



HOUSE OF LORDS

Science and Technology Committee

Corrected oral evidence: Financing and scaling UK science and technology: Innovation, investment, industry

Tuesday 8 July 2025

10.20 am

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Members present: Lord Mair (The Chair); Lord Berkeley; Lord Borwick; Lord Lucas; Baroness Neuberger; Baroness Neville-Jones; Baroness Northover; Lord Ranger of Northwood; Viscount Stansgate; Lord Stern of Brentford; Baroness Walmsley; Baroness Willis of Summertown; Baroness Young of Old Scone.

Evidence Session No. 20

Heard in Public

Questions 229 – 242

Witnesses

I: Tom Adeyoola, Executive Chair, Innovate UK – UKRI; Professor Charlotte Deane, Executive Chair, Engineering and Physical Sciences Research Council – UKRI.

USE OF THE TRANSCRIPT

1. This is a corrected transcript of evidence taken in public and webcast on www.parliamentlive.tv.

Examination of witnesses

Tom Adeyoola and Professor Charlotte Deane.

Q229 **The Chair:** Welcome to today's meeting of the Science and Technology Committee. I am very pleased to welcome two witnesses: Tom Adeyoola, who is executive chair of Innovate UK, and Charlotte Deane, who is executive chair of the Engineering and Physical Sciences Research Council—EPSRC—which is part of UKRI. You are both very welcome.

As you are aware, this inquiry is focusing on the ability of technology companies to scale up in the UK. You will also know that the industrial strategy has set an ambition for the UK to become one of the top three destinations in the world to build and scale a company, and for the UK to have its first \$1 trillion technology company by 2035.

When you introduce yourselves, please say how you view your roles, both at Innovate UK and UKRI. You are both quite new to your roles; we would like to know how you view them and how you are going to support the aims of the industrial strategy.

Professor Charlotte Deane: I am executive chair of the Engineering and Physical Sciences Research Council. I am also—and I suspect it is one of the reasons why I am sitting here—the champion for commercialisation across UK Research and Innovation. For completeness, I am an academic at Oxford University who works in AI, and I am a founder of a start-up in that area, so I have multiple things that fit into the remit of what we are talking about.

On your question about the industrial strategy and building this trillion-dollar technology, UKRI is the base starting point for that in a lot of ways. It is the critical platform providing investment in the things that will allow it to happen, as well as building past that point into the skills, infrastructure and discoveries you will need to underpin it.

We fund a huge portfolio of research across a lot of the industrial strategy areas already. A couple of quick examples are the manufacture of sustainable hubs or things in creative technologies; I could keep going because there are lots of grants. Those are both strategic programmes—things that UKRI has decided, as part of its strategy, that it wants to build and deliver—but also things that are delivered as managed programmes on behalf of the Government: they put investment through UKRI and direct it towards specific areas.

To give you an idea of scale, about 56,000 skilled people are currently funded by UKRI. We have roughly 20,000 PhD students who are active at the moment. Those are the kinds of people who are vital to the build-up for the companies.

The last part of this, and then I will hand across to Tom who can step into how this comes into industry, is that we also spend a lot of our effort—this is where my commercialisation hat comes in—in working out the mechanisms to make it easy, possible and useful to move all that R&D

from exciting research, fun stuff to do, and exciting areas and problems into things that translate into start-ups, scale-ups, and larger companies, while also working alongside larger businesses, because it might be more appropriate for them to bring the technology in immediately.

Tom Adeyoola: I am 10 weeks into the role of executive chair at Innovate UK. When I left university in the late 1990s, the UK had the largest company in the world in Vodafone. In my first week of my first job, I started on the merger of AstraZeneca, which is the UK's largest company today.

I have since worked in the start-up sector across various different industries and then had my own start-up in the field of fashion technology, working very closely with Cambridge University to fund PhD students and on emerging breakthrough technologies around computer vision and machine learning to take that into the clothing and apparel business. We did not reach the escape velocity that I would have liked over that course. I did not raise much UK money, but I raised 80% of £25 million from Asia to build that business. It was a sadness for me, spending my time in the innovation ecosystem, that we had not yet begun the process of building the Vodafores and AstraZenecas of tomorrow.

Since selling my business, I have been focused on the innovation ecosystem. I worked on the start-up funding review, in particular around how we could mobilise growth capital at the pension fund end and how to speed up the volume and flow of spin-outs at the university end. When this role came my way, it felt like an opportunity I could not refuse. I feel that it is the biggest lever to accelerate high-potential businesses from primary research through to escape velocity in the UK, so that we can build the AstraZenecas of tomorrow.

By doing that, and accelerating the journey, we need very strong and clear relationships in terms of the research councils and universities: how are we surfacing and understanding breakthrough technologies in spaces where we have the research base, the talent pipeline and, therefore, the right to win? How does that link up to government priorities in the industrial strategy? How can we be very tight at the other end, in terms of commercial funders and the Government acting as a due diligence engine for the UK system, to ensure that our promising start-ups are caught and then scaled to global significance?

That is what I think my role is. If we are successful in our roles, and build a pipeline which starts to show the potential for the new AstraZenecas to emerge, that would be success.

The Chair: Thank you. We have quite a lot of questions for each of you. Some are directed to one of you but the other is, of course, welcome to come in as you think appropriate.

Q230 **Lord Stern of Brentford:** Thank you both very much for coming. Not surprisingly, we have a number of questions about how to scale up. We

know that confidence in prices, revenue and markets is absolutely centre stage. Examples on a big scale are Gavi and advance purchase agreements. Basically, the issue is around offtake, size of market and confidence in markets, which takes us to procurement. There are a number of routes, but one is procurement. I understand that Innovate UK has a scheme in that area; it seems quite small but critical. If you look at past experiences of going to scale and confidence about prices, revenues, markets and so on, how can you see that idea, which you clearly have but which is rather small, scaling up so that we can use it to scale up these firms?

Tom Adeyoola: The contracts for innovation scheme, which is what you are talking about, definitely has a huge amount of potential. I am keen to spend quite a bit of time going through and understanding its mechanics. One thing to understand is that it is a pre-commercial procurement methodology programme so, thinking about the space in which it plays in the overall element, it is not the commercial deployment piece; it is the innovation piece at the beginning. We need government to understand innovation better and be a better procurer of the innovation part so that it can grow. There are two sides to it: how can we make contracts for innovation a better programme? How can we scale it? How can we drive awareness? How can we upskill government departments around it?

Even though it is small, Innovate UK has worked with over 100 public bodies across government and distributed nearly £2 billion through the scheme. That £2 billion is a small drop in the ocean compared with the £400 billion spent annually on procurement. That is probably the biggest lever we have to move the system; it is 16% of the economy. That overarching world needs a lot of effort, especially from the centre, to drive procurement. I see our role in this as trying to scale up that programme and enable start-ups to be a much more supported element from government.

Thinking about accelerating companies through the ecosystem, there is the bit at the beginning which is pre-commercial and about feasibility studies, R&D and trials, but since we are supporting companies all the way through, we need to do a better job of supporting them to get into the proper procurement elements as well. So it is not just the contracts for innovation, but ensuring that commercial deployment also happens.

Lord Stern of Brentford: How is that second step—which, logically, is much bigger than the first step, even though the first step is crucial—fostered or catalysed? Do you wait for it to happen or do you push the Government?

Tom Adeyoola: Our job at Innovate UK has to be that we are surfacing all the core challenges that the start-ups face through the ecosystem. That goes to my point about trying to be a due diligence engine. If we are doing a good job, we need to be surfacing all the issues that arise in terms of regulation, procurement, et cetera and, basically, be the interface to the right bodies. I bumped into Georgia Gould; I want to set up the next meetings with her to understand the plans from the centre.

We are a supporter of the DSIT-led commercial innovation hub, which aims to start moving the wheels on that, but it will be a much bigger job and we need to do a better job of surfacing not just those challenges but the opportunities, if we do it successfully.

Lord Stern of Brentford: Is it not No. 10 and the Treasury that tells departments as a whole what to do, not DSIT?

Tom Adeyoola: Yes.

Lord Stern of Brentford: Professor Deane, is there anything you would like to add?

Professor Charlotte Deane: No.

Q231 **Baroness Young of Old Scone:** It was interesting that you said you felt the Government needed to make a big central effort on the commercial stuff. In your *Start-up, Scale-up* review, you suggested there should be a procurement council of experts. Is that happening? Are you going to set it up if the Government do not?

Tom Adeyoola: Going back to the point on how small we are versus the £400 billion, I do not think it is our role to be the ones to set it up. I suggest inviting Georgia Gould to speak to this committee about the Government's plans, but I do not think it is our role to be the central convenor because of how big the procurement pie is for the Government.

Baroness Young of Old Scone: Do you see any signs of the Government grasping this one?

Tom Adeyoola: Procurement is one of those issues that everyone knows is big, difficult and thorny, and they want to move the lever on it. Getting a grip on all the different parts and how you move them is the difficult bit. From our perspective, we have to do our part, which is making the innovation piece as easy as possible and surfacing all these issues in a digestible form.

Q232 **Baroness Young of Old Scone:** In your experience of the pre-commercial stuff, how good are government departments at interfacing with you and how good are they at being intelligent customers?

Tom Adeyoola: From the evidence I have seen, quite a lot of government departments are involved. In some cases we are the contracting authority but actually government departments are using it independently. We upskill government departments on the methodology of how to do the process, and then they take it on and are the contracting authority. From that perspective, the ones that have been through the process and are actively using it are almost doing it independently. We are going through that journey of upskilling departments in how to think about innovation and that process, all the way through to what you do once you have measured the outcomes and how you go through to commercial deployment.

Baroness Young of Old Scone: Could I ask a more general question, which also refers to procurement? Where will you look mostly in the future: to business or to universities? There has been a progression over time of where Innovate UK sees its primary focus. Where do you think your primary focus should be? Are you still going to keep a focus on small inventors with bright ideas or do you see the feedstock coming mostly from universities?

Tom Adeyoola: Our primary focus should be on businesses; it should not be on those two things, as we would be taking our eye off the needs of the business coming through. The way I see it, it is about waves of companies: what are the waves doing, and how are the cohorts? We might talk later about quantum, for example. Quantum is one of those great examples as it is an area that was germinated by UKRI. A cohort of companies is coming through, and they have now reached the billion-dollar stage. We need to make sure that we do not take our eye off the ball. For that cohort, the key focus needs to be on making sure that all the relationships and the groundwork are prepared around the next stage of commercial funders, and that the Government are ready to understand what they need to do with this cohort of billion-dollar businesses coming through to ensure that they scale and stay here in the UK. That is the core challenge for that cohort.

The way I see it, it is about different cohorts and waves that will be at different stages. We need to be focused on those companies to ensure that those horse races, if you like, are progressing in the way they should, so that we are taking all the obstructions and hindrances out of the way of the horses to be successful.

Q233 **Baroness Willis of Summertown:** To come back to procurement, I am trying to get my mind straight about this. It is about the flow of information. Is it that the departments come to you, or you go to the departments saying, "This is a really important innovation that has come through"? Where is that flow of information? We also hear a lot about DSIT but, of course, there are so many other departments where huge benefits are coming forward. Health would be one of them, but I am thinking about NERC and a lot of the technological innovations for agriculture. There seems to be a gap in the middle of that flow of information between UKRI or Innovate UK and the department. I just wondered where that happens: where does that communication about procurement occur?

Tom Adeyoola: In terms of the departments, the flow has to be backwards and forwards, so that is where it emerges. Often it will be a case of departments having a programme need for particular types of innovation, creating the programme, which is then a call, in terms of a competition, for companies to come up with an innovation that solves this particular challenge. That is the way in which it revolves; you think about the problem statement first.

Baroness Willis of Summertown: What about blue-sky innovations that will come through, which may be relevant to something the

Government do not know is out there? How does that flow come through? When I was on the Horticultural Sector Committee, there were a lot of impressive agricultural technologies coming through that Defra, for example, was not aware of, yet they were getting some funding from Innovate UK. I am interested to know about that flow the other way.

Tom Adeyoola: From that perspective, it is different from a contract for innovation, which starts with the problem and then tries to get the emerging technologies to deal with that problem. In your example, you have the emergent technologies that have been built, then you are trying to get government to become the procurer. That is a different challenge. It is a different set of people in different departments, so it is about building those relationships. That is the bit I agree with you on. It is the next bit, where we have to build those relationships with the companies to be able to provide that support, which is outside pure cash but around how we can help the companies and Defra understand that these companies are valid, are good, and are supported by good technology. It is, in effect, doing that due diligence for them to try to get them to that next stage so they are procurable.

Baroness Willis of Summertown: That is the part that you are now looking at?

Tom Adeyoola: Yes.

Q234 **Viscount Stansgate:** My question is for Tom Adeyoola. Will Innovate UK work with the British Business Bank and the National Wealth Fund to build a single “front door” or, as it has been put to us in earlier sessions, a concierge service to help guide firms from proof-of-concept grants through to scale-up capital, including from the British Business Bank and public procurement opportunities? What more will Innovate UK do to flag high-potential companies and increase referrals between itself and scale-up financiers in both the public and private sectors?

Tom Adeyoola: In one word, yes.

Viscount Stansgate: That is a good start.

Tom Adeyoola: The ability for the BBB to become an important part of this system and a mobiliser of growth capital was a key part of the start-up review that I worked on. An MoU is already in place with the British Business Bank, which was signed last year. There is now a project board around joint activities, data, diligence, reach and engagement, marketing, and awareness-driving into the industry. That work has started. I have my first formal meeting with Louis Taylor next week when we will look at how, especially post the spending review and industrial strategy, we can turbocharge that arrangement and look for greater pathways to collaboration.

As I mentioned, I hope we can become that due diligence engine which shortens the timeframe for deep tech, which is a major problem area especially in the UK, to reach funding: how can we bridge that expertise

and knowledge gap for funders who find deep tech difficult to understand and, therefore, make their investment decisions on? Given that we should be seeing and understanding everything about the businesses from emergent breakthrough technology all the way through the stages from pre-seed to seed, et cetera, we should almost be able to say, "Here you go, here's our due diligence pack. This is why these companies have a right to win". Building those relationships and, essentially, moving Innovate UK into a position of credibility and authority in terms of deep tech businesses through the journey is where I want to take the organisation.

Viscount Stansgate: Does that mean that you see your role as evaluating the technical potential of technologies, the commercial potential of businesses, or both? Professor Deane might want to add something here. How do the research councils collaborate with Innovate UK on this first mission?

Tom Adeyoola: It is absolutely both; it is about ensuring that businesses become investable. In the first instance, it is about going through the technology at various levels and ensuring that they are progressing through those stages. However, as a company matures it becomes all about their investment-readiness and market-readiness levels—all those elements—how we can provide the additional support that gets them there, give comfort to the other side, to the investment organisations, and prepare the Government for things such as procurement to provide that concentrated effort of support around businesses to ensure they reach escape velocity. That is the key thing for me. Businesses in the UK traditionally take longer to raise less money. As a consequence, it is very difficult for those businesses to accelerate through into the hyper stage where economic value accrual becomes significant at a national scale.

Professor Charlotte Deane: Starting from the other side of that, it very much is the research councils' role. We are continuously assessing whether things are the most exciting or the most forthcoming science or technology as they come through. Often, there is a general sense that we are part of one organisation: the teams work together and they have meetings about the various sectors that Innovate UK is working in. However, to give you an idea, we have joint funding vehicles, which are very useful because they make us very closely connected in particular areas or across particular technologies or things. The innovation to commercialisation of university research would be a good example on knowledge innovation centres, those kinds of things.

More specifically, on the very important technologies that we see coming through, the best example would probably be in quantum technologies. The UK National Quantum Technologies Programme is entirely joint between EPSRC, Innovate UK, STFC and DSIT, and was set up because there was an opportunity there. You have the evaluation of the academic research on its way through, then you directly work with Innovate UK as it is building. For example, the five academic hubs in quantum technologies—the EPSRC funds—all chose to be co-funded by Innovate

UK, so they sit alongside where we think the very best research is happening to be able to pick that up. About 17 start-ups have come out of that.

Another example, which is not in EPSRC, would be the creative industries. There is a set of creative industries clusters across the UK and, once again, all those are co-funded with Innovate UK so that they are part of the build, because you can see that it is a clear industry you are trying to build and you know where you have the expertise. I can give you more examples, but I thought two would do for starters.

Tom Adeyoola: Going back to that example of quantum, I talked about needing to ensure that we are doing the life cycle from beginning to end, to escape velocity and going a step further than we feel comfortable. One of those spin-outs, Oxford Ionics, was bought for \$1 billion by an American company only three weeks ago. We need to make sure that that does not happen with the rest, otherwise we are just subsidising R&D.

Viscount Stansgate: Could that have turned out differently?

Tom Adeyoola: It could, if we had laid the groundwork well enough, built this cohort, planned for success and ensured that everybody later down the track—we are talking three years out—was ready for this cohort to be there. Were we ready for this situation? No, but we need to be. We need to be sure that we have an attractive enough environment that the \$1 billion exit versus staying and scaling are almost on par, if not better.

Baroness Neville-Jones: I want to go back to what Professor Deane said about quantum, which I recognise. That example you cite was driven by Peter Knight in a very determined fashion, and you cite it as an example of how the system operates. It was a particularly outstanding example. Do you think you can replicate that model in other areas and get it going more frequently? It stands out on the current scene.

Professor Charlotte Deane: Tom and I have spoken about that example a few times and a little about the creative industries one as well. This is the kind of thing we should be doing. You cannot have somebody's eyes on every single investment that UKRI has, or know whether it will be the one, because there is a huge number of investments. What we must do when we try to build critical mass, where we think we have competitive advantage, where the UK is leading the research or where we wish we were is ensure we are joined up in this way.

Quantum is a really nice example. One of the reasons I like it is because it makes it easier for me to explain to academics, colleagues and others that it works if we build in this way. Opportunities are arising around advanced manufacturing, which is another area we have spoken about previously as something that we could build in a similar way. However, we are going to have to pick areas and sectors where we can build that concentration. In some sense, we are continuously doing that because we pick the sectors and areas in the strategic research that is funded by

UKRI, but also by the government-directed programme, so we know how and where this is going to happen. We have to concentrate on making sure we do it in this kind of fashion.

Baroness Neville-Jones: It seem to me that that example of single-minded management was one of the keys to success.

Professor Charlotte Deane: Single-minded management can be good in particular areas, but you can also have it as collective management. Materials has managed to build a really coherent community feel across the UK. We have centres across the UK from the Royce. Having a champion does not hurt, but you can also do it by championing and creating a feeling across the field.

The important thing is the concept of the co-funding and co-localisation—the idea that we are deliberately building across UKRI. Before they even exist—so it is not a company yet—my first bit is: can I get companies a package that will hold them inside the university sector or academia long enough to be a really good investable proposition before they pop out? That is where I am trying to get us to, in a system where that is easy and good. I hope that what we will have next is something that picks them up and holds them long enough so that they can then scale rapidly, as Tom described.

Q235 **Lord Ranger of Northwood:** On the example of the quantum businesses and what you are describing, I spent 25 years in industry, some of that time looking at buying smaller businesses. I also chaired a research board, which was funded by the research councils, and I could see the difference in the dynamic on both sides: the academic and the industrial dynamic where Innovate UK sits.

What are the conditions you are looking for as success outcomes to fund those businesses to get them to the pre-commercial stage? If we are saying, as you state, that we do not want them to be picked up and taken away—so we are just pre-funding things so that others can capitalise—do you have specific requirements in those funding conditions to say, “Well, here are some other things we want to see as success from that funding that we are providing”, that will hook those businesses in and keep them here?

Tom Adeyoola: One of the challenges that Ian set coming in, which we are going to be looking at, is what the hooks and anchors are going to be: what can we do to make the UK an attractive place to stay and scale? It is going to have to be about having a good procurement story, which is a hook and anchor into the UK: is it a space where we have the right talent pipeline, which means that you want to be here because the research quality is going to keep coming through?

There will have to be different areas. I am someone who traditionally prefers focusing on the carrot rather than the stick, but we need to focus on what the conditions are in that area, what the end demand market looks like, and whether we have enough demand pull and the right

companies that can pull them through and, as you mentioned, whether potential acquirers are here—is there enough of a government or domestic market—which means that the anchor of that larger business is going to be in the UK. These are the things we are going to be working on and understanding, because that demand and market pull is critical.

As I have been going around Innovate UK I have seen that, in some areas, that market pull is a bit fuzzy; it is not quite there. As we think about focusing, it should be that we are getting some of this focus out of the industrial strategy. In those key eight industrial sectors, we should have the end market conditions that mean that this is a great place to be. We should, therefore, be focusing on those areas and, additionally, on the six frontier technologies. If we are doing that, we should be gaining the critical mass that delivers that attractive environment.

The Chair: Baroness Willis, we have covered quite a lot of what you were going to ask; do you still want to come in?

Q236 Baroness Willis of Summertown: I want to ask a slightly built-on question from that. Again, I am trying to get my head around the process. Do you think we are too focused as a country on blue-sky, pure research versus applied research? Who in EPSRC, or even in NERC, is the person who spots something coming through the blue-sky route that thinks, “Ah, that has great commercialisation potential”? I am saying that because I am in the middle of writing a NERC grant, and I have been really taken aback that there is not a single box—there are millions of boxes—that says, “Is there any commercialisation potential of the science that you are proposing?” To me, we have this gulf between the two. Maybe that is just NERC. What is your view on that?

Professor Charlotte Deane: There are two parts to that. What we try not to do is direct that this must be done. We are trying to create the environment and the system where it can efficiently join up. If you have a big priority area then the funding that we put in—even in some areas where we do not have Innovate funding, we put in funding that goes alongside our large grants—is deliberately designed for people to do introductions with an industry and do proofs of concept with it. That is part of the big grant we have put out in the first place.

Across the entire portfolio, we are always trying to create the framework that makes it happen. UKRI’s research commercialisation framework aligns us much more strongly to how Innovate UK works. That is now sitting there. The thing we have to remember is that most commercialisation decisions around this happen within the university or institute where the research takes place; they are not guided by the research council to do that. We are trying to put the money there to make that happen. There is the higher education innovation funding, which is about £280 million a year and about 110 universities get it. The stats say that 41% of all the commercialisation that is done in universities is off the back of that funding. That is a massive driver for it happening.

There are lots of other pieces of funding to do the encouraging. We have the proof of concept fund, the impact acceleration accounts, and prosperity partnerships. There are lots of ways for people to be connected into each of those, and I can explain each one if you like. Personally, I would like it if there was something that was more direct when people asked about grants, not because every piece of research we fund should have commercialisation opportunity today—that would be a very silly decision, if we want to fund tomorrow and tomorrow and tomorrow—but because it helps people to think about that question if they are close to that edge. That is the continuous thing; I want people to be thinking about it.

Baroness Willis of Summertown: If I could push back slightly on that, all those different names and funds you mentioned send my head spinning. If I am in this environment and they send my head spinning then I am sure the rest of the committee feel the same. It is so complicated. Is there any way the research councils can be a bit more streamlined in this process?

Professor Charlotte Deane: I would say two things. Relatively speaking, more streamlining has happened. One thing we have been working on is the concept of a single front door for the proof of concept funding, and the follow-on funding that research councils do. That is the funding to hold them in the university for longer to try to create that research commercialisation opportunity. That is something we are building. That is going to exist.

Another example of funding that I am talking about is the impact acceleration account, which is given directly to the universities to allow them to work with the right academics. It is a very popular form of funding. When I go to universities and ask them to tell me the stuff they like that I do—because what they tell me is mostly the other side—it comes up a lot. It is a pot where they are able to put out calls that are relevant to their university and the research that is happening there in the areas that they see as important that they are trying to build, since universities cover different sectors and have different strengths where they want to build the companies and places. I do not think the landscape will ever be completely straightforward.

Baroness Willis of Summertown: It sounds like there are steps to make it clearer.

Professor Charlotte Deane: There are definitely steps. When I took on the role one of my aims was to simplify it.

Tom Adeyoola: It is similar on my end; I want the wiring to be on the inside, not on the outside, so how can we do that?

Q237 **Baroness Walmsley:** We have heard that engineering deep tech start-ups have a particular problem when it comes to getting patient capital because it takes a lot longer to develop hardware than software. Therefore, it takes a lot longer for the revenue to come in. Is this

something that the EPSRC is focused on?

Professor Charlotte Deane: It is not a focus for us in the sense that we do not provide funding for businesses. We are not doing that part of it, but it goes back to my previous answer about how long I can hold the idea and development of the company inside the research system before it has to go on the hunt for capital, as it is a very investable proposition. That tends to make people more patient. This goes back to things like the proof of concept funding, the concept being that you do not need to go out and incorporate your company but stay in so that you have more evidence, a better package and are in a better place to hold on to more of what you have. There is a lot of that kind of thing: moving that excellent research capability in whatever the critical industry is slightly closer to market and holding it there.

We have been talking a lot about start-ups and scale-ups, but the other thing that EPSRC does a lot of is partnerships across the portfolio with business. There are 6,000 businesses partnered on EPSRC grants. That means that some of the deep tech research is being done alongside a large company or another company. It is a different situation; the economic benefit will come, but you can have much more patient investment and they can hold it in the university for much longer if they want to, because they are helping to co-fund it. Our prosperity partnerships fund research 50:50 which is still below TRL3—the top level that it goes to.

Tom Adeyoola: I have been on that journey. I was a board member from the inception of a female-founded business called Elvie, which was a deep tech hardware business. It was a real struggle to get funding. It went on to become one of only 60 female-founded businesses to generate over £50 million in revenue in the UK. It was a struggle of a journey, so I have seen it, but that business was launched off the back of an Innovate UK grant and it was an entrepreneur going the other way: an entrepreneur wanting to solve a problem, then proof of concept going back in to look at technology and, off the back of that, build a business.

With that business, we definitely saw that challenge of getting the right type of growth capital money to ensure that it could keep growing. In the end, that hit the stoppers as an American company used litigation to take control of that business. I have seen that journey, and it is definitely a hard struggle. It is about getting more growth capital into the system to have a more patient-type approach to those businesses.

Baroness Walmsley: Given the kind of companies that Professor Deane has just been talking about, is it advantageous for a company that has the potential to be in the supply chain of a bigger company to have the support of that bigger company during the period they are developing?

Professor Charlotte Deane: This goes back to the answers around procurement. It is always advantageous, in some sense, to have a customer, and those customers often work together: if they gain a massive advantage by doing that, which they hope to, it is a really

powerful part of this. Some of the exciting companies I have had the privilege to visit when going to the universities—they like to show off to me the amazing things they have done—quite often working in a way that spins out the company because a large company wanted to buy directly from the university. “Buy” is probably the wrong word, but the university sensibly has spun out a start-up that is now the vehicle for doing that connection.

Q238 Lord Borwick: We heard from Greg Clark that Innovate UK had perhaps adopted too much of the research councils’ culture in terms of speed and process of issuing grants—calls for proposals, peer-reviewed assessments, and money six to 12 months later. What is your average time between the first proposal and the issue of grants?

Tom Adeyoola: I have talked to the team to try to understand the culture and its approach to grants. This is one of those lagging problems, but the team has a really good process and is bringing that stuff down. They are 18 months into rolling out a sales and operations-based, demand forecasting-led response plan for how they deal with grants, so that they can flex up as demand comes in and goes down. Between 2022 and now they have reduced the cycle time by 32%, so it has gone down from 173 days to 118 days from end of competition to money received.

Lord Borwick: How many days on average does the competition take—90 days or something?

Tom Adeyoola: Competition live times will be variable, depending on the different competition and complexity. Often competitions come late and, therefore, are spun up; they might be on for a short period of time. The moment a competition closes, with all the applications in, that is the ticking clock part of the process.

Lord Borwick: Is it inevitable that, because your system is part of government, it is slower than that of business?

Tom Adeyoola: I do not think so. The team dealing with it is very much on a forward focus and works to business-type methodologies. We work very differently from the research councils, where the funding cycle is very different. This is really a demand-led, responsive, thousands of applications coming in type process. Although we have a process that is currently based on applications that are written, I have actually already pulled the trigger on that: we are going to have to rebuild the whole application process from the ground up because of the existence of AI.

Q239 Lord Berkeley: You mentioned in an earlier response that you had 6,000 SMEs on your books—maybe I got it wrong. My first worry is whether you are communicating properly with any of the companies, large or small, that think they need your services. My second, when it comes to making applications, is about the amount of paperwork that is required for a very large number of different applications. I have been involved in one myself—a very small one, which took only 50 pages—but you feel that you need to have a specialist report writer or assistant to help you to get

it just right for a better opportunity of success. Is that the way to get things done more quickly, or is there a simpler way?

Tom Adeyoola: The grant writing industry is obsolete; I have little sympathy for anyone using grant writing companies today when ChatGPT exists and you can get it done for free. That world has completely changed within the past 12 months. As a consequence, and as I just mentioned, it needs to be rebuilt from the ground up, because ChatGPT can pass a grant application today. That is the reality.

The process of getting an application should be hard, because you should have gone through the process of thinking about what business you are trying to create. It should be a process that gets the type of answers we need to ensure that you are investable or the right sort of person to go on that pathway. As for how we evaluate for that now, given that a straightforward paper-based approach of filling in a number of words in a box and evaluating purely on that is obsolete, we need to rethink that process from the ground up.

Lord Berkeley: You are going to need a very large number of boxes to fill in; that is the problem. Is there not a simpler way?

Tom Adeyoola: Now that AI exists, you are going to have to use AI to do filtering on the other side. It is going to end up with more human-to-human contact: we are going to need to meet the applicants who get through the filtering process and understand that they are able to execute the plans that they are putting forward.

Lord Berkeley: Interesting.

Q240 **Lord Lucas:** I was particularly interested in the research councils and how they set out to challenge the comfort of the consensus science. As a physicist, I see vast amounts going into dark matter and so on and so forth—dead-end, circular science getting nowhere—whereas challenging ideas do not get funded. How do you create a situation where failure is not a bar to future success and looking for something different is encouraged?

Professor Charlotte Deane: I have to challenge one bit of that: I do not think that failure is a bar to future success in research, in the sense that we are continuously pushing the edges of it. If you talk to someone who has done start-ups, it is not considered a bar to doing the next start-up if the first one you tried did not go so well, because it is about learning to do those things.

There is a continuous challenge in the system of ensuring that we are pushing people to the edges. It is sometimes comforting to see the stuff we already like; we have to push beyond that. We are continuously looking at ways to assess grants to try to create the environment where that happens: you look at the way they are being scored and the way they are being reviewed, but you also deliberately push out challenges in particular areas to try to move the field towards one area and away from areas that have previously been covered. When people talk about the

curiosity-driven research part of the budget, we do not have calls which say, "Do whatever you like". We want to do that as well, let us be clear—we want people to come out with every idea they have, because we do not know what the most important thing is—but within that you can also put steering in and ask questions that say, "We are particularly interested in things which will start to address or push".

It is always going to be a challenge because of the things we do not know. That is why I love my job: we do not know what the thing is that we should be funding today that matters for tomorrow and tomorrow and tomorrow, so we have to keep asking. We will keep getting it wrong, but sometimes we will get it right, and every time we get it right it is so powerful and important.

The Chair: On that point, do you think there is a shift in emphasis away from responsive mode to more directed programmes?

Professor Charlotte Deane: I am still relatively new in the role but, looking at the funding the EPSRC has been doing over the last several years, I would say there has not been that shift over a recent period of five or six years but there is more of a realisation of how to use the strategic funding in ways that are even more directive than before, if that makes sense. This comes back to some of the other things we have been talking about: for the strategic part of the pot, "strategic" does not mean a little bit of strategic funding in every area we currently do. It means picking big areas, funding them properly in a big and concerted way, and doing that in partnership with Innovate UK and other research councils. For example, the AHRC is the driver for the creative industries; a lot of the work in clean energy is NERC plus EPSRC. It is about being more coherent. Maybe that is the change that people have observed: the strategy part of the pot has become more directed in terms of these being large areas we want to focus on, and we want to bring money together to do that.

The Chair: Given that you only have a budget—which, unfortunately, does not increase very much—does that not mean that, inevitably, the responsive mode part of the budget is reducing because of the various strategic decisions you are talking about?

Professor Charlotte Deane: No, because that is the point: there has always been a split in the research council funding in that way. Lord Vallance described it as a very rough split: 50% is the curiosity-driven part, about 20% is the strategic part, and about 30% is industry-focused. That is incredibly rough. It is impossible to draw strict boundaries here—I just want to make that clear—but it gives you an idea. I do not think the idea is to change that fundamentally, unless we are asked and challenged to. I would not object to that completely, but the aim within the pot that we think of as strategic is to ensure that it is much more focused on these larger investments. I do not necessarily mean more money going to one place, but the money being more concentrated on particular areas.

You can be strategic but not say I have a strategic call in every area that EPSRC does. As far as I am concerned, that does not fulfil the aim.

Baroness Neville-Jones: I do not think my question fits here; we should go straight on to industrial strategy and come back to this because you are on to the key issue.

The Chair: All right; the industrial strategy is obviously of great interest to all us.

Q241 **Baroness Northover:** You have been expanding on exactly this area. We have the industrial strategy. Throughout this whole session, you have been talking about how you are seeking to link up research to commercialisation and so on. The industrial strategy says that UKRI will have a role to play in pivoting its research funding towards the sectors that it prioritises—this is something that has happened before, of course—working closely with DSIT, industry and departments. You have quoted Patrick Vallance on that division; I wondered whether you could go into some further depth about how you balance that ambition with what you have also said about the curiosity-driven part, and whether there are any specific technological sectors that will now see new funding as a result of the industrial strategy.

Tom Adeyoola: If I am thinking about the funnels, we should be the reverse bit of the funnel: you get more money the narrower down the tree you get in terms of commercialisation. The key thing for us is: where are the emergent technologies which match up against the industrial strategy? How can Innovate UK expand the surface area for those particular technology areas so that emergent companies will arise, and then try to follow them down the track? There should be a lot in the funnel at the top, then gradually it shrinks. However, we need to keep making sure that we do not drop off at each stage and we should have stronger relationships with commercial partners all the way through so that the capital keeps rising for the smaller amount of businesses on the way.

The difficulty I found, coming into Innovate UK, is that it has not been so strategic to date and has not really followed businesses through. At the same time, it is remarkable, when you meet start-ups, because it feels like nearly everyone in the room has had Innovate UK money in some way, shape or form. Trying to understand from our side who we have put money into, who the good companies are, and which are the ones we should be following is quite a hard question for the organisation to answer. I want that question to be easier to answer so that we are clear, at every level and in every core sector, about the cohorts coming through, that we understand the journey and about what success looks like.

The quantum story is the one success story that I have grabbed on to because it is a really good one. It is an extraordinary example of an emergent to a cohort of good companies from which you believe a big one is going to pop out. How can we use that confidence, with all these

emergent areas that connect with the industrial strategy? That is my key thing: it needs to connect. In this country, we still think we are a lot bigger than we are. We are a medium power; we cannot do everything. That clarity comes down quite clearly from the industrial strategy, from Patrick Vallance, and from Ian Chapman, who is coming in. We have to line up behind that, because if we do that and bring everything together in a co-ordinated and coherent way, there is more than enough that we can do to ensure that the AstraZenecas do happen.

Baroness Northover: Looking at that industrial strategy, are you likely to move away from certain areas? Were you surprised by others, or was it as you would have expected and that you need to focus on those?

Tom Adeyoola: I would say it is about focus. We are doing all the areas; we just need to get the focus and ensure that we are adding the additional support, which is not just cash; if you talk to any start-up, contracts and connections beat cash. Once they are going, how do we ensure our position in the ecosystem as a trusted broker for government, where we are interested in the wealth of the nation rather than any particular company in and of itself, and the founders and shareholders of that company—we are interested in the bigger picture—so that we are able to see and provide that information back, as, “Here are the friction points; here are the issues that could prevent this potential being realised”?

Lord Stern of Brentford: I want to pick up a point you made, Professor Deane, and invite you to celebrate the fuzziness of the boundaries, and to speak of issues rather than sectors, because “sectors” is far too narrow. We all know there is a huge intersection between AI, green and the drive to net zero. The next sentence comes from an academic; I had a paper on that in *Nature* a couple of weeks ago. We all know there is a big intersection between biochemistry, materials and the drive to clean technologies. We should not confuse priorities with direction. We can overdo the difference between blue-sky and application, but those are statements I would ask you to comment on because I am picking up on what I thought you said.

Professor Charlotte Deane: The start of my answer to this question comes exactly from there. When people ask, “How will you balance this with continuing to fund excellent research?”, I say, “6,000 companies partner EPSRC on its excellent research portfolio”. Companies do excellent research; they love the stuff. There is not a massive divide here. When you analyse what is coming through the portfolio, loads of the research that academics are choosing to do that is seen as the most cutting-edge and leading is in areas that make a massive difference to the economy or are part of this.

I am starting at the other end of the funnel, where I have to make sure that we fund a broad enough base of researchers and that we have enough skilled people in all the different areas. We will also have to narrow and specialise as we move strategically through that, but I

completely agree. The example I always give—I apologise, because I am an academic at heart—is that we divide universities into departments because we have to. We need to have organisational units, so we talk about there being a chemistry department, a physics department, and an engineering department. I sit in the department of statistics, but my research is in drug discovery. I primarily work on chemistry and biology. I write computer algorithms, and a lot of my group are software engineers—so, basically, take your pick.

I am very happy in my department and I feel very much the same when you describe sectors. We need language, and we divide it into buckets, but what we are really asking is: what are the problems that need to be solved that will make the economy grow and will make good stuff happen? It is a way of allowing people to understand and see that, and for us to try to organise and help bring that into existence. That is how I think about it. The boundaries exist because we need them to help us understand, but the reality is you are powering a system to make changes and are putting interventions in that will create the conditions we are being asked for by the Government, but which we can all plainly see are really important to us.

Q242 Baroness Neville-Jones: Can you envisage how the system will work? The industrial strategy tells us that you are going to help by pivoting research in the direction of the priorities that the Government have identified, but they are expressed as technologies, not as goals of a concrete kind that you want to achieve or get to, or projects that you can put some money into. Who will turn it into something that is actually financed? Do you turn it into an idea and then make a call, or will DSIT and any other government department tell you what they are after? How do you envisage this state of affairs working out in practice?

Professor Charlotte Deane: It will be a combination of all those, because each of us has a view on the system. I have a view, which I am still learning, of what exists across the research base in the UK: where we are really strong, where we actually have an advantage and are really good at some stuff, and where that sits in that world. Tom will have more of a view on what of that is a commercial proposition and could make a difference in the landscape that we have. Then you have views from DSIT and other government departments on what that is and where you get that advantage. This is probably not how I am meant to phrase it, but we will all be slightly wrong because we are all guessing a future state and looking at a very complex problem.

Baroness Neville-Jones: What about the obverse—there is a real national need, we do not have research strength and we need to create one?

Professor Charlotte Deane: There tends to be a demand signal that comes from government for us to create it. The thing about creating a research strength—there are areas where we need to do that—is that we have to remember that that it is not a short-term project; it is a long-term project. You can do it, it has been done before and it can be done,

but we have to be very clear that we are going to do it. It has to be a long-term project as a research strength; there are other levers you can move faster for that.

Baroness Neville-Jones: And not waste money by stopping half way.

Professor Charlotte Deane: Yes, you cannot stop. If you are doing it, you are doing it. If you are in, you are in.

The Chair: Thank you both very much for coming to give evidence to us. We appreciate it very much, it has been very informative. We are now going to pause this session while we bring in the next witness.