

The Contribution of Science and Innovation to Growth in the Economy

Professor Sir Adrian Smith
Foundation for Science and Technology
1 February 2012

Announcements

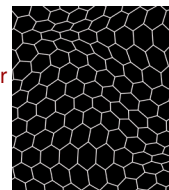
BIS | Department for Business
Innovation & Skills

£100m for Research & Innovation Campuses:

Babraham ▪ Norwich ▪ Daresbury ▪ Harwell ▪ International Space Innovation Centre
(2011 Budget)



£50m to support the commercialisation of **graphene** ▪ £145m for **high performance computing**
(October 2011)

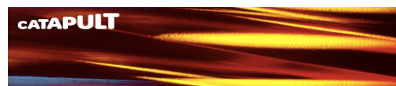


£200m of new science capital funding:

- Institute of Animal Health
- large-scale demonstrators of new technologies
- the next generation of small radar satellites
- ARCHER Phase II
- essential infrastructure

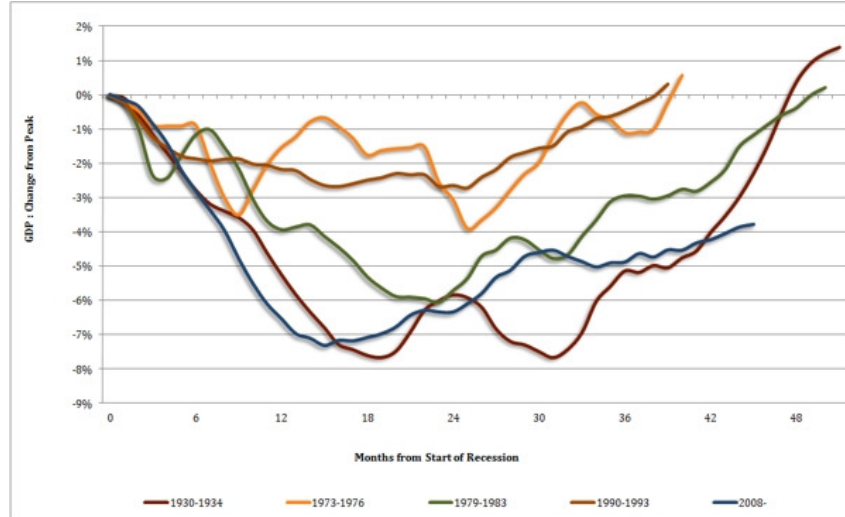
(Autumn Statement, 2011)

Innovation and Research Strategy for Growth (December 2011)



Wilson Review of University– Business Collaboration

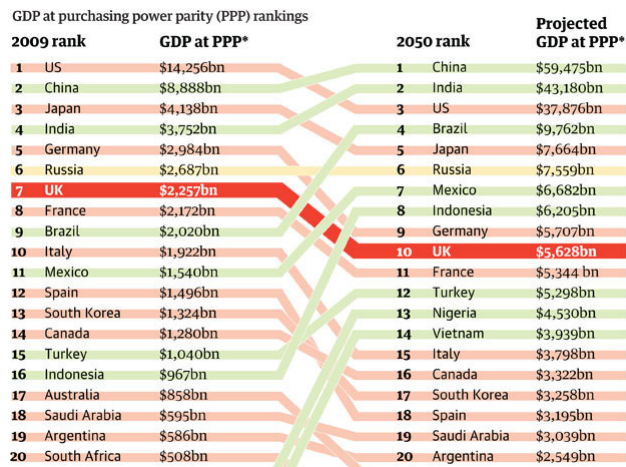
Recessions



Source: National Institute of Economic and Social Research, 2011

A tough economic climate

Increasing competition from China, India and Brazil.



Source: World Bank estimates for 2009, PWC model estimates for 2050

“Innovation also demands basic research...Don't gut these investments in our budget... Support the same kind of research and innovation that led to the computer chip and the Internet....”



President Barack Obama
State of the Union address
2012



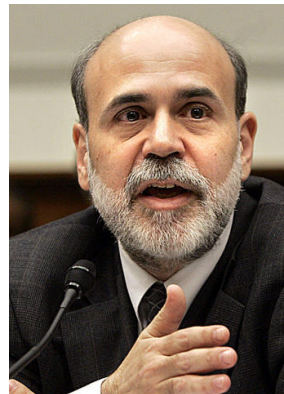
“Globally, science and technology are also crucial for overcoming the financial crisis and ensuring stable, balanced and sustainable economic development.”

Wen Jiabao
Premier of the People's Republic of China
Royal Society, June 2011

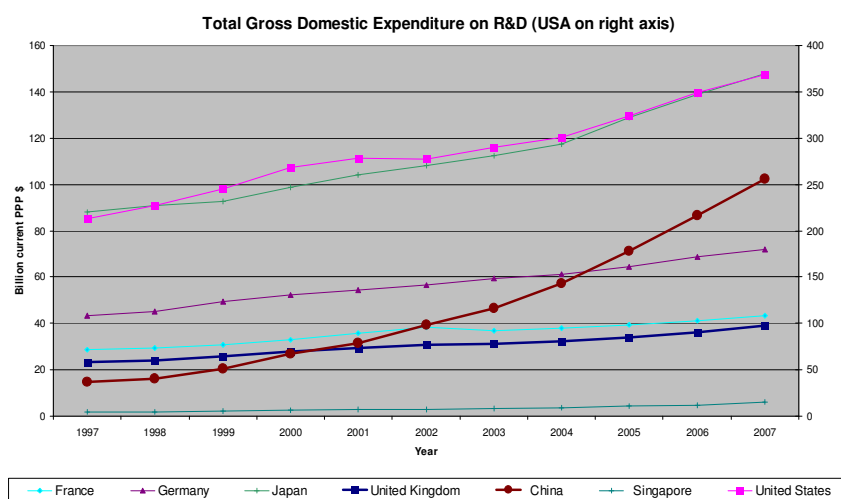
The role of Government

"Governments that choose to provide support for R&D are likely to get better results if that support is stable, avoiding a pattern of feast and famine."

Ben S. Bernanke
Chairman, Board of Governors
of the Federal Reserve System
May 2011

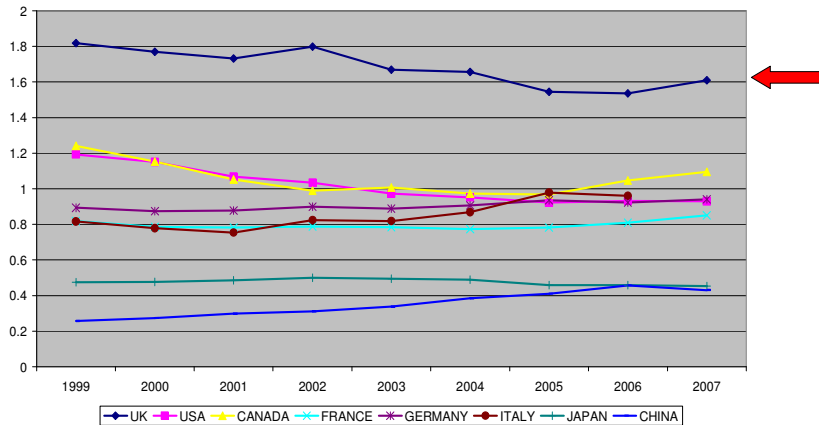


International spending on science

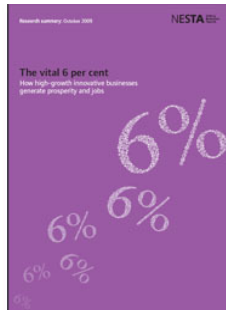


The UK research base is second in the world for excellence and the UK is **the most productive country for research in the G8**

Citations per \$ spend in public R&D



- Only 6% of companies are high growth
- Yet they account for 50% of new jobs created
- These companies are of all sizes and in all sectors
- The shared characteristic: they are all **innovative**



'The Vital 6 per cent'
NESTA report, October 2009

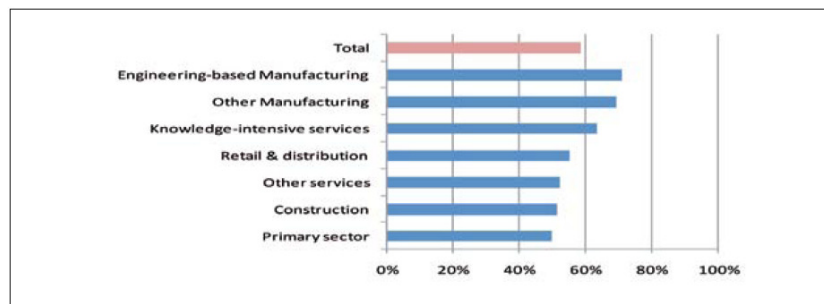
What does “innovative” mean?

- Innovation activity is defined as occurring when enterprises are engaged in any one of the following:
- Introduction of a new or significantly improved product (good or service) or process.
- Expenditure on and activities in internal R&D, training, design, acquisition of capital goods for the purpose of making new products or improving processes, acquisition of external knowledge.
- Engagement in development projects that have neither been completed nor abandoned.
- If a firm answers yes to any of the above activities it is defined as 'innovation active'. We currently survey 30,000 firms and get a response rate of 50%.

Innovation is pervasive

UK data shows high levels of innovation and low variance across industries.
Highly innovative firms are found in all industries and regions.

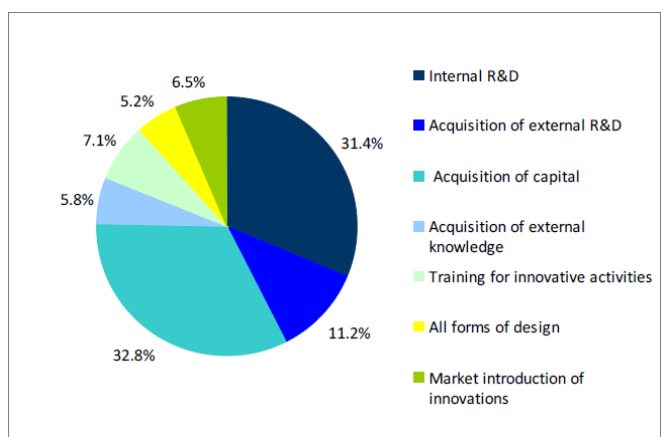
Proportion of innovation active enterprises in the UK, by sector (2006 – 2008)



Source: UK Innovation Survey, 2009

Although half of innovating firms do no R&D, they access R&D through interaction with universities

Innovation expenditure in 2008 (proportions of total expenditure)



Degree of academic-business engagement across types of interaction in the UK

Type of Interaction	Cambridge survey (At least once)	IGPC survey (At least once)
Attendance at conference with industry and university participation	87%	78%
Attendance at industry-sponsored meetings	n/a	59%
A new contract research agreement (original research done by university alone)	37%	54%
A new joint research agreement (original research undertaken by both partners)	42%	53%
A new consultancy agreement (provision of advice that requires no original research)	43%	44%
Postgraduate training with a company	33%	44%
Training of company employees (through course enrolment or through temporary personnel exchange)	33%	27%
Creation of new physical facilities with industry funding (e.g. new laboratory or buildings on campus)	9%	15%

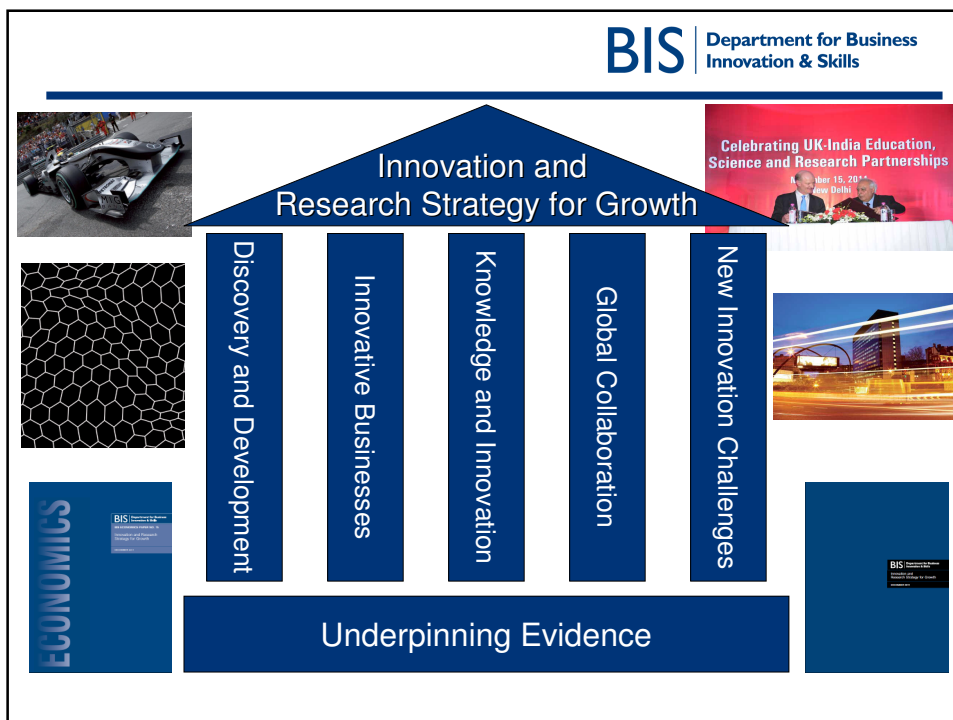
UK's science performance is strong

Scientific publication

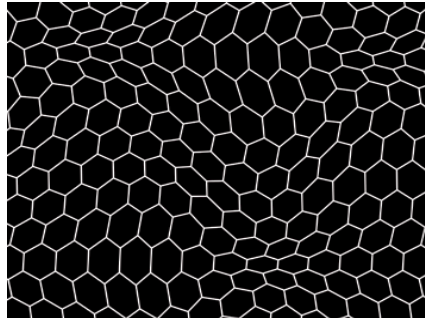
Percentage World Shares 2010
Growth rates from 2006: Growing (green), static (amber) and falling (red)

	UK	China	USA
Population	0.9	19.6	4.5
Researchers	4.2	18.9	23.8
GERD	3.0	13.3	35.0
Articles	6.4	17.1	24.0
Citations	10.9	7.6	41.4
Highly Cited	14.0	5.0	55.8

Source: BIS (2011), International Comparative Performance of the UK Research Base, Elsevier, report to BIS



- recognises UK technology strengths
- announces Catapult Brand for technology innovation centres
- identifies synthetic biology, energy efficient computing, energy harvesting and graphene as emerging technology areas



Catapults (Technology and Innovation Centres)

- **High Value Manufacturing** Catapult opened in October 2011
- **Cell Therapy** and **Offshore Renewable Energy** Catapults will be open by summer 2012
- Catapult in **Satellite Applications** due to open in autumn 2012
- Technology areas for the final three Catapults will be announced in early 2012 will be and operational by 2013





- £75m additional funding for Innovative SMEs, including relaunch of Smart (Grant for R&D), expansion of Small Business Research Initiative and Innovation Vouchers
- expansion of R&D Tax Credit for SMEs and introduction of an 'above the line' Credit to encourage large company R&D
- £25m for large scale demonstrators

- supporting Clusters through the TSB Launchpad and enabling multi-institutional bids to apply for research funding
- confirmation of Chancellor's announcement on EU VAT cost-sharing exemption to be extended to universities and charities
- details of £145m e-infrastructure funding and additional £13m for ARCHER phase II





- Strengthening EU engagement and access to EU funding
- Joint RCUK and Chinese MOST funding to undertake bilateral research projects

- £10m for an Open Data Institute
- Research Councils 'Gateway to Research'



- NESTA UK Prize Centre and Prize Fund
- More focussed work on public procurement including Centres of Expertise and Public Private Procurement Compacts

The Role of Universities

£115m Maritime Centre of Excellence



UNIVERSITY OF
Southampton

**Lloyd's
Register**

Energy

BIS | Department for Business
Innovation & Skills

- £89 million investment – Strathclyde’s single-biggest investment in its research capacity
- Partners include Scottish and Southern Energy, ScottishPower and the Weir group.



Automotive engineering

BIS | Department for Business
Innovation & Skills



Tata Motors has invested over £85m in collaborative research with the Warwick Manufacturing Group.

The Government's ambitions:

- best place in the world to do science
- more universities in the world's top 100
- invited proposals for new types of university with a focus on science and technology and postgraduates
- universities' knowledge exchange funding from external sources to grow by 10% over the next 3 years



David Willetts
'Our Hi-Tech Future', January 2012