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Government target of 2.4% spend on R&D

What is the best way to achieve the Government's target of spending
2.4% of GDP on R&D by 2027?

Dr Patrick Vallance
FST debate

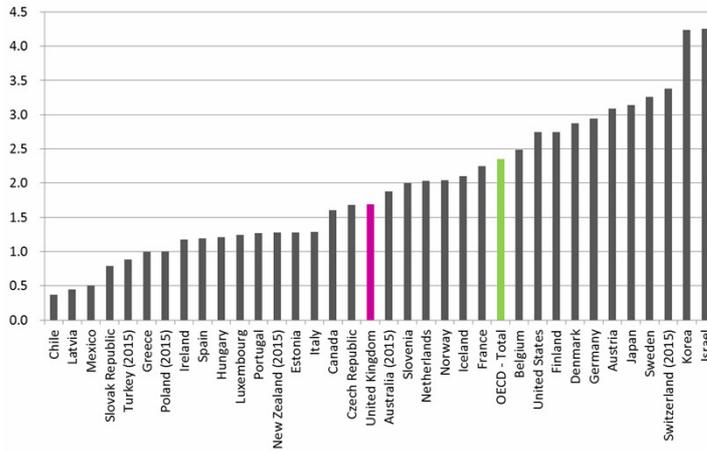
17th October 2018

What is the right amount?

“If the boundary is set too high then there is a danger that resources are wasted and the quality of research supported is too low; if the boundary is set too low then the research endeavour becomes inefficient and even dysfunctional, with funding decisions behaving more like a lottery.”

Percentage of GDP on R&D

Gross Expenditure on R&D as a percentage of GDP

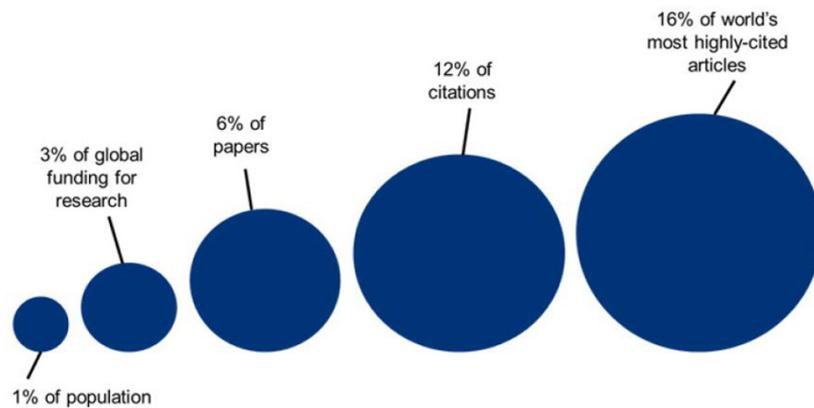


- 2.4% to 2.5% of GDP is the average spend on R&D across the OECD countries.
- The average spend is 2.1% across the EU15, whilst the average is 1.9% for the EU28.
- Gross Expenditure on R&D (GERD) stood at 1.7% of GDP in the UK in 2016.

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Source: OECD MSTI

Global performance of the UK Research Base

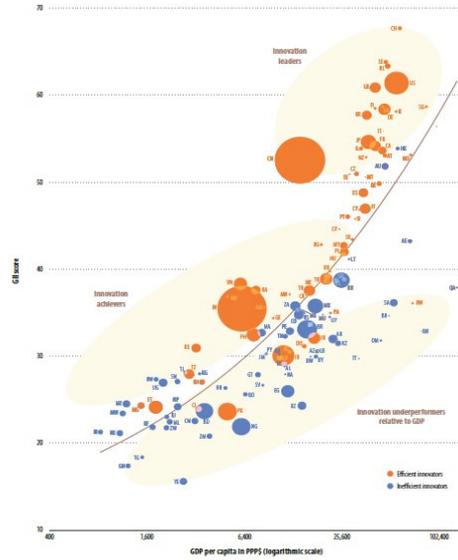


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Source: Our plan for growth: Science and Innovation. Department of Business, Innovation and Skills. December 2014.

Global Innovation Index 2017

- The Global Innovation Index (GII) considers the performance of 127 countries' economies against 81 indicators of innovation.
- In 2017, the UK was ranked fifth in the GI, behind Switzerland, Sweden, the Netherlands and the USA.
- The UK's rank in the GI has dropped, having been ranked second in 2014 and 2015, falling to third in 2016 and fifth in 2017.
- **By the metrics of the GI, the UK is classed as an 'efficient innovator', though on innovation efficiency (the ratio of innovation inputs to outputs) the UK is ranked 20 out of 127.**



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Source: Cornell University, The Global Innovation Index 2017

Who Spends?

Where are we now? Total investment in UK R&D as a percentage of GDP

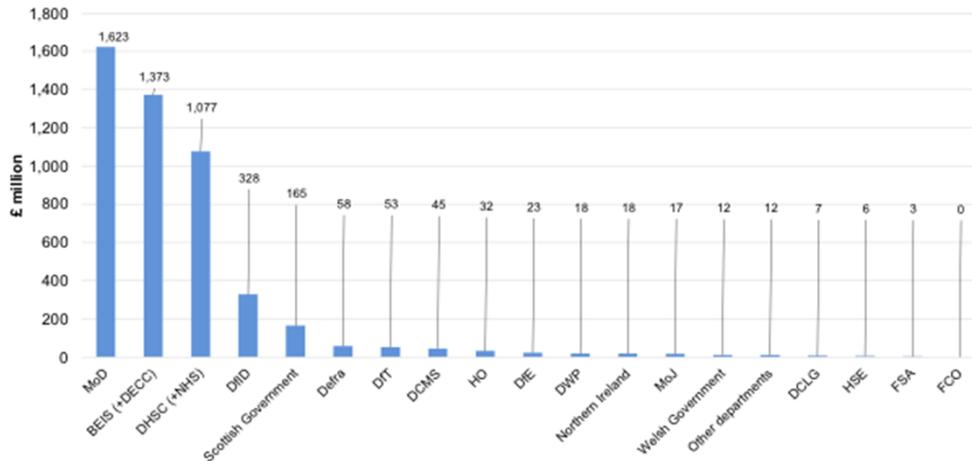


Source: ONS (2018) UK gross domestic expenditure on research and development, 2016. Note – figures are rounded.

Credit: the Academy of Medical Sciences, the British Academy, the Royal Academy of Engineering and the Royal Society (2018) Investing in UK R&D – updated May 2018.

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R&D Expenditure by Government Department 2016-17

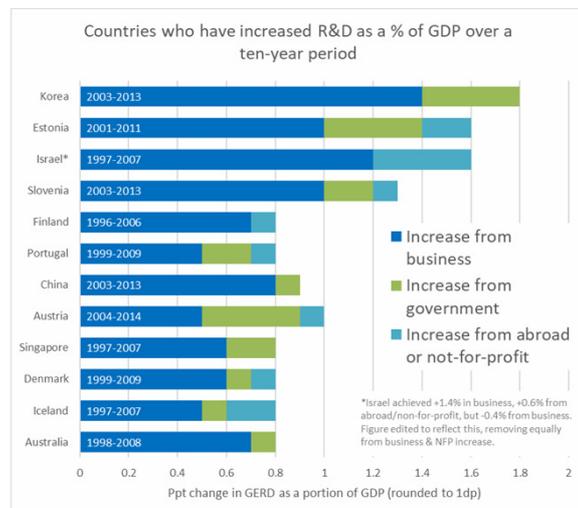


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Source: ONS, 2016

Is it feasible to increase percentage spend?

- The **2.4% target** implies **increasing the UK's R&D intensity** by **0.7% points** in 10 years.
- In most big developed countries R&D levels have remained stable. In Asia (China, Korea) big investments in education and R&D have helped facilitate a catching-up effect in GDP per capita.
- **10 countries** have achieved the UK's required scale of **increase (0.7% points)** in R&D in recent years. Most of the increase in each case came through **business-funded R&D**.



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Source: OECD MSTI

What makes businesses... locate R&D activities in a country?

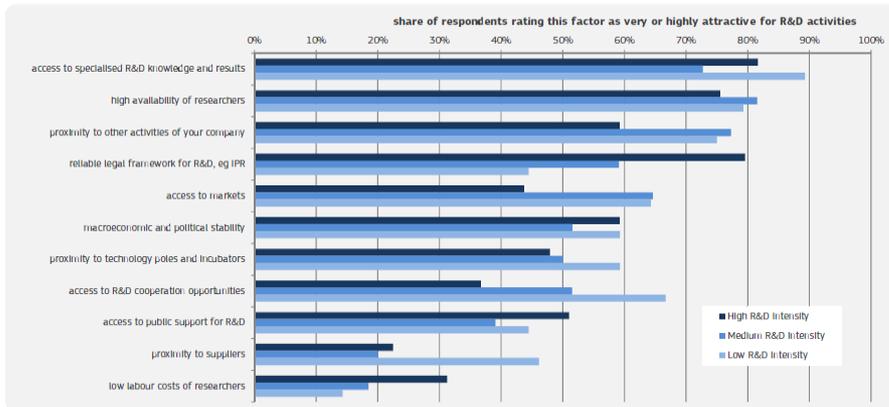


FIGURE 23 – FACTORS FOR THE ATTRACTIVENESS OF R&D LOCATIONS

Note: The figure refers to 151 (48 high R&D intensity, 65 medium and 28 low) out of the 157 companies in the sample representing 33% of the total R&D investment by the 1000 EU Scoreboard companies.
Source: European Commission JRC-B (2016)

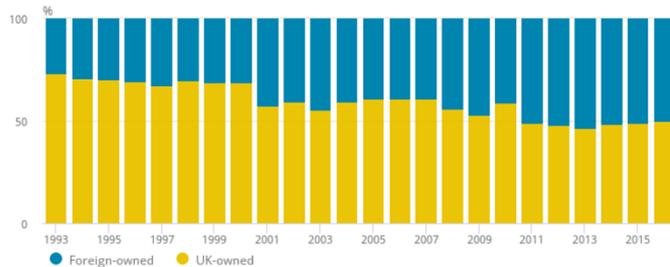
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Source: European Commission JRC-IPTS (2015)

Changing Pattern of Ownership and R&D Spend

- The proportion of foreign-owned businesses performing R&D in the UK is now 51%, compared to 6% in Japan, 16% in the United States and 20-22% for France and Germany.

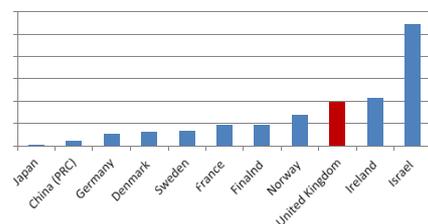
Ownership of businesses who perform R&D in the UK, 1993 to 2016



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Left Source: ONS 2016

Proportion of Business R&D funded from abroad (%), 2014

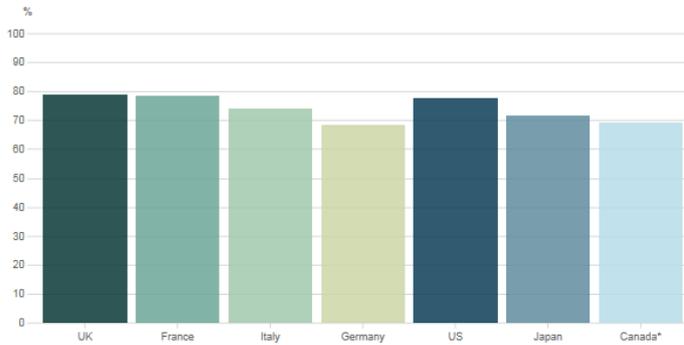


- The UK is attractive to Foreign Direct Investment (FDI), however reliance on FDI could make the UK vulnerable to changes in the confidence of overseas investors, new investment opportunities in Asia, or 'better offers' from competitors.

Right Source: ONS BERD survey (November 2017) and OECD MSTI

UK as a service driven economy

Percentage of each country's GDP that comes from the service sector, G7 countries, 2014



Source: OECD and Second Estimate of GDP, ONS
*The latest comparable data for Canada is from 2012

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- UK economy is somewhat more reliant on the services sector than any other G7 country. While our reliance is similar to that of France and the USA, we differ from Germany where a lower proportion (69%) of GDP came from the service sector in 2014.



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Thank you

For further information: gcsa@go-science.gov.uk