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Dear Chancellor

The Science and Technology Committee

I am writing to you in my capacity as Chairman of the House of Lords Science and Technology Committee with regard to science funding, in anticipation of the June spending review announcement. In speeches such as that to the Royal Society in November, you have emphasised the value Government place on investment in science and recognised the economic contribution it makes. The Committee welcomes your commitment to the UK's science base, and considers the protection of the science budget to be critical to ensuring that the UK maintains the world-class science base needed to support future economic growth.

The Committee is, however, concerned that ring-fencing is not enough to ensure that the UK retains its position as a world-leader in science and technology in the long term. The effects of inflation have already had a serious impact and could in the future have a more serious impact on the science budget. Uncertainty about the future will also deter potential investors. The Committee recommends that the Government publish a long-term investment framework for science, innovation and skills.

On 21 May, we held a one-off evidence session on science spend. We heard from Professor John Pethica FRS, Vice-President and Physical Secretary of the Royal Society, and Dr. Herman Hauser, venture capitalist and co-founder of Amadeus Capital. We discussed the science budget, and the importance of science and innovation to the UK's economic recovery – themes which numerous reports and publications have explored in considerable depth. It is from this evidence session and our familiarity with this broader set of literature that we have identified a number of key issues which we urge you to take into consideration when reviewing science spend in the current spending review and in any future comprehensive spending review.

We heard evidence on the importance of Government investment in science to support innovation in the UK. UK public investment in R&D, at 0.65 per cent of GDP, is below the G8 average of 0.8 per cent. Despite this, the UK continues to possess a world-class science base and performs extremely well in terms of quantity and quality of scientific publications per pound spent. Nonetheless, the Committee is of the view that the science-budget should be increased. We set out the reasons for this below.

Rationale for increasing the science budget

The value in supporting the UK economy

The relationship between public investment in science and economic growth is not linear, is difficult to measure and there may be significant time-lags before benefits are realised.¹ Importantly economic growth is not the only indicator by which benefits should be measured and wider public good benefits accrue as a result of investment. In many cases, however, a positive correlation between investment in science and economic growth can be seen.² For example, in his 2013 State of the Union address, President Barack Obama stated:

“if we want to make the best products, we also have to invest in the best ideas. Every dollar we invested to map the human genome returned \$140 to our economy -- every dollar.”

At our evidence session, Dr. Hauser gave the specific example of research clusters that have sprung up around research-intensive universities in the UK. He reported that the cluster in Cambridge included 1, 500 different hi-tech companies, employed 55, 000 people and had an annual turnover of around £13 billion. Dr. Hauser noted that in these R&D clusters the spend on R&D is very much higher than the national average. The witnesses emphasised the importance of a strong, underpinning science-base for stimulating innovation, and the link between innovation and economic growth; arguments which have been made in many other contexts.

Competition

Other countries continue to invest, and increase the scale of their investment, in R&D. Although the UK currently sees good returns on investment in R&D, there will be limits as to what can be achieved. As described by Professor Pethica:

“if people are running twice as fast as everywhere else, why do we not get them to run three times as fast? This argument can continue indefinitely of course.”

We are concerned that, unless investment in science in the UK keeps pace with that elsewhere in the world, the UK could lose its competitive edge in science and innovation, with consequential impacts on the economy.

Accelerating returns

The witnesses considered that the returns on investment in R&D are disproportionately greater than the levels of initial investment. Higher levels of investment result in economies of scale and catalysis of ideas within and between organisations. Increased public investment also has the advantage of increasing the flow of skilled people out into business. This is important for establishing sufficient absorptive capacity so that business is well placed to pull through research into the development of commercial products.

Reputation

The UK's high performance in science is attributable in large part to the country's ability to retain home-grown talent and to attract talented scientists from abroad to work in this country. The UK also attracts comparatively high levels of foreign investment in R&D. The

¹ The Royal Society: *The Scientific Century securing our future prosperity*, 2010.

² Her Majesty's Treasury: *Science and Innovation Investment Framework 2004-2014*, 2004; Department for Business, Innovation and Skills: *Innovation and research strategy for growth economics paper no. 15*, 2011.

UK's reputation as a world-class place to do science is key to this. Ensuring that the UK's levels of investment in R&D keep pace with that of our competitors is important in sending the right signals to other countries about the value Government place in R&D. A reduction in funding in real terms would result in damage to the UK's science base far in excess of the immediate monetary value owing to impacts of reputational damage. Historically, the UK has been able to attract the best talent from around the world, but there is a serious risk that the UK will lose out to other countries that are investing more than we are and are increasing their investment.

Establishing a long-term investment strategy

The Committee recommends that the Government publish a long-term investment strategy for science, innovation and skills, covering (as a minimum) the next decade. To inspire business with the confidence to invest, clear signals need to be given that Government initiatives and funding are stable and long-term. For example, returns on investment from initiatives such as the Catapult Centres could be maximised if Government were to provide clearer signals of its strategy for investment and review. The Committee considers this particularly important given its concerns that the current levels of investment in Catapult Centres are not high enough.

Given the importance of providing stability and avoiding fluctuations in the way funding is allocated, we hope that long-term planning for science investment is an issue in the next general election cycle.

Finally, I would like to express disappointment on behalf of the Committee that a Treasury Minister did not accept our invitation to attend the one-off evidence session on 21 May. Given the importance of science as a tool to stimulate economic recovery it is crucial that the Government remains open to discussing this area.

Yours sincerely,



Lord Krebs

Chairman of the Science and Technology Committee

The Rt Hon George Osborne, MP,
Chancellor of the Exchequer,
Her Majesty's Treasury.