

Contribution to the Balance of Competences Review on Research and Development

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Impact of EU research policy on UK

EU research and innovation policy operates through funding programmes. The 7th Framework Programme, or FP7, runs until 2013, when it will be replaced by the Horizon 2020 programme. The UK has to date been very successful in obtaining EU research funds as the data and examples below show.

European Commission data (also published by BIS) show that the UK receives more than 15% of the total funding of the current FP7 programme, second only to Germany¹. According to the Minister of State for Universities and Science, the total amount of EU funding awarded to UK Higher Education Establishments and to private organisations under FP7 so far amounts to €3,708 million and €878 million respectively.² The UK is involved in a larger number of successful projects than any other country, and UK academia and SMEs benefit significantly. Oxford, Cambridge, University College London and Imperial College are among the top ten universities receiving EU research funds³. On top of that, the UK is one of the few countries (together with the Netherlands, Belgium and Cyprus) that hosts a disproportionately higher share of European Research Council (ERC) grants compared to GDP and population size⁴. It should be noted here that ERC focuses on research excellence rather than a balanced re-distribution of EU funds, a feature which many UK researchers value highly.

EU research policy complements national efforts and represents an important additional stream of financing at a time when national budgets are under pressure. The UK research budget was cut in 2007, has not seen a major boost since then, and is behind the EU target, agreed by all Member States, of 3% of GDP to be spent on research. Almost one fifth of all funding for the UK Higher Education Institutions now comes from the EU⁵, therefore the EU research programmes have an important role to play in bridging the funding gap.

¹ Government Review of the Balance of Competences between the United Kingdom and the European Union: Call for Evidence: Research and Development, May 2013

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/199991/bis-13-866-balance-of-competences-review-research-and-development-call-for-evidence.pdf

² Research: EU Grants and Loans, <http://www.theyworkforyou.com/wrans/?id=2013-07-03a.162433.h&s=%28section%3Awrans%29+speaker%3A11494#g162433.q0>

³ Fifth FP7 Monitoring Report, European Commission, August 2012, http://ec.europa.eu/research/evaluations/pdf/archive/fp7_monitoring_reports/fifth_fp7_monitoring_report.pdf

⁴ Ibid

⁵ Government Review of the Balance of Competences between the United Kingdom and the European Union: Call for Evidence: Research and Development, May 2013

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/199991/bis-13-866-balance-of-competences-review-research-and-development-call-for-evidence.pdf

A good example of the positive impact of EU research policy for the UK is the success of the Joint European Torus (JET) facility, located in Culham. Largely supported by EU research funds, this is the world's largest and most powerful tokamak. The JET facility is the prototype of an international fusion project the International Thermonuclear Experimental Reactor (ITER). JET carries out much important work needed for the design and construction of ITER, such as testing of plasma. It is thus the core part of the European fusion research programme and owes part of its prominence to EU support and funding.

There are numerous examples of regional projects supported by EU research funds. For example, Biopharma Technology Ltd and other companies in South East (Winchester) have received £2.6 million for influenza research⁶; Cambridge University has obtained £2 million for research into electric vehicles and hybrid electric vehicles⁷; Newcastle University has been awarded £5.1 million for research into Comprehensive Modelling for Advanced Systems of Systems⁸. Without this EU support it would have been more difficult for the UK Government to fund such projects.

The rationale for research policy at EU level

The European Union has a shared competence in the field of research, technological development and space, reflecting the need for better cooperation and collaboration in modern day research.

Research is complex, cutting edge and interdisciplinary. Individual companies and even countries find it difficult to fund increasingly costly projects and endeavours that require more "critical mass" than before. Modern research thus dictates the need for better co-ordination and cooperation, for increased mobility of talents and ideas and for ability to leverage large sums of money. Individual Member States, such as the UK, simply do not possess the economic muscle to undertake such research projects. The EU, with its 28 Member States representing more than 500 million people and a large resource pool, is better placed to respond to the challenges of present day research and innovation. For example, such excellence-based EU research funds as the ERC can draw resources from a wider pool of talents and ideas than any national scheme can.

A good example of the scale of EU research funding is the recent announcement that the European Commission will invest €8 billion investment from the next EU research and innovation programme, Horizon 2020 in five public-private partnerships in innovative medicines, aeronautics, bio-based industries, fuel cells and hydrogen, and electronics⁹. This will be topped by around €10 billion from industry, and close to €4

⁶http://cordis.europa.eu/search/index.cfm?fuseaction=proj.document&PJ_LANG=EN&PJ_RCN=10228125&pid=50&q=F5E1A16CB292D4E72D5D2044BDAD2577&type=sim

⁷<http://cordis.europa.eu/projects/index.cfm?fuseaction=app.details&TXT=%22university+of+cambridge%22&FRM=1&STP=10&SIC=&PGA=FP7-TRANSPORT%2CFP7&CCY=UKCOUNTRY&PCY=&SRC=&LNG=en&REF=98408>

⁸<http://cordis.europa.eu/projects/index.cfm?fuseaction=app.details&TXT=%22newcastle+university%22&FRM=1&STP=10&SIC=&PGA=FP7&CCY=UKCOUNTRY&PCY=&SRC=&LNG=en&REF=100096>

⁹ http://europa.eu/rapid/press-release_IP-13-668_en.htm

billion from EU Member States to secure €22 billion worth of investment. It would be difficult for any single Member State to leverage such funds.

It is widely acknowledged that the best research is highly collaborative and requires stable international links. The EU is best placed to promote and coordinate scientific collaboration across borders as it can easily facilitate European and international partnerships by, for example, involving multiple participants from a number of Member States in bids for funding. It thus facilitates the right type of collaborative structure that provides the necessary critical mass for the research to be effective.

If it was not part of the EU, the UK would find itself isolated when competing with China and the US in today's race to innovate - the EU offers a much more powerful and effective platform to do this. While it is true that non-EU Member States such as Israel and Switzerland participate in EU research programmes as associate members, they have no say over the shape, structure or priorities of EU research policy as they do not participate in EU decision making.

Is today's EU research policy fit for purpose?

Horizon 2020

There has been some criticism of the EU research programmes; in particular it has been noted that the application process is rather burdensome and lengthy, while it is sometimes difficult to have an overall picture of what funding is available.

The EU has not ignored such criticism and the reformed EU research programme, Horizon 2020, goes some way to rectify the previous weaknesses. In fact, the UK was one of the main drivers for simplification during the legislative process and is one of the key Member States to have successfully pushed reform ideas forward in order to improve the EU research framework.

With an expected budget of EUR 70 billion, the new Horizon 2020 programme will run from 2014 until 2020 and will combine all the existing EU research and innovation funding programmes into one coherent mechanism: the Framework Programmes for Research and Technical Development, the Competitiveness and Innovation Programme (CIP) and the European Institute of Innovation and Technology (EIT). This single research instrument with a single set of rules across the EU will make it easier for companies and research institutes to apply for funding.

The new structure of the programme reflects the priorities of the UK and other Member States. It puts a very strong emphasis on excellence with "excellent science" as one of the three core priorities (together with "industrial leadership" and "societal challenges"). It features a simplified reimbursement model and a possibility of a fast-track procedure for funding applications. Horizon 2020 will also have a special SME instrument to support innovative SMEs and target the gap between research and the market.

The new Horizon 2020 instrument will therefore be a more effective and simplified EU research funding programme, targeting excellence and market penetration. It is

estimated that it will generate an extra 0.92% of GDP and 0.4% of employment by 2030¹⁰.

European Research Area

The European Research Area (ERA) is the EU Internal Market for research. When completed, it will enable researchers, research institutes, businesses, scientific knowledge and technology to circulate and co-operate freely across borders. ERA consists of all research and development activities, programmes and policies in Europe which involve a transnational perspective. As no single country offers sufficient resources to be competitive on a world scale, cross-border co-operation can help make the most effective use of national and regional resources.

The ERA, if completed, can overcome the fragmentation of research in Europe along national and institutional lines and help fulfil Europe's research and innovation potential, bringing vast benefits to citizens. The UK therefore stands to gain from the single research area as it does from the EU single market. It is key for the exchange of talent and ideas across borders.

Galileo and Copernicus

EU space policy is closely linked with EU research and innovation policy. The EU's main competence in the field of space lies in strengthening the coordination of national space programmes and resources as well as in setting funding instruments that support the development and uptake of space applications and services.

In today's world, space applications have a strong impact on security, safety and well-being. Having an autonomous space infrastructure will therefore give European countries a global competitive and strategic advantage. While every EU Member State pursues their national space policy, often as part of their defence and security framework, building a system that is able to compete and offer similar services to the US GPS would be difficult if not impossible for any individual European country. The EU is better placed to leverage more power and resources to undertake such a task.

This is the rationale for the two flagship EU space programmes, Galileo and Copernicus. Galileo will be Europe's independent global navigation satellite system offering such services as Search and Rescue and Public Regulated Service. It will put Europe on the same footing as the US and China and offer services on the par with the GPS and GLONASS.

It is estimated that Galileo and its interoperable usage with GPS will deliver a substantial increase in applications in all sectors thanks to improved accuracy and coverage. UK companies have a competitive advantage when it comes to Galileo services in particular, because of the expertise and experience they already have in this area: they already play key roles in various EU research projects associated with the exploitation of Galileo in transport and agriculture¹¹.

¹⁰ Commission Impact Assessment, http://ec.europa.eu/research/horizon2020/pdf/proposals/horizon_2020_impact_assessment_report_executive_summary.pdf

¹¹ <http://www.raeng.org.uk/news/publications/list/responses/galileo.pdf>

Copernicus is the European Earth Observation Programme (previously GMES). It will provide precise data crucial for monitoring environment and security in order to understand and tackle such challenges as climate change and weather emergencies. It is only by pooling Member States' resources and expertise together that the EU is able to build such a large and autonomous space infrastructure.

Other EU policy and innovation in UK

Apart from direct research funding programmes, there are other ways in which EU policy stimulates innovation and technological developments. Ambitious targets and standards lead to research into new technology and stimulate uptake of new products and services.

In the field of energy, both the EU ETS Directive and the Renewable Energy Directive (RED) have led to significant investment into renewable energy technology. As a result, the efficiency, generation power and cost have improved drastically over the last 5 years. For example, solar photovoltaics are expected to be competitive with fossil fuels such as gas before 2020¹².

Thanks to an ambitious policy framework, the EU is currently the leader in research and development into renewable energy. Horizon 2020 is expected to allocate 85% of its energy budget into non-fossil fuel energy research, mostly renewables and energy efficiency. The UK, with its vast wind and marine resources, is positioned to benefit enormously from this funding priority.

Another example is the F-Gas Regulation currently being negotiated. Its aim is to curb HFC emissions in Europe by limiting or even banning some sources. Safe and efficient alternatives exist but there is no market demand to drive their cost down. 90% of the current HFC production is in China¹³, while many small European companies are producing alternative technologies. Environmental legislation can spur innovation in Europe and give a competitive advantage to European SMEs to expand their existing facilities and build new ones.

Setting standards at EU level, such as energy efficiency, environmental or safety standards, stimulates the market and promotes innovation. Having uniform standards across Member States also makes it easier to trade cross-border, increases opportunities for growth and ensures a fair, competitive environment for companies.

Conclusion

If the litmus test is whether EU research policy benefits the UK more than it costs, the answer is clearly positive. The breadth and depth of UK research strengths has allowed the UK to consistently secure a disproportionate share of EU funding in this field. The UK has excellent scientific infrastructure that some newer Member States are still lacking. All this gives the UK a competitive advantage when it comes to EU

¹² Technology Roadmap: Solar photovoltaic energy, IEA, <http://www.iea.org/publications/freepublications/publication/name,3902,en.html>.

¹³ Testimony of Bente Tranholm Schwarz, F-Gas Expert Hearings: Stationary AC and Pre-Charging Ban (28 February 2013)

research funding - our allocation is around a third higher than our share of the population.

The overall impact of EU research policy on the UK has therefore been positive as it has increased the amount of high quality research, key to economic growth and development.