minister, a *"testament to the fact this country is fast becoming the European centre for research and development in new offshore wind technologies."*

### **GlaxoSmithKline, pharmaceuticals, Montrose in 2011.**

In 2012 pharmaceutical manufacturer GlaxoSmithKline announced its decision to invest more than £100 million and create 100 new jobs across its two Scottish operations in Irvine and Montrose.

In responding to the announcement, Cabinet Secretary for Finance and Sustainable Growth, John Swinney said: *"The quality and skills of our workforce in life sciences have played an important part in the company's decision, as has the research excellence of our institutions and the competitiveness of our business environment."*

### **EnStratus, ICT, Edinburgh, 2012.**

Cloud Computing firm EnStratus chose to make Edinburgh the site of its European headquarters, creating 30 highly-skilled jobs. Minister for Culture and External Affairs, Fiona Hyslop said: *"Scotland is globally renowned for innovation, enterprise and technology. The quality and skills of our workforce in the digital sector have played an important part in the company's decision to locate its European office in Edinburgh, as has the research excellence of our institutions and the competitiveness of our business environment."*

# Positioning for the future: universities well placed to play their role

Looking ahead, commentators agree that competition for FDI is set to intensify and no country can afford to be complacent. There is also shared opinion on the factors that will shape a country's future competitive edge. The factors that stand out are:

- Research and development and innovation;
- New models of accessing innovation including "innovation webs";
- Ongoing battle for attraction and retention of talent; and
- Ensure and develop global reach.

Universities are well placed to ensure Scotland capitalises on all of these factors and maintain its strong FDI performance.

## Research and development

When asked what world-class strengths the UK should display to remain a major destination for inwards investment, the overseas companies surveyed by Ernst & Young put research and development top of the list.<sup>13</sup>

Similarly, an analysis of emerging global business trends by the Royal Institute of International Affairs (RIIA)<sup>14</sup> and IBM's Plant Location Team predicts that multinational firms will increasingly establish R&D labs outside their home countries to serve and support overseas production units and marketing activities.

This suggests that Scotland's research performance, which is overwhelmingly concentrated in universities and which is recognised internationally to be world-leading in many fields, will be of increasing importance in maintaining Scotland's competitive FDI performance in the future.

## New models of accessing innovation including “innovation webs”

Scotland’s universities are already demonstrating new and innovative ways of working in partnership with business, the same model which experts predict will become increasingly important in FDI decisions. The RIIA believes that in future: *“the emphasis will be on access to, rather than ownership of resources, talent, components, products and services”* with companies increasingly *“tapping into disparate pockets of talent, suppliers, customers, and academic institutions around the world”* as part of innovation webs.<sup>15</sup>

Scotland’s universities first pioneered this “new” concept, shared access to resources and talent, in the shape of research pooling adopted in the early 2000s. This meant Scotland was well placed to take early advantage as this trend has begun to emerge in business sectors in regards to FDI. The location of a major new drug discovery unit, the European Lead Factory in Lanarkshire in 2013, is an excellent example involving universities and industry partners, which highlights the concept of access rather than ownership of resources in FDI decisions.

The investment in the European Lead Factory in 2013 was worth a total of €190 million with €80 million from the European Commission and a further €91 million Euros of in-kind support from participating companies.

The European Lead Factory is an international consortium of 30 partners including universities, seven pharmaceutical companies and SMEs. Ordinarily access to compounds, essential in the search for new medicines, is highly restricted. However, in this model, the pharmaceutical companies will contribute 300,000 compounds and a further 200,000 will be added by universities and SMEs. In total, a library of half a million compounds will be accessible to all project partners offering promising new targets for drug discovery screening.

Speaking on behalf of the Scottish Screening Centre team, Dr Glenn Crocker CEO BioCity Group said:

*“For me, the exciting aspect of this project is the opportunity it provides to discover novel drugs through the collaboration of seven large pharma companies and an open call to academics and industry across Europe. On top of that there is the potential to build on this platform, extending it into new screening technologies or wider compound collections.”*

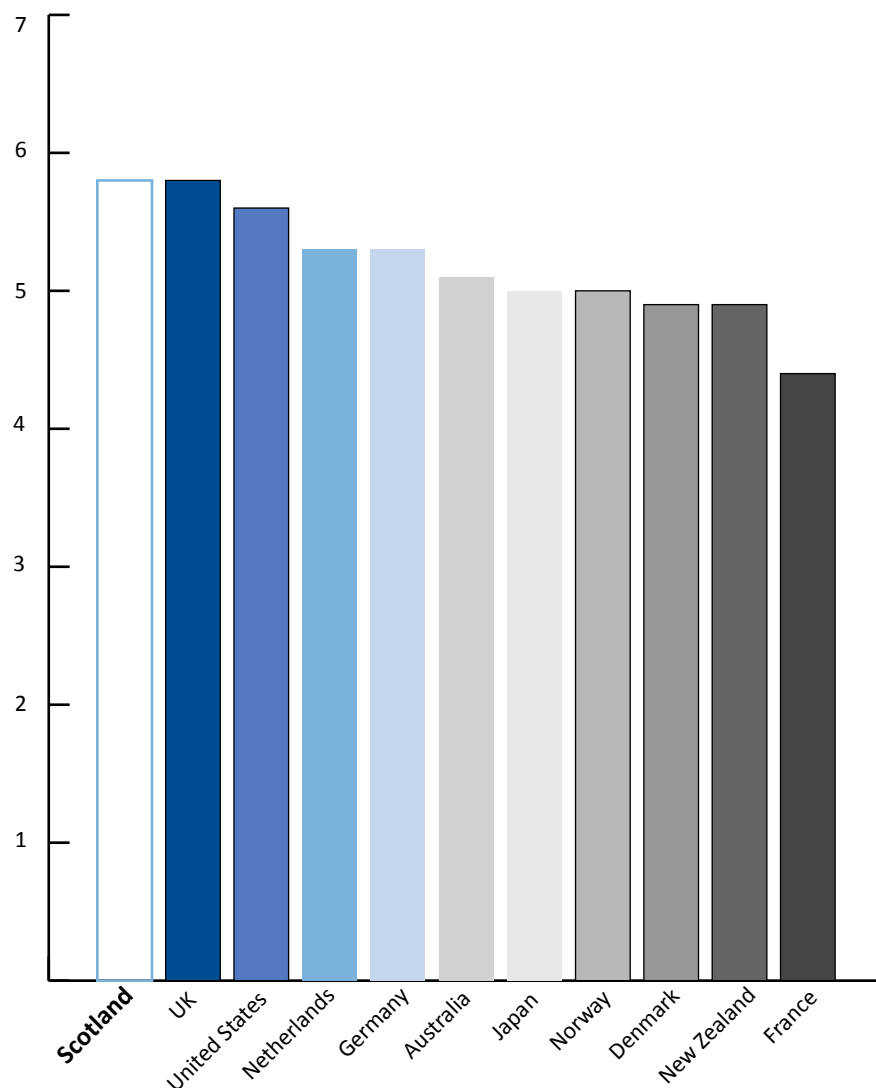
First Minister Alex Salmond said:

*“Congratulations to BioCity Scotland and to SULSA on bringing such a huge and valuable piece of work to Scotland. This provides enormous opportunities for Scotland’s life sciences sector and it is fantastic recognition of the talent and expertise of Scotland’s life sciences community. In particular, this shows the combined strength of our universities and commercial experts. Working together, they have been able to secure the biggest ever IMI contract of its kind for Scotland, putting Lanarkshire and Dundee at the forefront of drug discovery in Europe for many years to come.”*

Collaborations between universities and business in Scotland far outstrips that which takes place in other countries which also puts Scotland in a very strong position to take advantage of the trend for 'innovation webs' way in FDI investment.

Scotland scores 5.8 out of 7 when assessed on its university-industry collaboration in research and development with 7 being "collaborative extensively". This sets Scotland above the US and eight other leading OECD nations.

Graph 9: Performance on university-industry collaboration in R&D with 7 being "collaborate extensively"



Source: WEF Global Competitiveness report 2012-2013 from FDI Benchmark report.

## Ongoing battle for attraction and retention of talent

The RIIA believes that the attraction of talent and development of highly educated talent at home will be crucial continued success in attracting FDI. It argues the availability of skills is critical in location decisions with *“companies re-shaping their global footprint to access talent”*.

Scotland currently performs well within the UK for its share of the population educated to degree level. Universities compete successfully in the attraction of talent from around the world at student and staff level with 21.3 per cent of the student population and 16.4 per cent of staff recruited from outside of the UK.

It is essential that this continues and that Scotland increasingly focusses on postgraduate level skills to remain on a competitive footing when it comes to FDI. Universities have the capacity to deliver greater levels of postgraduate skills and there should be greater encouragement of home students to take up postgraduate level study as 70 per cent of all postgraduate students educated in Scotland’s universities are from outside of Scotland.

The RIIA predicts that the future of FDI will see companies will consolidate activities in locations with large pools of the necessary skills for a particular activity. The fact that Scotland is home to 19 higher education institutions gives it an excellent basis on which to create and sustain these conditions.

## Ensuring a global reach

RIIA recommends that in order to foster international relationships that lead to FDI, a region needs to ensure its key organisations have global reach.

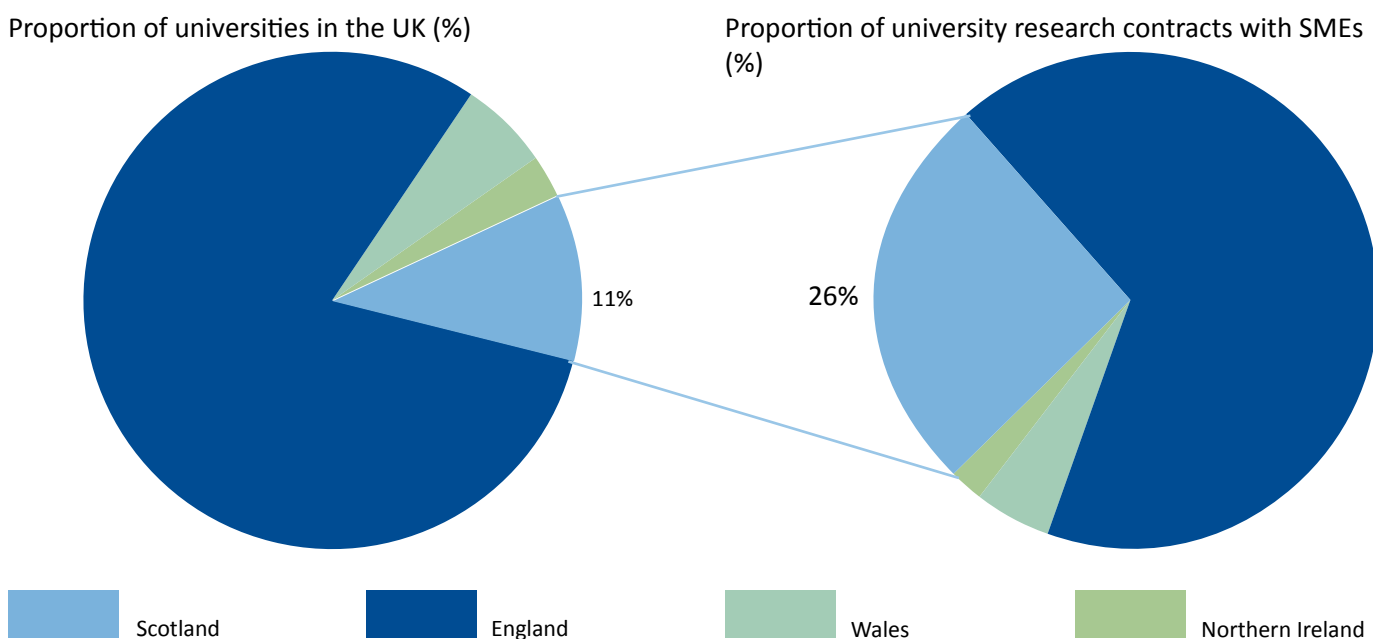
Scotland’s universities are highly internationalised and have vast networks of academic and professional connections around the globe. A Scottish higher education and the four-year degree is coveted internationally as the “gold standard” and the quality of our research and contribution to innovation and progress is renowned. Every university undertakes some research judged to be of “world-leading” quality, five Scottish universities are ranked in Leiden’s world’s top 150 for scientific performance and five institutions appear in the Shanghai Jiao Tong world’s top 300.

# Support

Universities act as a key partner for other parts of Scotland's economy by translating the products of their research into the indigenous Scottish business base.

Working with small and medium sized businesses Scotland's universities work more effectively with SMEs than any other part of the UK. The Higher Education Business and Community Interaction Survey (HE-BCI) found that Scotland's universities were doing more than a quarter of all the contract research between universities and SMEs in the UK despite representing only 11 per cent of the UK's universities.<sup>16</sup>

Graph 10: Proportion of university research contracts with SMEs relative to size of sector



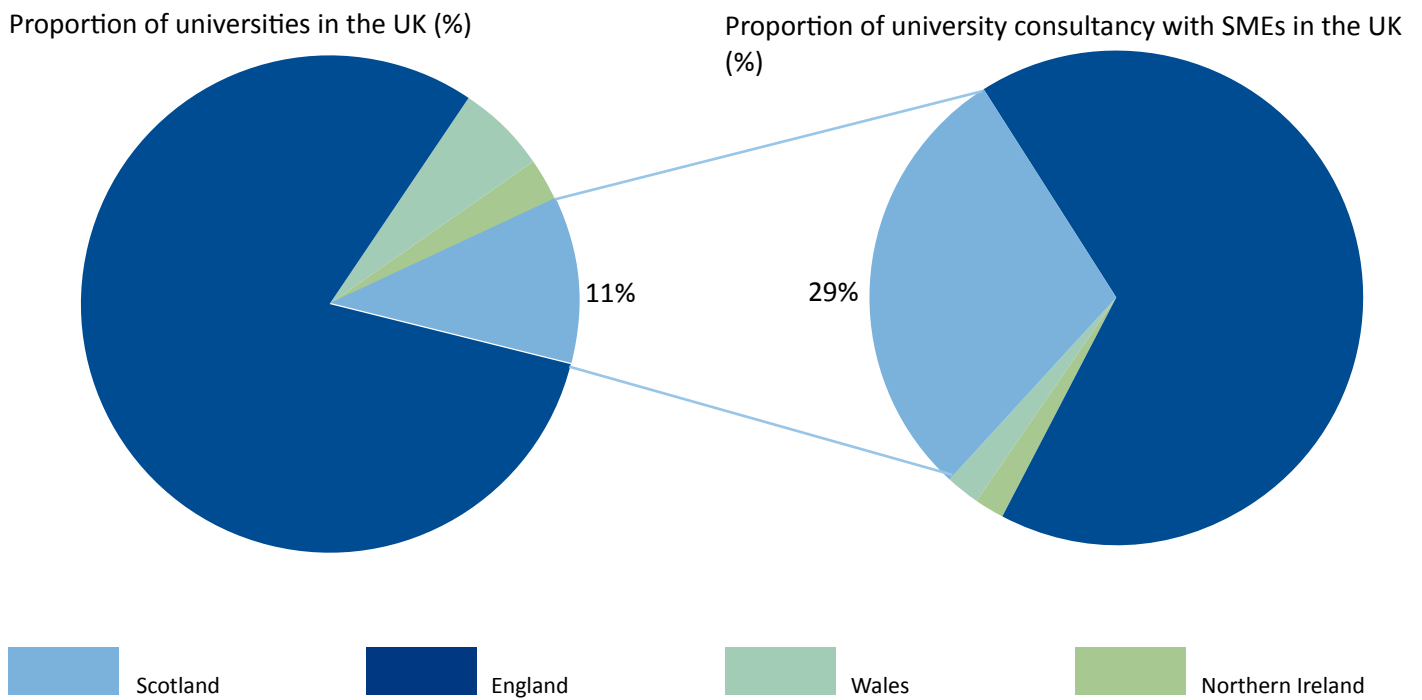
Source: HESA Higher Education Business Community interaction Survey 2011-12

Traditionally, SMEs are more likely to partner with universities for innovation in the form of a consultancy arrangement.<sup>17</sup> Again, Scotland's universities were far more effective at working with SMEs to convert knowledge into innovative outcomes, than their peers elsewhere in the UK as they were responsible for 29 per cent of all research consultancy agreements with SMEs.



The total value of contract and consultancy work between Scottish SMEs and universities was £28.4 million in 2011/12.

Graph 11: Proportion of university research consultancy with SMEs relative to size of sector



Source: HESA Higher Education Business Community interaction Survey 2011-12

SMEs have been a priority within universities' knowledge exchange programmes in recent years.

The formation of Interface, a match-making service for small businesses looking to access the expertise in Scotland's universities, in 2005 has been integral to the establishment of greater connections between universities and small and micro-businesses. A recent survey found that 87 per cent of Interface's clients would have been unlikely to have partnered with universities for innovation had it not been for the presence of the match-making service they provide.

In the last year alone Interface has supported 306 Scottish SMEs and issued 401 expertise specifications out to its university and research institute partners. This represents a 21 per cent increase on the previous year.<sup>18</sup>

The innovation partnerships made by Interface add value to business. Of the SME respondents to Interface's annual survey, many reported on benefits already realised including:

- 15 per cent had created or safeguarded jobs as a result of the university-business collaboration.
- 23 per cent had developed one or more new products or expanded into new markets.

Forecasting over the slightly longer-term of up to three years:

- 40 per cent expected to introduce one or more new products or services in the next three years.
- A further 20 per cent expected to introduce new processes into their business.
- 24 per cent of companies expected to be able to safeguard jobs as a result of their innovative partnership.

## End notes

<sup>1</sup> For clarity and the avoidance of double-counting, revenue generated from university exports and supporting indigenous Scottish businesses contributes to the overall GVA figure.

<sup>2</sup> According to the 2011 Census, National Records of Scotland.

<sup>3</sup> Praxis Unico (2013) *Spin Out Survey Annual Report 2013*

<sup>4</sup> Ernst & Young (2013) *Attractiveness Scotland 2013* and *UK Attractiveness Survey 2013*

<sup>5</sup> Ernst & Young *Scotland Attractiveness Survey 2013* – p7

<sup>6</sup> fDi Intelligence from The Financial Times Ltd.

<sup>7</sup> Think London (2012) *London 2020: Competing in a New Global FDI Era*

<sup>8</sup> Shanghai University - Academic Ranking of World Universities (2012) top 500.

<sup>9</sup> RAE 2008 the last time an international peer review of research in the UK was undertaken.

<sup>10</sup> <http://www.scotland.gov.uk/Resource/0041/00417243.pdf> pg4

<sup>11</sup> George Agiomirgianakis, Dimitrios Asteriou and K. Papathoma (2006) *The Determinants of Foreign Direct Investment: A Panel Data Study for the OECD Countries* City University London.

<sup>12</sup> Biggar Economics 2010

<sup>13</sup> Ernst & Young (2012) *2012 UK Attractiveness Survey: Staying Ahead of the Game* p 27

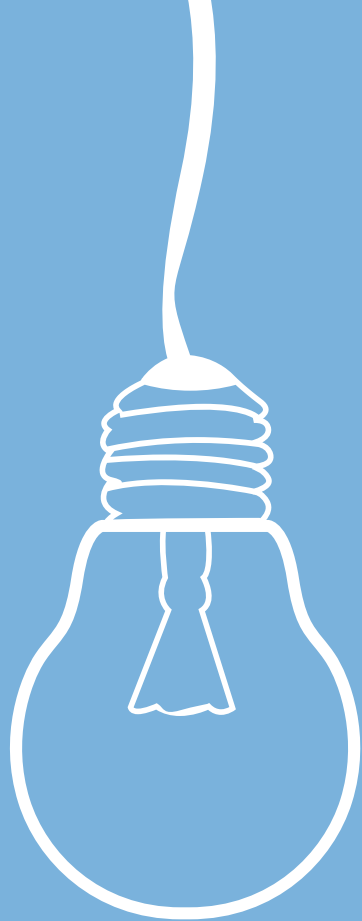
<sup>14</sup> AKA Chatham House

<sup>15</sup> Think London (2012)

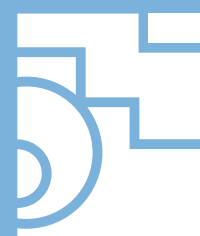
<sup>16</sup> Measured by £ value of research contracts and consultancy. HE-BCI 2013.

<sup>17</sup> Based on SFC KE Metrics which showed that consultancy counted for 59 per cent of all KE between universities and SMEs whereas contacts accounted for 33 per cent. SFC KE Metrics 2011-12.

<sup>18</sup> Interface (2013) *Annual report 2011-12*.



**Universities  
Scotland**



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