

Business-University Interaction in the UK

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Business R&D is changing

- Companies are moving from a closed internal system of R&D to an open collaborative form of innovation
- Business R&D is going global, with R&D centres increasingly located in key markets
- Innovation cycles are getting shorter, uptake of new technology is speeding up



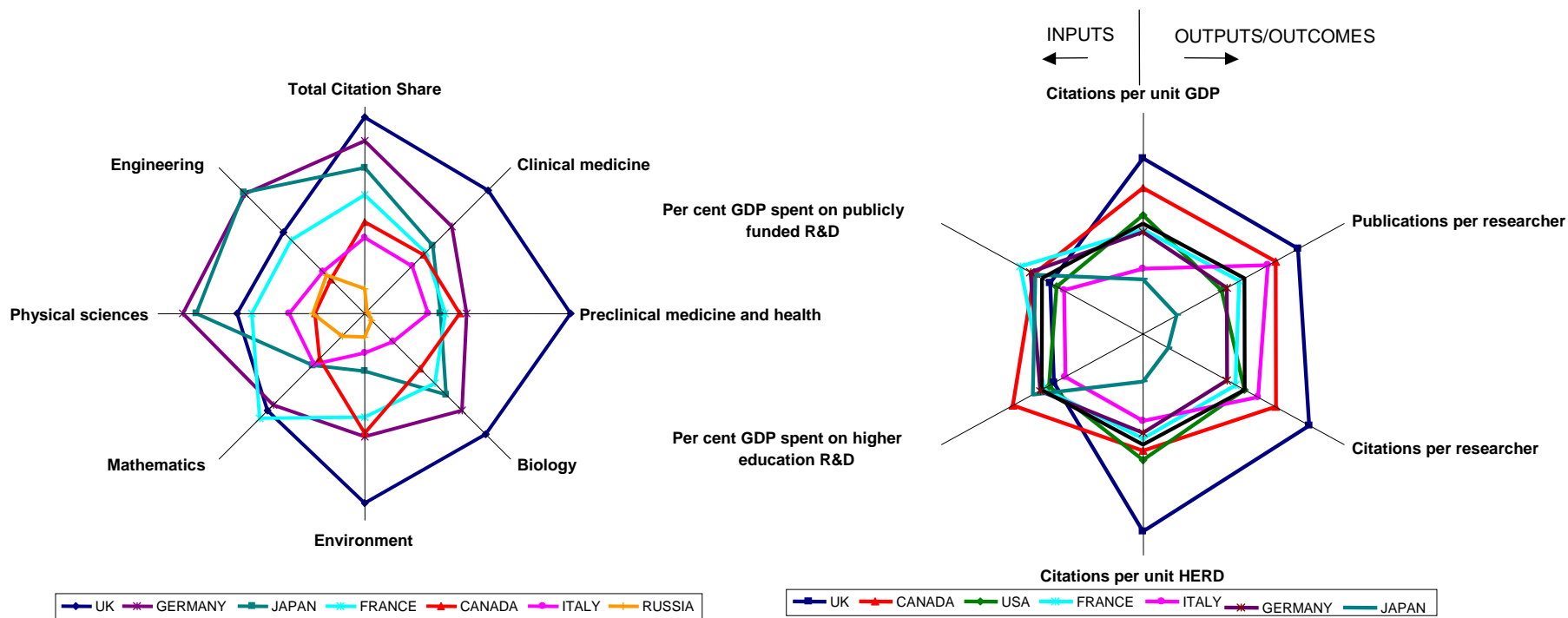
Universities are a key resource

- Good researchers operate in world-wide networks, science is global
- There is a continuous flow of new ideas and people into and out of university laboratories
- Research at the interface between disciplines is increasing

UK universities are doing well ...

- There has been a marked improvement in university business interaction in the UK over the last ten years
- An increase in the entrepreneurial culture within universities
- And a stronger regional and national role

The science base is strong and efficient ...



By 2007 government funding for basic research will have doubled, compared to 1997 figures



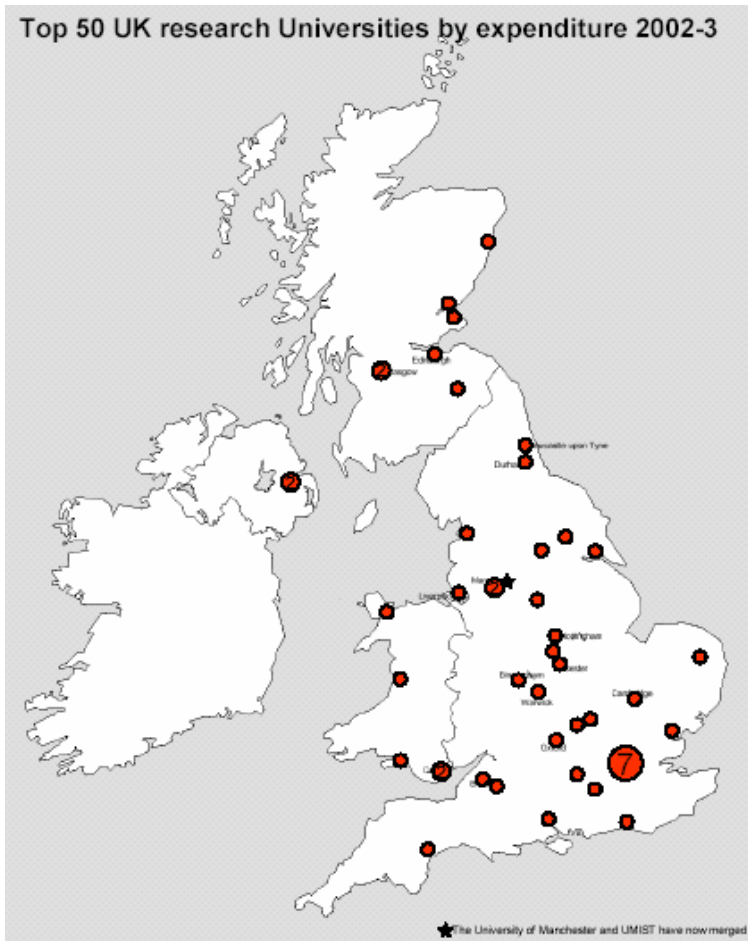
university-business interaction is improving ...

- Since 2000, approximately 200 new spin-offs per year, compared to 338 in the previous five years (one for every Yen 3.4 billion of research spend in 2003¹)
- Spin-off income in 2003 totalled Yen 71.6 billion¹.
- Market value of university spin-offs floated in 2004 was Yen 121 billion (market capitalisation of University spin-offs floated in the last two years reached Yen 200 billion in Feb 2006)
- Licensing income up from Yen 6.2 billion to Yen 8 billion in 2004
- Patent applications up by 25%¹ (a ten-fold increase over 10 years)
- consultancy earnings up by 38% to Yen 33.6 billion¹
- Education and training income of Yen 26 billion¹

¹University Business Interaction Survey, published Jan 2005



... and universities play a strong regional and national role



- Research expenditure is diffused – the largest university has only a 6% share of total UK funding
- Regional agencies focus on science assets and exploitation
- Global scale clusters (Cambridge, Oxford, London)
- University-led international links
 - Cambridge-MIT
 - Texas-UK
 - Manchester-Washington U.
 - Imperial-Texas, ORNL, Georgia
 - U.Cal-Bath, Bristol consortium



Universities are big business

- Contribute Yen 9 trillion directly to UK economy (from 171 HE institutions)
- Total income of Yen 3.4 trillion in 2003/4
- Export earnings of Yen 720 billion
- Generate an additional output of Yen 5.12 trillion in other sectors
- 1.2% of total UK employment (330,000 people) and generate another 276,000 jobs indirectly

From report published by Universities UK, 11 May 2006

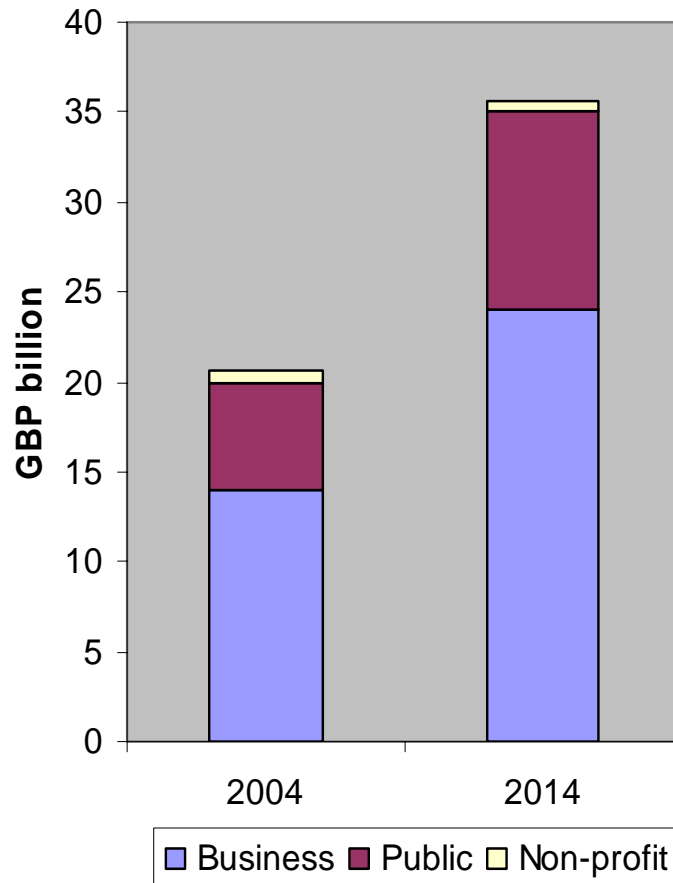


But the demand-side can be improved ...

- Overall business investment in R&D is low in the UK (1.2% of GDP)
- R&D intensive business do well, particularly new industries and services
- Sources of finance and venture capital are improving
- And there is a strong international dimension



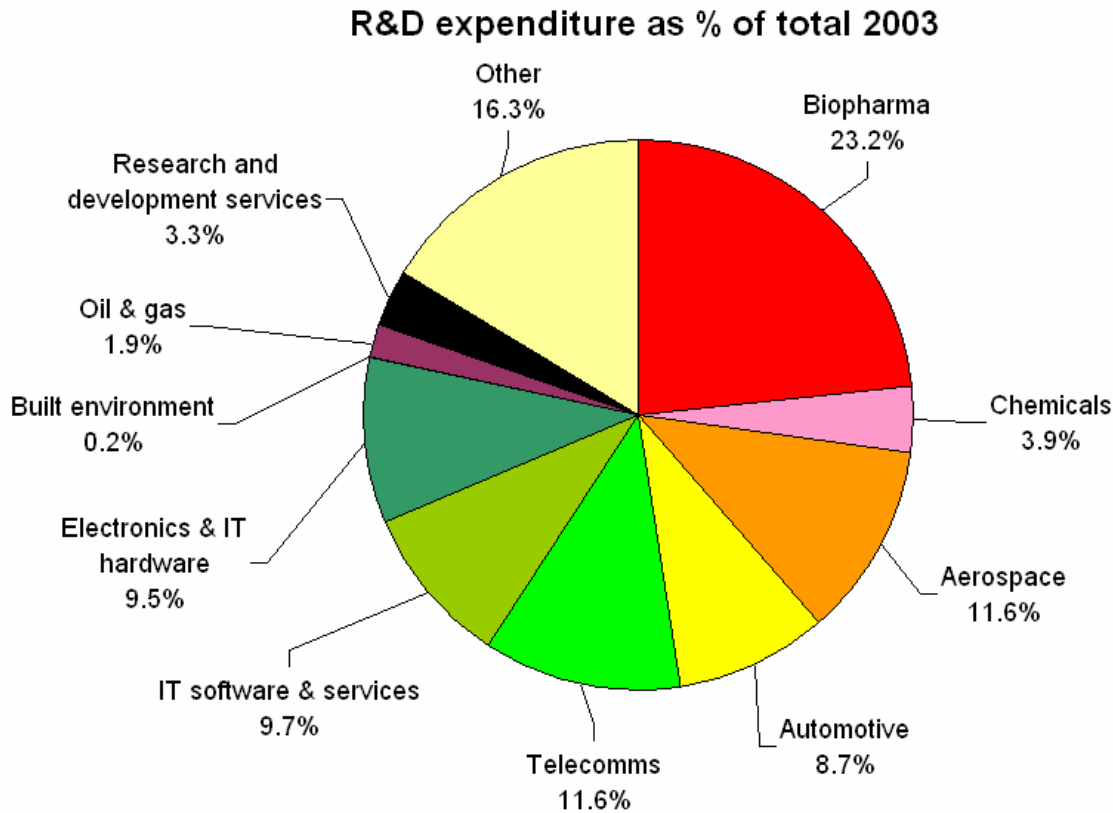
R&D expenditure is low overall



- Target is to increase total R&D spend to 2.5% by 2014



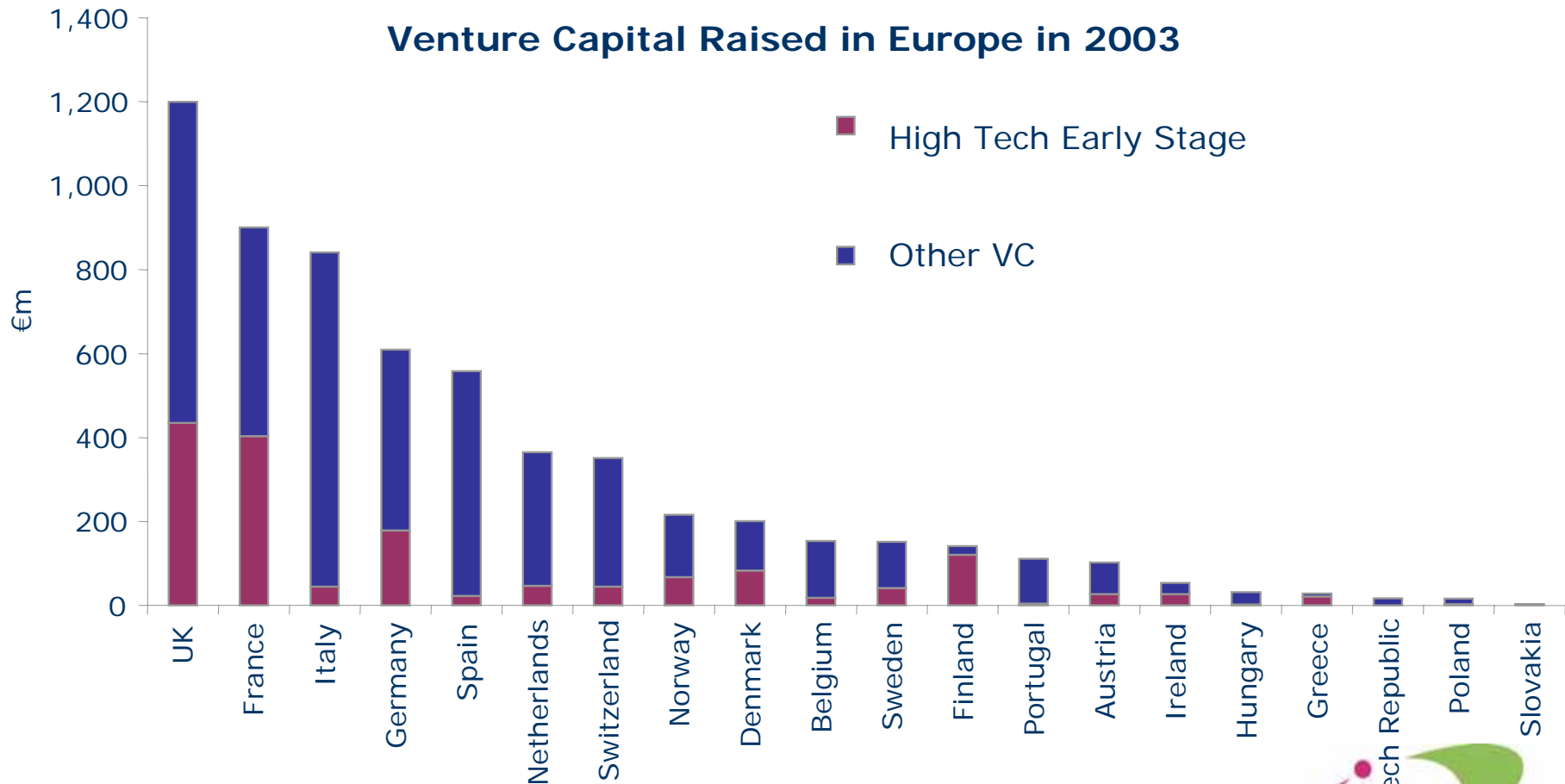
R&D intensive businesses



- Long-standing relationships in mature sectors (aerospace, pharma)
- dynamic new clusters emerging (bio, nano, software, design)



Venture capital availability is increasing ...



Source: EVCA Annual Survey



... and UK is open for business

- 25-40% of business R&D is from foreign owned companies
- Business funds 10% of university performed R&D
- Non-EU countries spent Yen 40 billion on university-based research in 2004



Government focus is to develop the supply-side (skills, ideas) ...

- Strengthen public sector entrepreneurialism
 - 24,000 science and engineering students received enterprise training, compared to just 3,000 in 1998/99
 - provide funding for knowledge transfer activities by Research Councils and Universities
- Make networking and IP handling easier
 - 20 knowledge transfer networks established
 - IP toolkit developed (Lambert Review)



... and stimulate business demand

- business-led National Technology Strategy
 - £580m (Y116bn) of R&D activity and over £270m (Y54bn) provided in Government support (over 360 projects) for priority technologies.
 - focus on key challenges through development of innovation platforms to integrate technologies and bring together the public sector research, business, policy and procurement instruments
- Increase market-led investment in R&D
 - tax credits worth GBP 600m (Y120bn) per year



Summary

- Open business environment, with high level of foreign investment in R&D
- Open and receptive science base, strong international collaboration and high quality research. Supply-side initiatives.
- Market-led strategy to increase business demand for university R&D
- Initiatives to join up and facilitate joint projects with business in key technology areas
- Development of global science and innovation links through the FCO Science and Innovation Network



Vision

“For the UK to be seen as a global leader in innovation and a magnet for technology-intensive companies, where new technology is applied rapidly and effectively to create wealth”

Technology Strategy Board, November 2005



Further information

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Examples



UK-JAPAN CLIMATE CHANGE COLLABORATION

- Met Office's Hadley Centre and NERC's Centre for Global Atmospheric Modelling and Japan's Earth Simulator Centre
- 6 UK researchers based in Yokohama for 3 years
- Supported by FCO's GOF Climate Change & Energy Programme £60,000 (Y12m) for 3 years
- UK access to best-funded centres of expertise
- Next generation simulations of the climate system at higher resolutions
- Research in key areas has accelerated.
- Identified the ocean to be a significantly more important factor for modelling the atmosphere than originally thought



and many others ...

- Edinburgh University Institute for Stem Cell Research and the RIKEN Centre for Developmental Biology at Kobe
- Takeda Pharmaceuticals and the Oxford University Centre for Diabetes, Endocrinology and Metabolism
- Mitsubishi Chemical Corporation and Imperial College on solving the barriers to gene therapy
- Cambridge University and Japan's National Institute of Material Science on nanomaterials for next generation computers
- Bristol University and Toshiba on new telecommunications technology
- University College London and Eisai on diseases of the brain and central nervous system

