



HOUSE OF LORDS

Revised transcript of evidence taken before

The Select Committee on Science and Technology

Inquiry on

THE FUTURE OF INNOVATE UK

Evidence Session No. 4

Heard in Public

Questions 26 - 39

TUESDAY 14 JUNE 2016

11.40 am

Witnesses: Jo Johnson MP and Gareth Davies

USE OF THE TRANSCRIPT

This is a corrected transcript of evidence taken in public and webcast on
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Members present

Earl of Selborne (Chairman)
 Lord Borwick
 Lord Broers (co-opted)
 Lord Cameron of Dillington
 Lord Fox
 Lord Hennessy of Nympsfield
 Lord Hunt of Chesterton
 Lord Mair
 Lord Maxton
 Baroness Morgan of Huyton
 Baroness Neville-Jones
 Lord Oxburgh
 Lord Vallance of Tummel
 Baroness Young of Old Scone

Examination of Witnesses

Jo Johnson MP, Minister of State for Universities and Science, Department for Business, Innovation and Skills, and **Gareth Davies**, Director General for Business and Science, BIS

Q26 The Chairman: Welcome, Minister, and Mr Davies. It is very good of you to come back to the Committee at short notice. We thought it would be helpful to launch a short inquiry into the future of Innovate UK, the national agency for driving forward UK innovation, which has been of enormous interest to the wider community, whether science, engineering or business. As usual we are being recorded on the web cameras. For the record, could I ask if you would like to introduce yourselves and, if you would like to make an opening statement, please feel free to do so?

Jo Johnson MP: Thank you very much. I am Jo Johnson, Minister for Universities and Science. I am with Gareth Davies, the Director General in the Department for Business, Innovation and Skills. I would like to make a brief opening statement.

I am very glad to be back before the Committee to talk about Innovate UK. It is an essential strand of this Government's approach to addressing one of our major economic challenges, which is our productivity challenge as a country. It is an extremely important government agency and we are focused very closely on it. It is essential to our ability to fulfil a number of manifesto commitments as a Government, including that we want the UK to be the best place in Europe to innovate and grow a business.

We have ensured that we are going to be in a position to do that, first, by protecting funding for Innovate UK going back to the coalition. In this majority Conservative Government, we have increased Innovate UK's funding considerably from 2009-10 levels of £315 million to £567 million per year, and we expect it to remain at roughly that level until the end of the Parliament.

We want to make the system within which Innovate UK operates still more effective. We are building on great strengths, but it has capacity for improvement. In the White Paper, which we published last month, and in the Higher Education and Research Bill, which was introduced last month in the House of Commons, we are proposing a number of steps that we believe will strengthen the research and innovation system as a whole. I look forward to going into that in due course. The overall vision is to have a more integrated, strategic and agile research and innovation system that will enable us to better meet the global challenges we face.

Following spending review commitments, in the White Paper we are proposing to introduce a broader range of products with which Innovate UK will support innovative businesses in this country. We are doing market research at present so that we can make available up to £165 million per year¹ worth of financial support by the end of this Parliament.

We were extremely attentive to the responses of the business community and the research base to consultations that we launched in the Green Paper published last November and to a further consultation specifically into Innovate UK and its relationship with the rest of the research system. We have taken on board concerns that were raised about the need to preserve Innovate UK's distinctive business-facing identity and the separate nature of its funding stream. We have done both of those. We have ensured that innovation is in the very name of the new organisation that is being set up. It will have a clear and distinct identity and I believe it will contribute strongly to our ability to rise to our productivity challenges in the years ahead.

Q27 The Chairman: Thank you very much, Minister. You said you would like to see the United Kingdom have the best record in Europe for promoting and implementing innovation. How are we doing at the moment?

Jo Johnson MP: It is a picture of considerable strength in many ways. You can pick and choose among the various indices that attempt to rank countries by how innovative they are. By some we are doing very well. We are second in the Global Innovation Index. There are others where we are seen more as an innovation follower than an innovation leader. We recognise it is a mixed picture. There are great strengths, but there is also considerable room for improvement—and we are not the first Government to make this diagnosis—in the scope for closer collaboration between business and academia: business and the research base. We want to build on and make more effective many of the ways in which we see collaboration work between those two groups.

The Chairman: As you say, there are a number of innovation indices. In the BIS evidence you quote the Global Innovation Index, where we come second, but even that index recognises that when it comes to knowledge diffusion we do not do very well, we are 23rd, and knowledge absorption, where we are 30th. Clearly there is an issue at that end that is quite different from the universities. You will see from the innovation indices that we do very well from the UK research base. We all recognise, and the White Paper states, that our universities are excellent. We are seeing a lot of research generated from business that is nothing to do with universities. It is not a linear process, so we have to make sure the area we are not doing very well in by comparison with the university sector has a governance that is fit for purpose. Our concern is that by following the Nurse recommendations, which very

¹ Spending Review and Autumn Statement 2015

much link Innovate UK with the universities, we may be missing some of the weaknesses at the moment and businesses might feel that they have to dance to a tune that is more appropriate for research councils, which are reactive, than for Innovate UK, which clearly has to be proactive and orchestrating a very different scenario.

Jo Johnson MP: That is a very reasonable concern and one that came through in the responses to the consultation. We feel that we have addressed this head-on in the way we are organising the new body, UK Research and Innovation. There will be a very distinct role for Innovate UK within this organisation. Its objectives will be set down in legislation in the Bill and, subject to Parliament, enacted. As I said, innovation will be in the name of the organisation. There will be a strong business representation on the board of UK Research and Innovation. It will have its own funding stream and distinct role within the organisation. It must stay attentive to the core needs of the business community.

At the same time, we believe it is important that we do better as a society in exploiting and getting a return from the £6 billion or so that we are spending every year on research and innovation². That is part of its job. By sitting horizontally alongside the seven research councils, Innovate UK will help them make businesses more aware of the brilliant research and great opportunities that are being generated in the research base, and at the same time it will help the business community, particularly SMEs, better understand what is going on in the research community. We see these as very important aspects of what it does.

At the moment about 10% of businesses that are innovative are so because of collaborations with universities and academia. We believe that figure has the potential to increase over time, and in developing relationships between business and academia we can see a greater level of innovation deriving from our academic base than at present.

Q28 Baroness Morgan of Ely: You have given us a fairly clear exposition, Minister, but I would like to dig a little further. To what extent did you look at alternative options to achieve the aims that you are talking about? To what extent do you think it would be possible to do it while maintaining a separate organisation? Can we be confident you have not done this for tidiness and “Let’s reduce the number of arm’s-length bodies and make things neater”? There is always a tendency to that within government.

Jo Johnson MP: Tidiness was not part of our thinking. The main drivers of our thinking in creating UK Research and Innovation were to follow the broad vision set out by Sir Paul Nurse in his review. He identified a strategic deficit in the way we do science and innovation as a country and saw that the system as a whole of the research councils and Innovate UK, while world class, adds up to less than the sum of the parts, which is how he put it. We do not have a body that is articulating a big strategic vision for the gaps in our system, where we need to prioritise resources and think about where the future challenges are coming from down the pipeline towards us. That was the main driver for doing what we are doing.

An equally important driver was the fact that the siloed nature of the research councils, and their clear remits to focus on their disciplines, meant that we were at risk of missing some exciting opportunities in interdisciplinary and multidisciplinary research. Developing countries around the world are focusing ruthlessly on these opportunities. If we stick with our existing structures, we are in danger of missing them. We could not afford to take that

² Case for the creation of UK Research and Innovation – June 2016

risk. If we want to remain world class, we have to adapt our systems and structures so that we have the capacity for cross-cutting research and innovation.

The third motivation, as I explained earlier, was to ensure that there is greater capacity for collaboration between academia and business. We think that mainstreaming innovation in this way in the organisation will help us do that. It is not the only answer, and in and of itself it is not going to crack our productivity challenges, but it is going to be a contribution towards a solution.

Q29 Lord Hennessy of Nympsfield: Minister, you referred to the broad vision of Paul Nurse, and I agree with that, having read the report, but in the key paragraph on page 31 on Innovate UK he points out that it was not part of his remit to go into this in any depth and that he has many anxieties about the merger that you are about to carry out. To put it bluntly, do you think you have done sufficient R&D on this new structure? We are talking about a very delicate mixed economy.

Jo Johnson MP: Yes, indeed. Sir Paul pointed to the potential benefits from the integration of Innovate UK with the research UK body that he was advocating in his review. He also flagged the risks, as did later responses to the consultation. We have addressed those risks. The risks he identified were the ones that came through very clearly in the consultation response, namely the business identity of the organisation and funding autonomy need to be preserved and the differing remits of the body need to be preserved. We are absolutely clear that that must continue, and I have made clear we want to ensure that innovation is in the name of the organisation, it has its own budget and it is funded separately from the rest of the organisation that is within the science ring-fence.

Lord Cameron of Dillington: A moment ago you were talking about missing opportunities. Bearing in mind that over 90% of research and development occurs outside the UK and should be available to Innovate UK, by tying Innovate UK to UKRI are you not limiting their possibilities?

Jo Johnson MP: We do not want this to be mutually exclusive. We want both to help the research base get better bang for their buck in commercialising the brilliant research that is going on, and ensure that Innovate UK continues to carry on doing the important work it does for the business community and other government departments.

Lord Cameron of Dillington: Does it not undermine the rationale by tying them? Are you sending out the wrong signals?

Jo Johnson MP: We do not think we are. We make it very clear that Innovate UK will continue to deliver on its strategy, which Dr Ruth McKernan discussed with you this morning, while working within UKRI to ensure we get a better return as a society on our £6 billion investment in research and innovation³.

Baroness Neville-Jones: Minister, I thoroughly agree with what you said about the need for more focus on interdisciplinary research activity. I wonder whether a wholesale structural change is necessary to achieve that, but the objective is certainly desirable. It seems to me there is still a missing piece in the argument as to why it logically follows from that that you have to change the status of Innovate UK, which seemed to me to thrive on its independence and the relationship that it could fashion with all-comers. If I might say so, I

³ Case for the creation of UK Research and Innovation – June 2016

do not think the business of the translation from research through to innovation is linear, which your model suggests. How is Innovate UK, given its positioning in the system—and it seems to me it is a council under UKRI—going to maintain that valuable commodity of independence that it had, particularly when a lot of emphasis has been laid on the mitigation in the White Paper of the ring-fencing of its budget but there is going to be a single accounting officer? How does that add up to an organisation that can decide what its priorities are?

Jo Johnson MP: Each council within UKRI will be responsible for setting its own strategic delivery plan, and Innovate UK will do that and have it agreed by the UKRI board.

Baroness Neville-Jones: That does not make it independent any longer, does it?

Jo Johnson MP: It will be within a body that is responsible for setting an overall strategic vision for UK Research and Innovation. That is an important thing for this country to have. Innovate UK will agree its strategic delivery plan, it will have its own delegated budgetary authority and it will be responsive to the needs of the business community, which will make up a very significant proportion of its own council within UKRI. As I said earlier, there will be a significant business representation on the board of UKRI itself.

Baroness Neville-Jones: I think you describe a very top-down system, Minister.

Q30 Lord Fox: What you described earlier was your hope that Innovate UK would somehow infect the research councils with a more cross-disciplinary attitude. Yet when you come back to the governance, Innovate UK is in such a minority that how can you expect that to happen? Is it not more likely that the reverse will happen and that some of the things you are trying to breed out of the research councils, which I think is what I detected, will be the things you infect Innovate UK with?

Jo Johnson MP: All our reforms have this goal very clearly in mind. We have to make sure that it has two jobs. It has to serve the significant number of businesses that are innovating happily, well and successfully without needing the research base, but it has to do better at making more of the advantages that are within the research base. We do not want Innovate UK to become subsumed with academic concerns about citations and those types of issues; we can leave that to others. But we want it to do better at ensuring we get a clearer return from the £6 billion of investment in research and innovation⁴. That is why we believe this integration will be really important.

Lord Vallance of Tummel: What are the reserve powers that UKRI will hold over Innovate UK that are not devolved to Innovate UK? The budget is going to be devolved because it is ring-fenced. Specifically, what are the reserve powers at the top level?

Jo Johnson MP: The Innovate UK budget does not form part of the science ring-fence. It is distinct from the budgets that will be held by the executive chairs of the other councils. The board of UKRI will be a strong body. It will have the responsibility of informing Ministers about strategic allocations, advising Ministers about allocations between the various constituent parts. It will have a duty to co-operate and share information and data with the new body coming up over the other side of the teaching fence, the office for students. It will be responsible for ensuring that the money we are allocating towards science and research is optimally spent. We think that the academic community will welcome this.

⁴ Case for the creation of UK Research and Innovation – June 2016

Lord Vallance of Tummel: You are not answering my question.

Jo Johnson MP: Let me have another go.

Lord Vallance of Tummel: My specific question is: what are the reserve powers—that is, what is not devolved to Innovate UK—that are going to be held at UKRI level?

Jo Johnson MP: The accounting officer is at UKRI level. The chief executive of UKRI is the single accounting officer for the body.

Lord Vallance of Tummel: But he is an accounting officer. I am asking about powers.

Gareth Davies: Essentially, we see Innovate UK having the freedoms and flexibilities that it currently has. It will set a strategy with its council.

Lord Vallance of Tummel: There are no reserve powers?

Gareth Davies: I was going to say how it works. It is important to compare how it operates now as a contrast, because we are moving from the position now to then. At the moment, Innovate UK proposes a delivery plan that is ultimately signed off by the Minister. That is a connection now, so there is a connection back into the department. Through the Bill we propose that, as now, Innovate UK will develop a delivery plan, but rather than going to Ministers that will be signed off by the UKRI board. The goal is consistency with the investment strategies of the nine bodies as part of UKRI. As the Minister said, we are investing £6 billion into UK science and innovation. We know our success as a country will come from our ability to exploit that science base, both globally and locally. It is about ensuring consistency between the two. At the moment, in effect, good people—you have already seen Dr Ruth McKernan and Professor Phil Nelson—make a very complex system work. This is ensuring that coherence and collaboration between the business side and research side is embedded from the start.

Q31 Lord Broers: A lot of questions have been dealt with. I have three specific questions and I want to set them in context. Does this reorganisation simply represent a merging of back office functions, or will it include strategy, priorities and decision-making? What is the estimated cost saving of forming UKRI? Who will have oversight of the wider innovation landscape to ensure coherence and prevent it becoming overly fragmented? In setting the context, we have talked about this a lot, but I would like to put some specifics. We are trying to compete internationally. You have chosen to take the Cornell global index, which was developed by a university. Its major measures of the quality of innovation are world university rankings and citation indices. The third is patents. We happen to sit equal first in the university rankings and in citations with the US, and tenth on patents. Patents are more relevant. If we look at a business-based one—our Chairman mentioned Bloomberg—we sit 22nd in R&D intensity, 44th in value-added and 30th in productivity. We have a serious problem. Are these changes going to address that situation when Innovate UK gets less than one-tenth of the overall budget? Perhaps it should get 30%? I am sorry, I have mixed some specifics with a general overview.

Jo Johnson MP: I will come in on the bigger question and ask Gareth to come in on some of the more technical points about cost savings, and so on. Of course, the proposals in the White Paper and the Bill are not the only part of the Government's answer to our productivity challenges, but they are an important part in making sure that we have a more effective innovation and science base. There are many important reasons why we are not

doing as well as we could be as an innovation power. We have an industrial base and business sector that is not as absorptive as it should be. Management in the UK is not as aware as it could be of the opportunities for innovation that are coming out of our system. Our skills base, which is a key driver of whether or not we are absorptive, is not what it should be. We are working hard as a Government to ensure that we are getting a better quality of skills base from our school system through our apprenticeship and university systems, but these are not issues we are going to be able to fix overnight. We believe the reforms will contribute towards a more joined-up system that has the capacity to create more linkages between science and business.

Gareth Davies: Coming back to your opening question, we have a shared view that as a country we are truly world class at invention and research, but we recognise that we have far more to do on innovation. This has been a long-standing problem with the British economy. You can go back 100 or 150 years to the productivity comparisons with Germany or the United States. As the Minister suggested, there are many issues. This reform will be part of but not the total solution.

Some of the benefits I see of the integration of Innovate UK into UKRI partly reflect the changing nature of technological change and adoption. If you look at emerging technology, particularly in the digital space, a lot of the new highly productive, fast growing companies are often very small. We are moving from an industrial model of the post-war period where we had large industrial manufacturers that drove our productivity frontier, and to a certain extent still do. You only need to go to Shoreditch and some of the small start-ups that rapidly scale. Large multinationals have the fixed costs and capacity to engage with a very diverse and diffuse research base in a way that small start-up companies cannot. One of the goals of this integration is to make the engagement of our world-class research base far simpler for some of those start-up companies. When I ask university researchers about their connections to businesses, often it is to our strengths in advanced manufacturing, be it people like Rolls-Royce or Jaguar Land Rover. I was at the University of York last Friday. They have a digital creativity lab deliberately designed to work with Innovate UK bringing in small businesses. We know that some of the growth in our economy will be in service-based sectors, design, communications and media. If there is a challenge facing UKRI, it is ensuring that the research base connects into those growth sectors of the economy as well as our existing strengths in advanced manufacturing.

Lord Broers: If we look at the evolution of high technology industry, my estimate is that 75% of advances are evolutionary and 20% or 25% revolutionary. The 25% comes down from the science base. The 75% has to be generated in industries doing R&D, which is where I have observed us to be quite weak. Do you think this change helps? That is where Innovate UK has to work with industry and not the other way round. I am saying that 75% of their function should be working with industry and perhaps 25% should be trying to extract things from the research base. We may have our priorities wrong; at least, they do not agree with my observation of the situation.

Gareth Davies: I like your distinction between evolution and revolution. This is an important point, and goes back to our previous comments that this is not necessarily a linear process of an invention in a lab popping out at the other end as a product; that is one part in the creativity process. From my experience of working with Innovate UK and university researchers and businesses, it is the partnership which matters. The partnership with universities is sometimes about new products, new materials and new technologies, but it is

also about our business schools and some of our work on the arts and humanities, for example, which are often seen far away from productivity. That can help give a framework for new business processes and ways of working. You could call it evolution or continual improvement in businesses. Some of those partnerships are incredibly important, and there is more to be made from that.

Jo Johnson MP: I do not think the proportions that Innovate UK presently spend in the academic community are very far out of line with your ideal. It is currently spending about 20% through the research base, so it is not a million miles away from your 25%. We see opportunities for the small business community in closer collaboration. Ten per cent of innovation that is taking place in our business sector is coming out of co-operation with universities or higher education institutions. That compares with countries such as Switzerland, which is seeing almost double the level that we are achieving. We think there is scope for more interaction between these two bodies.

Q32 Lord Oxburgh: In practical terms, within the new structure, how do you see things being possible that Innovate UK and the universities could not have done before?

Jo Johnson MP: Things on the interdisciplinary and multidisciplinary side. At the moment the research councils are limited in developing and exploiting the opportunities for interdisciplinary research. Similarly, the impact of this research is being felt by businesses taking advantage of it in multidisciplinary and interdisciplinary ways. There is a continuum from concept all the way through to commercialisation, and that applies to Innovate UK as much as the research councils.

Lord Oxburgh: I am talking about at the working level. This innovation is something that involves people hands-on in laboratories or businesses. At that level, what is new that could not have been done, or indeed was done already?

Jo Johnson MP: It will greatly simplify the ways in which Innovate UK collaborates with the research councils to do research through to commercialisation.

Lord Oxburgh: Collaboration does not occur at a research council level; it occurs at the individual level of the projects.

Jo Johnson MP: It can do. The Urban Living Partnership, for example, is a project about designing the cities of the future that involved all seven research councils and Innovate UK. It took over a year to get eight different contributions into a shared pot. These are the kinds of rigidities that we have in our current system that we believe we cannot afford if we want to remain competitive, agile, flexible and able to respond rapidly to the challenges we see coming down the line. We do want a system whereby these bodies can work more closely and rapidly together.

Lord Oxburgh: How much shorter do you think that would be under your new system?

Jo Johnson MP: I cannot give an exact number of weeks or days, but it would be reasonable to expect it to be a considerably easier process.

The Chairman: Could I come back to Lord Broers's concept of evolution and revolution? I do not know whether Lord Broers' 75%:25% is right or wrong, but that does not matter. We recognise that the research-based universities, the cutting edge research, are probably less suited to promote this evolutionary research. When we had a stronger network than we do now, the public sector research establishments were good at it because they were relating

to industry. When one looks at Germany you can see that the German research institutes work very closely with industry in a way that our structure makes harder. Collaboration is extremely desirable, but under the new governance arrangements we have to ensure the opportunity for this evolutionary input to be made recognising how much research is done. Of course, the majority of research is done not in academia but in commerce. The business sector must not feel that in future the agenda is going to be set by the research councils. This is why it is important to keep Innovate UK in touch with the people doing the research and they must feel that they are setting the agenda. Would you reflect whether you feel this continued desire to make sure that industries benefit from the universities' output is not the tail wagging the dog?

Jo Johnson MP: Absolutely. We recognise that it is extremely important that Innovate UK continues to support businesses in their current innovative activities, but, where there are opportunities for them to benefit from ideas that are being generated in the research base as a society, we should want them to take advantage and be aware of them. We are in agreement with you and want to ensure that Innovate UK retains its distinct business-facing identity within the new organisation. We have stated that very clearly in the White Paper. We have put its objects in the Bill—innovation is in the name of the new organisation—and are committed to ensuring that it continues to serve its core constituency.

Q33 Lord Vallance of Tummel: At a previous session we were told that Innovate UK's portfolio is extremely attractive and that for every £1 invested £7.30 is returned to the UK. We were also told that Innovate UK could invest at least twice as much with similar returns. Is that not where the blockage is? Instead of—how shall I put it—messing around with organisation charts, should we not be looking at how to get more finance into this? Is America so much better at it because its financing is better? If it is not going to be public finance it should be private, and it is not difficult to set up a vehicle that is combined public and private, that diversifies the returns and is a good prospect. It seems to me that you are getting the wrong end of the stick.

Jo Johnson MP: We have protected Innovate UK's financing. The direct support that we are giving through Innovate UK—which has gone up from £315 million in 2009-10 to £567⁵ million now—has been protected. There is significant indirect support for innovation in this country through the R&D tax credits. They have increased significantly in value to £1.75 billion in the last year for which we had data, which is 2013-14, from £1.1 billion in 2010-11. The overall amount of financial support that government is giving to innovation is on a strong upward trajectory. I do not think we are missing the point at all. We are very much focused on the need to provide support in the form that is required.

Lord Vallance of Tummel: I think you are completely missing the point. If there is a huge backlog, as we were told earlier this morning, that needs to be financed. If government cannot finance it you need to look at other ways. Under the existing system there are matching funds between the public and private sector at individual company level, which is where the risks are greatest. The portfolio return for Innovate UK is very high, so why not think about how you can get in private money at portfolio level and create a structure that allows that to be done. It is fairly simple, is it not?

⁵ As stated in the Minister's opening statement (page 2)

Gareth Davies: We are looking at what we are calling new finance products for innovation. The Government set out £165 million in the spending review.

Lord Vallance of Tummel: With respect, that is out of the existing pot. I am talking about how you deal with a great backlog of highly productive potential projects in SMEs that are not properly financed. If it is not going to be government finance and the venture capital markets are prepared to do it, you can set up something between the two that is a vehicle, part publicly and privately owned, that will get in private money because the risk is diversified at the portfolio level.

Q34 Lord Oxburgh: We have touched on this. What do you see as the risks of the integration that you propose?

Jo Johnson MP: We have touched on it. They are the ones that came through the responses to the various consultations we have had. Lord Hennessy and the Chairman suggested that Innovate UK's voice might be drowned out in the research councils. We have been extremely attentive to that in the way the governance of this body is being set up. We have ensured that Innovate UK's funding will not be diverted into other activities. In the new world we have given the executive chair of Innovate UK responsibility and delegated responsibility for the budget. There is a risk that it might become overly focused on trying to commercialise research from the research councils and be insufficiently attentive to what businesses want—the concerns the Chairman echoed earlier—concerns that it might lose its ability to do cross-government work and ensure that other government departments are sufficiently focused on innovation. We are very clear that we want all its good work on behalf of other government departments, ensuring that regulators have an innovation focus that remains important to its future work. There is the risk that businesses might stop seeing Innovate UK as where they go for support for innovation because they would see it as a research-council-dominated organisation. We are alive to those risks, and in creating the new organisation and in all the mitigations and protections that we have put in place we feel we have addressed them.

Lord Oxburgh: In what detail have you considered the make-up of the overarching board?

Jo Johnson MP: We have considered it in significant detail. We want to ensure that it reflects the strengths of the academic communities that will be served by the research councils within it, but also that it has a very distinct business-community representation. There will be very strong business figures on the UKRI board.

Lord Oxburgh: Could you put some numbers to that?

Jo Johnson MP: The overall board will be between nine and 12 people, in addition to⁶ I the chief executive, the chair and the finance director. That leaves up to twelve slots for others. We have not been specific about the number of slots we would want to go to the business community, but we have said very clearly that we want to make sure there is a strong business voice on the board.

Lord Oxburgh: Would that amount to three or four of those slots?

Jo Johnson MP: I could not guarantee that it would, but it might.

⁶ White Paper – “Success as a Knowledge Economy: Teaching Excellence, Social Mobility and Student Choice” – May 2016

Lord Oxburgh: Having been involved in the original setting up of the Technology Strategy Board, one of the important elements with business was they did not want to be drowned out, or shouted down, by academic interests, which they felt were focused in a totally different direction. It seems that this is an important challenge that you have to recognise and face. Strong business representation on that board would go some way to alleviating that.

Jo Johnson MP: Agreed.

The Chairman: The research councils are invariably chaired by somebody from business. Could we assume that the main board of UKRI would be chaired by somebody from business?

Jo Johnson MP: It is certainly something that we are looking at. We have an interim chair in place now in the form of Sir John Kingman, currently of the Treasury. He is acting as interim chair until the creation of UKRI. In due course there will be a full public appointment process to find the chair with all the characteristics we want for this important position.

Q35 Lord Hunt of Chesterton: Minister, with your European scholarship you may know that on Friday the French department for education was discussing the importance of innovation and the fact that the ideas came from Sir Francis Bacon, a fellow of Trinity College, in 1605. They translated Bacon's remarks into French. The class was then asked, "When do you think this was written?" and they said, "Probably last week in *Le Monde*". This made the French laugh. My own career started with research council projects and then forming a small company. The assumption everywhere is that if you form a small company you want to grow and grow, but that is not always the case. A company can do valuable things. Lord Broers has implied that we are rather feeble in Britain and do not grow our companies enough, but there are two strands.

The other point you have made is small companies have benefited from the tax benefits that came under the previous Government and this Government. You have emphasised that the Government should take more of a strategic view of high technology projects, and France is an example. These are multidisciplinary, and you have mentioned the Urban Living Partnership, but in what way will these strategic projects—power, infrastructure and new invention—happen? Innovate UK people take existing projects, and then you have the research councils. It seems a new range of people or bodies from what we have had in the past. Perhaps Gareth Davies can answer how, organisationally, you will have this new structure that sounds like Harold Wilson in 1964 with these new technological frontiers. How is this going to happen in your new organisation?

Jo Johnson MP: We feel that we are delivering on the vision Sir Paul Nurse set out, which is, as a country, how we best address the deficit in strategic thinking that we have on science and innovation. At the moment, we have a very effective research council system in which the individual councils are focused on their legally defined remits and impeded from collaborating effectively one with another. They are competing to a certain extent for the same pots of government money and undercutting each other's messages. We want to have a system whereby there is an iteration between the councils within UKRI and the overarching UKRI board, so that as each council agrees its strategic delivery plan, that informs the work of UKRI in setting an overall strategy for science and innovation in the UK, which in turn will enable it to best advise Ministers on how we allocate funds that are then

veered back to the individual councils. It is an iterative process whereby the communities talk directly to UKRI that synthesises the views and makes recommendations to Ministers, and we achieve an intelligent hierarchy of what our national priorities should be and where the gaps are, where we need to do more, and where we are wasting money. That is the vision that we have for it.

Lord Hunt of Chesterton: I understand that this week Inmarsat, a big company, is no longer in the top 100 companies, which is very important. This is a strategic issue. How will this be discussed? I have been on a research council. They talk about research projects, not how we should be dealing with energy or geology. We need a new format. It seems that you could do that, but you have not explained the institutional structure that will enable you to do that.

Gareth Davies: On coming into this role I observed that we are very clear and have a deep understanding of the strengths within individual disciplines. We are strong on biomedical research and we can look at places such as the Francis Crick Institute or the Laboratory of Molecular Biology. What is harder to assess as a country is where our comparative strengths and weaknesses are globally. This is not Oxford versus Cambridge or Liverpool versus Manchester; this is a global system. One of the earlier points was that this is a global open research community and that one of the strengths of the UK is its openness—just look at the number of international citations on joint research work. This is where I see the benefits of integrating Innovate UK with a business focus into the conversations where our comparative research strengths are and where we can capture the economic benefits as a country. The opportunities created by autonomous vehicles connect the revolutionary work, say the convergence of technologies on robotics and sensors, combined with big data and data programming with a lot of the behavioural and societal changes that you need in insurance and much more at the applied end. That work is happening, but at the moment it is spread across the EPSRC, partly in the ESRC, and in Innovate UK and its transport catapult. Having a more systematic integrated conversation will make these decisions more explicit and evidence-based so that we have a sense of strategy of where to invest public funds.

Lord Hunt of Chesterton: The catapults will be a major integrated, strategic force.

Baroness Neville-Jones: I want to make a short comment on something that the Minister said. You gave me the impression that the research councils are going to do their thing and that the interdisciplinary matters will be thought about at the UKRI level. I am on the EPSRC and we spend a lot of time on engineering in medicine, in the biological sciences, in disciplines that are not traditionally thought of as engineering. I and other members of the council are extremely concerned that our capacity to do that will be cut back, not enhanced, by this new organisation, which has a hierarchy of the discipline and interdisciplinary. I hope that we do not end up with an organisation that lacks some of the flexibility that we have at the moment.

Jo Johnson MP: On the contrary, we think this will facilitate greater interdisciplinary and multidisciplinary work.

Baroness Neville-Jones: I hope it will.

Jo Johnson MP: That is the whole objective of what we are doing. If there was any evidence that such effects were appearing, we would be extremely concerned. We are doing this explicitly to rise to the challenges of these great opportunities.

Q36 Lord Fox: We have heard about indices and measurements, but I imagine you do your own benchmarking. As Minister you have had a chance to look over the fence at other administrations. Which Governments are delivering innovation more effectively? In this development what is it that emulates what they are doing?

Jo Johnson MP: We have taken into account our relative performance as an innovation system. We discussed at the start how we do in some of the innovation indices and where we are stronger and where we are weaker. We believe that we have room for improvement in the areas which these reforms seek to address: namely, long-standing recognition by Governments of all stripes that we need to do better at industry-academic collaboration. This is front and centre of these reforms. We have looked to countries that have developed new innovation products to meet gaps in our suite of offerings with which to support business. We have looked to countries including France, Finland and the Netherlands. We have taken stock of the fact that Switzerland does better than us in the proportion of innovation coming out of the research base. We have looked broadly across the systems of competitor countries.

Q37 Lord Cameron of Dillington: When I woke up this morning I was rather concerned about Innovate UK converting one-third of its grants into loans. I was worried about the question of loans amalgamating risks, as we heard from one of our speakers last week. We had a very good discussion with Dr McKernan about the philosophy behind the loans and the variety of products and encouraging the possibility of Innovate UK taking up equity in start-up companies, which then shares responsibility for the risks and the opportunities involved. I am encouraged by that, but it does beg another question, which Lord Vallance raised. We heard that seemingly Innovate UK could sensibly invest twice as much money as at present and get the same return. If loans and equity are going to be part of Innovate UK's new armoury, how does that venture capitalist activity fit in with UKRI and its goals and modus operandi?

Jo Johnson MP: We have looked at the countries I mentioned that have successfully developed non-grant forms of innovation finance, and they are meeting a need in their economies. We see similar scope to develop these products in the UK and are market-researching them at the moment. We have ambitions to make sure that we have the full suite of products from grants through to equity-linked products to loans, so we have a system in which there is a greater sharing of risks and rewards between innovators and taxpayers.

Lord Cameron of Dillington: How does that fit in with UKRI? If you are going into venture capital, which is a good idea, and I support everything you have said, it does not fit in with the research councils.

Jo Johnson MP: We see scope for the research councils to have an eye to the future commercialisation of some of their ideas, where appropriate. It will not be appropriate in many cases. We do not want them to lose their focus on discovery science and blue skies research, which is an important part of what they do. In many cases there are opportunities for commercialisation of research, and where there is a more venture capitalist-type spirit running through them we welcome it.

Lord Borwick: Mr Davies mentioned the spending review. I wonder whether the growth of the one-third of Innovate UK funding, which will be in the form of loans and potential equity,

is part of the spending review discussions so that the same amount of cash goes into business but is accounted within the department as an asset rather than a grant expended. Beyond that, how will the cost of managing these extra loans and equity be handled? It is going to be much more expensive to hammer the salaries of the City into the Civil Service system without causing too much stress. I should declare my interest as chairman of an advisory board on autonomous vehicles, which is funded by Innovate UK.

Gareth Davies: Those are very good points. The main reason why we are not rushing to introduce these this year is because we are looking to do market testing, both qualitative and quantitative, to pilot in the next financial year and scale as we learn. In the past, when government has tried to move too quickly to some of these more innovative financial products, mistakes have been made. We want to make sure that we learn and build methodically. The costs will be part of Innovate UK's delivery plan, and we will discuss with it how it wants to structure and the best way of delivering this, learning from Innovate UK's back office systems but also the British Business Bank and other providers in the market.

Q38 Lord Vallance of Tummel: I have a question about ethos. Putting investment banking together with traditional banking ended up a mess because there was a completely different ethos and one tended to dominate over the other, and it seems to me there is a very different ethos between Innovate UK, which is becoming more interested in different types of finance, and so on, and the rest of the research councils. They look in different directions and have a different ethos. My worry would be that this results in the mess that we eventually saw in the banking system, that one dominates over the other or there is a mish-mash between the two, and that would be an argument for keeping them separate. Another argument for keeping them separate is that, if you ever thought of trying to get in private finance at the portfolio level, where the risks are mitigated and diversified, rather than the individual investment level, you would be better off taking it out separately rather than within the other. You are constraining yourself in potential financing for the future. Sorry, that is a statement, but do react.

Gareth Davies: How we design it will be important. Your point about looking at portfolio funding as well as individual project funding is entirely right. The key here is not that we are trying to create a new financial organisation; if we do that, we have failed. The goal is to make sure that we keep the focus on innovative companies. That is what Innovate UK does well now and needs to keep as its core competency. It will need to bring in the classic credit assessment, some of the skills that you talk about, and portfolio analysis. Whether that should be within Innovate UK or held on a more arm's-length contractual basis are design questions. The point on culture is entirely right. The test will be making sure that we keep Innovate UK's core competency and understand what helps innovative companies to grow and flourish.

Q39 Lord Hennessy of Nympsfield: As Gareth indicated a while ago, our discussion this morning touches a deep and long-standing national anxiety from at least 1896, when a bestseller, *Made in Germany*, hit the stalls and chilled everybody's bones. We could have had a specific conversation like this since the 1918 Haldane report, which laid out the spectrum of research councils, which we finally got after many years. Whitehall is littered with the bleached bones of Ministers and officials who have hurled themselves at this problem. I have listened very carefully today and still cannot winnow out from your very helpful answers—and I admit they were very helpful answers—what is different about your

approach. When PhD students in the 2050s come to look at this session and your stewardship, Mr Johnson, are they not going to add you to that pile of bones?

Jo Johnson MP: No, or Sir Paul Nurse's in that case. We are implementing Sir Paul Nurse's very compelling vision of how we can have a more effective science and innovation system. I will not reprise the overarching objectives. We are addressing the present strategic deficit, a glaring risk that we fall behind on interdisciplinary and multidisciplinary science, and tackle the fact we are not doing as well as we could at the knowledge-transfer side of the equation, making sure that we are getting bang for the buck from our brilliant research. For those reasons alone, it is worth doing this.

The Chairman: Minister, you referred to Sir Paul Nurse's review, which is the begetter of this, and I remember that in the paragraphs in which he referred to Innovate UK he expressed some caution. He thought that it was important to quantify and qualify some of the issues to be addressed. I hope that when we come to write a short report or a letter on our two mornings of inquiry we will help to contribute to that review, which Sir Paul clearly felt was necessary. Indeed, from the evidence we have received we will be sharing with you some of the concerns that others have expressed, but recognising where there have been some very positive contributions. We recognise entirely what it is you are trying to achieve by bringing into being the new organisation of UKRI. I hope we will not be totally negative and will be able to contribute to a discussion which will help, as the Bill goes through Parliament, to meet all the real aspirations you and others have for the new organisation. Thank you, Minister, and Mr Davies, for a very helpful morning.