Academy of Social Sciences response to House of Commons Science and Technology Inquiry into Balance and Effectiveness of Research and Innovation Spending

1. The Academy of Social Sciences welcomes the inquiry of the House of Commons Science and Technology Committee into the balance and effectiveness of research and innovation spending. We have also welcomed the fact that government has established the Industrial Strategy Challenges Fund (ISCF) and the Strategic Priorities Fund (SPF), and the potential for UKRI to develop a more strategic approach to other 'grand challenges' that face the UK.

2. We believe, however, that the current configuration of UKRI's strategic spending would benefit from a greater focus on some additional issues that are essential to address the challenges underpinning the UK's industrial strategy, its productivity performance, and other national and global challenges. We set these out below, under the headings of the Inquiry.

Who we are

3. The Academy of Social Sciences (AcSS) is the national academy of academics, learned societies and practitioners in the social sciences. Its mission is to promote social science in the United Kingdom for the public benefit.

4. The Academy is composed of around 1300 individual Fellows, 44 Learned Societies, and a number of affiliates, together representing nearly 90,000 social scientists. Fellows are distinguished scholars and practitioners from academia and the public and private sectors. Most Learned Societies in the social sciences in the UK are represented within the Academy.

Questions posed by the Inquiry:

The effectiveness of public spending on R&D, including through mechanisms such as the Industrial Strategy Challenge Fund.

5. As we wrote in our public response to the announcement of the government's Industrial Strategy, the AcSS welcomes the government's goal of achieving spending of 2.4% of GDP on research and development by 2027, as a driver of productivity and national innovation, and welcomes the long-term aspiration to match the EU target of 3%. Given, however, the long-standing weakness of UK private enterprise in investing in R&D, especially for smaller and medium-sized enterprises, and recent analysis suggesting that "between 57 and 80 per cent of R&D tax credits are deadweight, subsidising spending which would have happened anyway, at an annual

cost of £1.8–1.9 billion,"[1] **we encourage further work on how to stimulate private sector R&D investment.**[2]

6. There is insufficient evidence and evaluation of 'what works' in raising long-term private sector R&D spending. This is not just a question of descriptive diagnoses of the existing problems, though that is always helpful. We welcome the fact that much of the current strategic focus of UKRI has been informed by economist Mariana Mazzucato's work on the role of the entrepreneurial state. She points out that, rather than picking winners, the state should define a vision for the 'direction of economic development and technological change', and should be willing to take risks investing in research the private sector will not fund, in order to enhance innovation[3]. Inevitably, however, some of these risks will not pay off. It will be crucial that UKRI has robust evaluation processes in place, as suggested in its *Strategic Prospectus*.

7. The issue of deadweight illuminates the challenges of stimulating private sector R&D to meet the government's aspirations. This goes beyond evaluation of funding streams already put in place by UKRI's Industrial Strategy. **It is an important theme in its own right**. As the subsequent evaluations of tax credits has shown, broad attention needs to be paid to the issue of how to improve private sector R&D and promote genuine additionality, rather than simply substituting public sector subsidies for investments the private sector may otherwise have undertaken.

8. Recently, for instance, Richard Jones and James Wilsdon addressed some of the particular challenges of stimulating private sector R&D spending in the biomedical sector,[4] demonstrating the importance of specific sectoral knowledge in addressing this challenge. There are also issues of design of taxation, regulation and social policy that are relevant if the UK's public sector investments are effectively to stimulate private sector investment. While many of these issues *will be* general across sectors and regions, others may require a more differentiated approach.

9. **The Academy of Social Science thus believes that having a separate strategic theme on how to stimulate private sector R&D spending should be a priority for UKRI strategic investment**. This should involve experts in tax and regulatory design, such as economists, political scientists, experts in legal and regulatory design[5], academics in management and business studies, and so on, as well as those with particular expertise in priority sectors. A relatively modest investment in experiment and evaluation to improve the performance of both UK private sector R&D and long-term productivity would, we think, pay dividends. We have previously suggested that UKRI might wish to invest in a strategic strand with this as

[1] https://www.ippr.org/files/2017-11/1511445722_industrial-strategy-cej-november17.pdf
[2] See, e.g. – the call for greater direct spending in: https://www.theguardian.com/commentisfree/2017/nov/27/white-paper-industrial-strategy-government-economy
[3] Mazzucato, M (2015). The Entrepreneurial State. New York: Anthem Press.
[4] Jones, R and Wilsdon, J (2018) , The Biomedical Bubble: Why UK research and innovation needs a greater diversity of priorities, politics, places and people. London: NESTA
[5] Such as those at the Oxford Centre for Business Taxation.

a focus, and noted that it should involve both the ESRC and Innovate UK as key leaders.

The rationale needed for deciding on the balance of public R&D funding between: individual research disciplines, research councils and cross-disciplinary schemes; the two research funding streams of the 'dual support' system; regional balance; and global challenges and other strategic national priorities

10. As UKRI's industrial strategy is currently formulated, with its focus on investment in research for near-term commercialisation projects, there are no dedicated funding streams for strategic approaches to other sorts of research designed to address the social and behavioural underpinnings of the industrial strategy challenges, or other global challenges. Without such social and behavioural research, these challenges cannot be fully addressed or properly tackled.

11. Of course, we understand and welcome the fact that, within the current themes, social science has a role to play alongside other disciplines in particular projects. We recognise too the importance of stimulating deeper interdisciplinary research than the previous funding system perhaps encouraged.

12. However, we have, in various policy documents set out various arguments for the strategic research that is missing in the current UKRI strategic themes.

13. First, are there is a dearth of research and intervention experiments and evaluations on how to address the UK's **productivity performance.** We have already mentioned the importance of ensuring that robust social science can evaluate the effectiveness of existing mechanisms for stimulating private sector R&D. But apart from this, there a number of issues that are, we think, important if the UK is to lift its industrial performance.

14. Much of the industrial strategy is rightly focused on efforts aimed at improving and "strengthening the foundations" of UK productivity, which has not only stagnated since the financial crisis in 2008, but is 15% less than that of the rest of the G7 economies, lagging significantly behind global leaders like the US and Germany.[6] The Government's proposed efforts largely focus on increased public investment, increased stimulation of private investment in research and development (R&D), increasing the national skills base, sector and city deals, and improving infrastructure – all of which are important.

15. Yet there is little detail about how the government will seek to address the 'long tail' of underperforming enterprises across the UK that account for a significant component of its productivity puzzle[7]. Similarly, there are relatively few clear actions

[6] ONS. (6 October 2017). "International comparisons of UK productivity (ICP), first estimates: 2016", available at: https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/bulletins/internationalcomparisonsofproductivityfirstestimates/2016.

[7] For a detailed explanation of the roots of the UK's productivity puzzle, see: Haldane, A. (2017), "Productivity Puzzles", available at: http://www.bankofengland.co.uk/publications/Documents/speeches/2017/speech968.pdf

taken to address productivity across the UK supply chain[8]. There is a large body of social science evidence, expertise and skills that can help government to develop appropriate policy interventions in these areas, to experiment with innovation and to evaluate their success[9]. Haldane points out that "even marginal improvements to productivity among the long tail of low-productivity companies – or, equivalently, a speeding up of rates of technological diffusion to these companies – could make significant inroads into the productivity puzzle." The Industrial Strategy White Paper signalled its intent "to increase the diffusion of best practice" but this will, we believe, require a continued focussed programme of experiment, innovation and learning to work out practical means of improving productivity in different sectors and different areas.

16. The social sciences are, we believe, crucial for this. What is needed is a specific strategic strand of research – diagnostic, experimental and evaluative – to find out 'what works' in improving productivity in this 'long tail'. Some factors will require intervention, experiment and evaluation in improving management. Management social scientists would be useful in this. There is robust research about how to stimulate greater investment by firms in workforce training and skills. The work of Professors Nick Bloom and John Van Reenen shows that management practices are strongly associated with productivity. Their research suggests that the average UK manager is less proficient than many overseas competitors, while management skills could account for a quarter of the productivity gap between the UK and the US.[10] A joint Cambridge-Harvard-LSE-Stanford team led by Professor Nicholas Bloom of Stanford University with Professor John van Reenen and Rebecca Homkes of LSE, and Dr Rafaella Sadun of Harvard University, has examined management practices around the world and documented the factors that drive success. The research resulted in the first global database on management practices, providing the ability to identify the key essentials of good management which drive economic success.[11,12]

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[8] See: Hollinger, P. (27 November 2017), "Four key challenges raised by the UK's new industrial strategy", available at: https://www.ft.com/content/f2857abc-d398-11e7-a303-9060cb1e5f44.

[9] See, for example, the body of research produced by the Structural Economics and Productivity Programme of the National Institute of Economic and Social Research at: http://www.niesr.ac.uk/research-theme/structural-economics-productivity/; Haldane, A. (2017), "Productivity Puzzles", available at: http://www.bankofengland.co.uk/publications/Documents/speeches/2017/speech968.pdf; Aghion, P, T, Besley, J, Browne, D, Caselli, R, Lambert, R, Lomax, C, Pissarides, N, Stern, J, Van Reenen (2017) 'Investing for Propsperity: skills, infrastructure and innovation', LSE Growth Commission Report; Dan Corry, Anna Valero, and John Van Reenan (2011). 'UK Economic Performance Since 1997: Growth, Productivity and Jobs.' Centre for Economic Performance, London School of Economics. http://cep.lse.ac.uk/pubs/download/special/cepsp24.pdf; Rebecca Riley and Chiara Rosazza Bondibene (2016). 'Sources of Labour Productivity Growth at Sector Level in Britain, After 2007: A Firm Level Analysis.' Nesta Working Paper 16/01 April 2016. www.nesta.org.uk/wp16-01; R. L. Martin, P. Sunley, B. Gardiner, E. Evenhuis and P. Tyler (2017). 'Structural Change and Productivity Growth In Cities.' Working Paper 3, ESRC Project on Structural Transformation, Adaptability and City Economic Evolutions (ES/N006135/1), Department of Geography, University of Cambridge; or the ESRC's programme of research investments related to boosting innovation and productivity, available at: http://www.esrc.ac.uk/news-events-and-publications/news/boosting-innovation-and-productivity/.

[10] Centre for Economic Performance (2007) 'Management Practice & Productivity: Why they matter' http://cep.lse.ac.uk/management/Management_Practice_and_Productivity.pdf and Bloom, Van Reenen (2016), 'Measuring and explaining management practices across firms and countries', http://www.nber.org/papers/w12216

[11] www.worldmanagementsurvey.com

[12] The importance of management may also suggest the importance of using apprenticeship funding for additional management education that would not otherwise take place.

17. We believe there is a need for strategic investment in research and experiment to address these issues. They are not eligible under the current formulation of UKRI's ISCF themes. While the ESRC has recently announced a new focus on productivity (https://esrc.ukri.org/about-us/strategy-and-priorities/), it is unclear how large or well-resourced its programmes will be. **We believe the ESRC is under-resourced to make the contributions that it could, and that the government's vision in fact requires.**

18. A second strand of research relevant to industrial strategy and productivity is that concerning UK **human capital and skills more generally**. There is a large body of research about the need for greater number and data skills in the UK school-leaving population, as well as the wider workforce. In our view, there needs to be a programme of experiment and evaluation about how to improve these skills, so important for the UK's long-term productivity and growth. Social scientists including educational researchers, economists, and behaviour-change specialists should all be involved, and the focus should be less on institutional forms than on how to improve teaching and teacher quality (known as the most important public intervention), and curriculum and qualifications after age 16. The Campaign for Social Science addressed some of these issues in its recent report, *Positive Prospects*.

19. There is also a wealth of evidence about the relatively low level of investment in vocational education (mainly provided by further education institutions in the UK). Despite recent attempts to secure investment for high-quality apprenticeships, there is still a great need to understand why smaller and medium-sized firms in sectors where apprenticeships are common among our industrial competitors are not supported in the UK, and not well integrated with properly funded FE courses. Again social scientists, including educational researchers, economists and others, could be helpful in designing programmes with high effectiveness.

20. Still on the subject of industrial strategy and productivity, there is insufficient focus in the current UKRI strategy on regional development. We believe that **UKRI has yet to develop a clear strategy for regional institutions as part of the national infrastructure for productivity and growth.** Social science evidence can play a critical role in understanding not only how best to drive regional growth, but also how universities can be used to anchor such developments.[13] The social science and higher education communities can help policy makers support research and foster innovation in local areas by helping build capacity for collaborative working across the boundaries between research, commercial businesses, government and civil society.

21. Universities in these regions and core cities also have a critical role in contributing to policies and practice for local economic growth, and serve as a source of advice and consultancy. Partnerships among universities, like the N8, can act as powerful accelerators. While some regions may be well placed to focus on cutting edge technology, others may instead find their competitive advantage in acting as a test-

[13] See, e.g.: Mike Emmerich (2017). Britain's Cities, Britain's Future. London: London Publishing Partnership; and the work of the Industrial Strategy Commission: http://industrialstrategycommission.org.uk/.

sites for innovative policies and interventions to tackle local level productivity among particular types of firms, or grand challenges, such as aging and sustainability that are in fact 'local problems with potentially global markets.'[14] **Government should aim to support and strengthen 'the role of universities as anchor institutions in left behind city regions [as] an important component of a place-based innovation strategy**.'[15]

22. These will also be vital to help central government understand what does and does not work for promoting regional economic growth and development. If the What Works Centre for Local Economic Growth is to help with the development of policy *and* to support Local Enterprise Partnerships (LEPs), the government will need to ensure that the Centre is properly resourced not only to conduct its own systematic reviews, but also to commission the necessary research to bolster the weak evidence base in these areas, and to increase their capacity to advise regional institutions and local policy makers.

23. Currently, the ESRC has the second lowest spending of any of UKRI's constituent research councils. We believe that a modest investment of UKRI's strategic funds on programmes of research, perhaps jointly led by the ESRC and Innovate UK, on subjects such as these are essential if the UK is to meet its aspirations to promote both R&D spending and improve productivity and industrial performance overall. **The sums needed for this, in comparison with the current Industrial Strategy themes, would be modest and yet could promote a step-change in our understanding of what works to promote economic development.**

24. The Academy of Social Science has made similar representations about the importance of the social sciences in some of the current industrial strategy themes, where a focus on commercialisation does not always support UK leadership of sectoral development or social impact.

25. For example, putting the UK at the forefront of the artificial intelligence (AI) revolution will require behavioural scientists, economists, public opinion analysts, and lawyers so that development, adaptation and regulation of artificial intelligence and robotic technologies retains public support and works on behalf of the public. Similarly, economists, financial services, patent lawyers, and business analysts will need to be involved for the successful commercialisation of such technology.[16] We welcome the Government's announcement that it will create an industry-led AI council, a government Office for AI, and a new international Centre for Data Ethics and Innovation, but again **encourage inclusion of expert social scientists to help tackle the ethical, regulatory, and social challenges,** as well as social science research on use of AI in context. If UKRI were to develop an adjunct programme of research (including experiment and evaluation) to the work it is funding on commercialisation of AI, we believe that it would pay dividends in helping the UK to remain at the forefront of this field.

[14] John Goddard FAcSS (2016). 'Left-Behind Places Need New Ideas and New Money.' Research Fortnight, 7 December.
[15] John Goddard FAcSS (2017). 'Towards a Place Based Science and Innovation Strategy for England: A Role for Universities?' A paper for the BEIS Advisory Group on Smart Specialisation and Innovation Audits, p. 8, 15.
[16] For an example of such work, see: http://www.cbi.org.uk/index.cfm/_api/render/file/?method=inline&fileID=65F7E3B8-3109-4A8A-AB76029C857A4DB9.

26. We have made similar arguments about the need for a greater strategic focus on the social and behavioural elements in ageing and healthcare, most notably in our recent report, *The Health of People*.[17] Important as research on pharmacological and medical technologies are, many of the significant health challenges facing the UK require widespread social and behavioural change, and well-funded initiatives led by the ESRC and the MRC would undoubtedly be an aid to this. Wider research access to health data, linking it to other social and administrative data, is largely within the government's control, but so far, it has not been willing to take the actions needed to ensure health data are made available for public-benefit research. We would make similar observations about the UKRI research strands relating to ageing, where many of the social infrastructural and policy changes require a deep understanding of social science and human behaviour, including work led by economists and social policy experts as exemplified by the English Longitudinal Study of Ageing and HAGIS in Scotland.

27. Social science is essential in all these areas to inform developments in policy, practice and technology to improve people's lives. None have yet seen additional investment in the new framework. In addition, we note that meeting the aspirations and potential for change will require that the UK trains the right kinds of social scientists, with the skills (substantive and technical) to meet these challenges. This too will require some sustained uplift in funding which, while modest in the total UKRI budget, can ensure real progress in our capacity to have stronger evidence about the range of issues UKRI has identified for its challenge-based funding.

In short, we hope the House of Commons Science and Technology Committee Inquiry will take the opportunity to encourage UKRI to take a wider view of the configuration of its current strategic themes. We believe that with modest extra investments in the social science relevant to the broader themes relating to Industrial Strategy (including productivity, regional development and infrastructure, and human capital and skills) and the other 'grand challenges', UKRI and the UK are more likely to meet the goals and aspirations of a transformational change in the UK's future prospects.

[17] This point is also made in Jones and Wilson, 2018) , The Biomedical Bubble: Why UK research and innovation needs a greater diversity of priorities, politics, places and people. London: NESTA.