OFFICIAL REPORT
AITHISG OIFIGEIL

Economy, Jobs and Fair Work Committee

Tuesday 6 March 2018

Session 5

The Scottish Parliament
Pàrlamaid na h-Alba

Tuesday 6 March 2018

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ECONOMY, JOBS AND FAIR WORK COMMITTEE
8th Meeting 2018, Session 5

CONVENER

*Gordon Lindhurst (Lothian) (Con)

DEPUTY CONVENER

*John Mason (Glasgow Shettleston) (SNP)

COMMITTEE MEMBERS

*Tom Arthur (Renfrewshire South) (SNP)
*Jackie Baillie (Dumbarton) (Lab)
*Colin Beattie (Midlothian North and Musselburgh) (SNP)
*Kezia Dugdale (Lothian) (Lab)
*Jamie Halcro Johnston (Highlands and Islands) (Con)
*Dean Lockhart (Mid Scotland and Fife) (Con)
*Gordon MacDonald (Edinburgh Pentlands) (SNP)
Gillian Martin (Aberdeenshire East) (SNP)
*Andy Wightman (Lothian) (Green)

*attended

THE FOLLOWING ALSO PARTICIPATED:

Sandy Finlayson (Converge Challenge)
Alastair Sim (Universities Scotland)
Professor Ferdinand von Prondzynski (Robert Gordon University)

CLERK TO THE COMMITTEE

Alison Walker

LOCATION

The David Livingstone Room (CR6)

Scottish Parliament

Economy, Jobs and Fair Work Committee

Tuesday 6 March 2018

[The Convener opened the meeting at 09:30]

Decision on Taking Business in Private

The Convener (Gordon Lindhurst): Good morning, everyone, and welcome to the Economy, Jobs and Fair Work Committee's eighth meeting in 2018. I remind everybody to turn electrical devices to silent so that they do not interfere with the proceedings or the committee's work. We have received apologies from committee member Gillian Martin.

Agenda item 1 is a decision for the committee on whether to take item 3 in private. Do members agree to do so?

Members *indicated agreement.*

Scotland's Economic Performance

09:30

The Convener: I welcome our three witnesses, who have braved the weather to come in and speak to us as part of our inquiry into Scotland's economic performance. With us are Alastair Sim, who is director of Universities Scotland; Sandy Finlayson, who is chair of the converge challenge programme; and Professor Ferdinand von Prondzynski, who is principal of Robert Gordon University.

I will start with a general question for you all. You should not feel that you all need to answer every question—we will see how the questions and the discussion flow. How do you see the Scottish economy as having performed over the past 10 years? I am thinking in particular about innovation and development. Who would like to go first?

Sandy Finlayson (Converge Challenge): I will have a go. It is difficult to look at the Scottish economy as such, given that there are different regional economies. In Edinburgh, we now have a very effective tech ecosystem—you have probably heard that expression before—that is joined up and well connected. It is not as good as the one in Cambridge, but it is not bad, although it could be a lot better. The tech ecosystem does not work nearly as well in Glasgow nor, perhaps, in Aberdeen; Professor von Prondzynski will have a better view of that than I do.

In addition, we have in Edinburgh very effective business angel syndicates that have provided support for start-up companies. An example is a group called Archangel Investors, which has been responsible for creating approximately 3,500 graduate-level jobs since it started in 1992. However, I do not see that happening to the same extent in the other university cities with regard to the output of our academic institutions. We have much more to do in that respect.

Without going as far afield as Massachusetts to look at the performance of Massachusetts Institute of Technology and Harvard University, I can say that I am always impressed by the Cambridge miracle. The University of Cambridge has been so successful at creating high-value employment that there is now negative unemployment in the city. I could go on about that for a long time, but I should probably let the other witnesses have a shot.

Professor Ferdinand von Prondzynski (Robert Gordon University): I have been in Scotland for seven years. I came from Dublin, where I spent the previous 10 years as president

of Dublin City University. Although it is always dangerous to make comparisons between countries, I made some observations when I arrived in Scotland. I was used to the system in Ireland, in which there was a high level of integration between universities and the key economic levers in industry and in Government agencies. When I came to Scotland, I found that universities were expected to be service providers for initiatives that came from elsewhere, whereas in Ireland I had been used to partnership arrangements.

I mention that because Ireland's experience during the years in which I was there makes for quite an interesting comparison with Scotland. At that time, there was a focus on two aspects: start-ups with high knowledge value, particularly in the area of technology, and high-value foreign direct investment. Ireland's specific emphasis on creating an innovation economy by nurturing an innovation ecosystem allowed it to step out of the recession that it slipped into—by which it was especially badly affected—very early. It now has a vibrant exporting economy that is focused largely on high-value, knowledge-intensive, innovation-driven initiatives, which are usually partnerships between industry and universities.

Scotland still has some way to go in that regard, as we are not quite at the point that I felt that Ireland had reached when I left, but we are going in the right direction. The innovation centres that have been created by the Government agencies in Scotland are definitely a move in the right direction, although we need a higher level of investment in activities of that kind than there has been so far.

The key driver of success will be the creation of a much higher level of research and development in industry. Scottish academic research is good, and it compares well with such activity anywhere in the world, whereas industry R and D does not. The industries of the future will not involve call centres or fairly low-level manufacturing; they will be knowledge-intensive, innovation-driven industries. For that development to take place, we need much better links between universities and industry to ensure that industry moves up the value chain to a greater extent than has been the case so far. Obviously, there needs to be a huge focus on skills.

We know all of that, and we are moving in the right direction, but we need a faster pace and—I suspect—more money. The United Kingdom's industrial strategy may help a little bit in that regard, but we need to do a number of things in Scotland specifically. We are going in the right direction, but we have a way to go.

Alastair Sim (Universities Scotland): My response is along broadly similar lines: we are getting there, and things have been moving along. Current statistics show that Scottish universities are doing business with more than 21,000 Scottish businesses a year. There are now graduates coming out of university who have gone through a curriculum that focuses on entrepreneurship and a range of employability skills, and we hope that they will help to drive economic growth. The rate at which universities are creating spin-out companies and getting their intellectual property out there so that other companies can use it is increasing. However, we have not yet got what I would describe as a virtuous cycle in which there is enough of a breadth of innovative companies—small and medium-sized enterprises in particular—that are hungry to co-create ideas with universities.

Again and again, I am struck that universities interact with more companies than Scottish Enterprise does, because SE has had such a big focus on high-growth companies. One of my hopes for the Scottish Government's new Strategic Board for Enterprise and Skills is that it will enable us, through universities and the enterprise networks, to drill down further to help more SMEs to become enterprising and innovative and to call on the ideas that universities are developing.

The Convener: We move to a question from Jamie Halcro Johnston.

Jamie Halcro Johnston (Highlands and Islands) (Con): Before I ask my main question, I would like to know why you think it is—if indeed this is the case—that so many businesses are unaware of the opportunities to partner with local or other universities. What more can be done to raise awareness in that respect?

Alastair Sim: Ferdinand von Prondzynski will be able to answer that, given his direct experience of working in an institution. However, if we look at the national picture, it is probably to do with the nature of our SME economy. There are many excellent SMEs, including family businesses, that are doing a good job, but they are not really in the space where they are thinking about their next process or product or about how they can do something that will change the market. Somehow—I wish I knew how—we need to stimulate a wider range of companies to think like that.

There are initiatives that are working well. For example, the Interface agency is working extremely well to match up companies with university expertise. Businesses can phone Interface and say that they have a problem and they need some expertise, possibly from a university, and Interface will work hard to find the right person in the right university across Scotland who can help them to solve it. Quite often, that

person will say, “That’s not the problem—you need to reconceptualise it and think differently about growth, product and process development.” That approach can start to create a virtuous cycle of long-term engagement between an enterprise and an institution. Those longer-term relationships tend to get a bit of momentum behind them, and they can change a business fundamentally.

Other universities are doing a great job, and there are good examples of that. The University of Dundee has a fantastic incubator centre for new businesses. The wiring that is used in the international space station was developed through that mechanism. Universities feel that they are doing a lot to create space for interaction with business, but we still sit in the Organisation for Economic Co-operation and Development’s bottom quartile for business investment and research and development. Some kind of catalyst is needed—I wish I could give you an easy answer on what it is.

Professor von Prondzynski: I agree with everything that Alastair Sim has just said. There are two elements to consider. The first is that, as Alastair mentioned, SMEs often do not have the resources or the people to pursue innovation opportunities, and sometimes they do not realise that it would be worth while to do so. They may feel that, if they pursue innovation, they will be wasting their scarce resources.

However, there is another element. If we look at the experience of other countries—a lot are now involved in this area—we see that innovation builds up around two types of clusters. One is higher education—as Sandy Finlayson said, the most innovation-intensive areas tend to be situated around universities. However, they require at least some elements of existing business R and D. One problem in Scotland is the low level of R and D, particularly in large companies. For example, our neighbours at the University of Aberdeen are spinning out a lot of companies, particularly in life sciences, and exploiting their intellectual property commercially, usually through a licence. The problem is that the value that is created will almost certainly end up somewhere other than Scotland. There is very little industry R and D in the life sciences sector. If someone makes a specific discovery, it is likely to end up in Massachusetts or elsewhere.

If a university spins out a company, it will probably no longer be there in 10 years’ time. It will have been acquired, even if it is successful—in fact, especially if it is successful—by a multinational company, and whatever potential value it had will be exploited in Asia, America or continental Europe. We need to ensure not only that there is a link between industry and universities, as Alastair Sim mentioned, but that high-level industry R and D becomes a priority. That can be helped by a focus on how we pursue foreign direct investment to ensure that there is, for example, a biopharma company in Scotland that is undertaking significant levels of R and D.

Jamie Halcro Johnston: My colleagues will cover more of that area. My main question is more general. What are the key opportunities and risks that Scotland’s economy faces over the next 10 years?

Sandy Finlayson: We can start with Brexit. I have come to the conclusion that Brexit is a little bit like “The Archers”—it has been on forever, it is on every day with the same tired old cast of characters, nothing much ever seems to happen, and people either love it or hate it.

More seriously, in my sector, a significant number of academics and students—the other gentlemen on the panel will give you more accurate statistics than I can—come from European countries. I recently chaired a presentation on Brexit for entrepreneurs, and the panel included the chief executives of five technology companies, each of which employs between 25 and 40 people. About a third of the employees in each of those companies come from Europe, so it is clear that Brexit is an issue.

A third of our venture capital originates from the European Investment Fund. That source will need to be replaced simply in order to maintain our existing flow of capital, because it is already drying up. The Government’s new Scottish national investment bank will be a very good starting point. However, I make a plea to the committee that, when the bank becomes operational, it should provide equity rather than debt. There is plenty of debt to clearing banks; access to capital is what we need. Scotland trails quite badly behind the rest of the UK in access to capital for innovative new companies.

09:45

There is an interesting statistic that is perhaps pertinent to the committee’s deliberations. Last year, the UK Government published “Patient Capital Review—Industry Panel Response”, which looked at a cohort of companies over 15 years. During that period, the companies that took in external equity—venture capital—had created nearly half the overall number of jobs that were created by all the companies. To put it another way, nearly half the jobs that were created by all the companies were created by one company in 200, which works out as 0.5 per cent. It is important that we find more ways to ensure that ambitious companies are created.

In response to Jamie Halcro Johnston’s specific point, I note that one of the big issues, to be blunt,

is lack of ambition. If people can make a comfortable living doing what they are doing without taking the risk of expanding their business, an awful lot of people in Scotland will be happy just to do that.

Jamie Halcro Johnston: Has the environment changed so that people are no longer prepared to take those risks?

Sandy Finlayson: The environment is changing. It is a lot to do with storytelling. If you go to London, you will see entrepreneurs sloshing around everywhere—they have cashed out their companies once, twice or three times and they are happy to share their experiences. There are not enough people up in Scotland who are sharing their experiences.

Professor von Prondzynski: I absolutely agree with what Sandy Finlayson said. Two key risks currently dominate in Scotland. One is Brexit—we do not need to talk much about that, but it is a huge risk. It is a reputational risk, and not just in Europe. On a recent visit to America, I ended up—by complete coincidence—talking casually to a senior official from the National Science Foundation, which is the key science funding body in the United States. He told me that the foundation's view was that, as one of the consequences of Brexit, the UK will lose its research leadership in Europe, and that position will go to Germany. There are reputational issues not just in Europe but elsewhere; I have had similar experiences in China. We need to be aware of that.

The other risk builds on what Sandy Finlayson said: not enough people in Scotland want to be entrepreneurs. There are a number of reasons behind that, one of which is how we run our education system and how, in that context, we put forward role models. Incidentally, that is sometimes caused by the social ambition of parents, who think that the best place for their children is in the professions as lawyers, doctors, accountants and so on. Of course, we need all those professions—I am a lawyer, although I tend to take the view that we do not need any more lawyers—but there is not an urgent need for more people in the professions. We need people who want to be entrepreneurs.

Too often, the people who are driving the BMWs in more disadvantaged areas are the wrong role models—they are often drug dealers. I do not mean to exaggerate, but we need to give young people a sense that going into business and doing something creative is a really exciting prospect. That view should be encouraged through families, schools, careers guidance and so on, because we need more entrepreneurs.

Jamie Halcro Johnston: When could, or should, that start?

Professor von Prondzynski: It needs to start at primary school, because many formative influences take place there.

Alastair Sim: The biggest risk, which other people have touched on, is that we become inward looking and unambitious as a nation and as an economy. I hope that we will not do that, and the indications are that we are probably heading in the other direction.

The biggest opportunity is to ensure that we are a high-growth, high-skills economy. Indicators in the economy show that there is among employers a growth in demand for higher skills, whereas there is less growth and in some respects a decline in demand for skills at the lower and medium levels. That gives us a sign that we are on the path towards becoming a more outward-looking, high-skills, innovative economy, but we need to keep a consistent focus in that respect lest we settle back into something that feels more like a comfortable decline.

Sandy Finlayson: I should perhaps say something about my role as chair of the converge challenge programme. It is a voluntary non-executive role, but I have found it intensely invigorating. While we have been drawing up our business plan for 2019 to 2021, I have had the opportunity along with Olga Kozlova, who is the programme director, to visit all of Scotland's 19 higher education institutions, and I have been really impressed by the size and scale of our universities. I had not appreciated just how big they are and how much is going on. The people whom we come across are those who get involved in the programme. It started only six or seven years ago, and only 60 companies applied in the first round. This year, we expect about 250 applications; the best of those companies will be real businesses.

That is all very exciting but, as soon as the companies are created, they face an immediate problem with access to capital, which is much more difficult in Scotland than it needs to be. I will give you a flavour of that. I am always intrigued by the difference between Oxford and Cambridge. Why has Cambridge been so successful—we talk about the Cambridge miracle—whereas Oxford trails behind it? Two years ago, the University of Oxford put together Oxford Sciences Innovation, with £582 million to back spin-outs. Last year—surprise, surprise—the university produced 50 spin-outs and put £46 million into them. If we give it 10 years, some of those companies will be great businesses.

The process takes a long time but, through the converge challenge programme, we are at least

trying to create the right mindset in the student community. However, we need much more capital to get those companies to succeed.

The Convener: We move on to a question from John Mason.

John Mason (Glasgow Shettleston) (SNP): My main question is about how Scotland compares with other countries on innovation and research and development, and what we can learn from those countries. Can we actually measure research and development and innovation? I have seen figures that suggest that industry research and development is not great. Is that based on how much industry, or the Government, spends on that? I can buy a meal for £15, while someone else buys a meal for £10; the fact that my meal was more expensive does not prove that it was better. Is there another way of measuring all that, other than just looking at how much money we spend on it?

Alastair Sim: It is genuinely worthwhile to compare what we put in, but you are absolutely right—we also have to look at what we get out. In Britain, we put less into research and development in general than a lot of our competitor economies are putting in. Figures from the UK Government's industrial strategy show that the amount that we put into R and D is hovering around 1.8 per cent of gross domestic product. The really fast-growing economies, such as South Korea, Israel and even Switzerland, are putting around 3.5 per cent to 4 per cent into research and development, which genuinely shows in their creation of a cycle of innovation-driven economic growth.

We can demonstrate efficiency. Although we are behind the USA in the proportion of money that we invest in research and development, we have an extraordinarily strong rating with regard to our impact, based on things like how often our research is cited and how it creates a change in ideas. However, there is an ambition to go further. The UK industrial strategy makes it clear that we want to grow to the level of the OECD average for investment in R and D from both Government and business sources, as it will be a catalyst for creating a virtuous cycle of innovation-led high economic growth. The UK Government is looking to put an extra £2 billion a year into research and innovation by 2021. In Scotland, we are finding it quite a challenge to keep up with that level of resourcing. Given the overall constraints on Scottish budgets, the amount that we put into research infrastructure and knowledge exchange activities is not able to keep up with the level of ambition that is displayed in England.

We have to look at inputs and outputs—they are both important. In Britain, we are very efficient at using the inputs, and we can demonstrate that. However, in comparison with some of our international competitors, we are constrained because we hover below or around the OECD average for investment when the fast-growing economies are being a bit more ambitious than that.

Sandy Finlayson: We have to be careful about our use of the term "research and development". Research implies blue-sky research—investors will not back that, but they will back development. More importantly, success in business is all about innovation. Kwik-Fit is as basic a company as it is possible to get, because it simply sells tyres, but it was an immensely innovative company and it completely disrupted the supply chain. It ended up being sold to the Ford Motor Company of America for £1 billion. Successful innovation is the key, and that does not necessarily cost a lot of money—it is just about having bright ideas.

John Mason: Can innovation be measured? I have an example that is similar to the one that you gave. There is a small business in my constituency that is part of a big engineering company—it does something fairly basic like cleaning coal-fired power stations. I have been there, and I have seen that the engineers on the ground are finding new ways of doing things, which I would call innovation. I am not sure that anyone measures that anywhere.

Professor von Prondzynski: There are different ways of assessing innovation. In general, we measure R and D and innovation—as Alastair Sim suggested—through an input-driven calculation. Measuring the output is difficult, because it will be affected by a number of different things, including R and D and innovation.

You are quite right to say that innovation comes in different forms at different levels. One of the most successful innovation-driven models in a particular industry—until people got a bit of sick of it—was Ryanair. Initially, it operated on a very low-tech, innovation-driven system, and it was disruptive. Michael O'Leary, who is the chief executive of Ryanair, was one of my students; I do not necessarily pretend that I taught him what he went on to practice. He told me once that, when he took over Ryanair, he held a meeting with the senior executives. They all had to write down on a piece of paper 10 things, other than planes and passengers, that were indispensable to the airline industry. The rest of the meeting was about how Ryanair could get rid of each of those 10 things. That is a model of disruption—we may not always like the consequences, but it can be really successful, as it was for Ryanair. Innovation is not always high-tech or science driven.

On the other hand, we can chart a clear relationship between countries that have made major investments in R and D, through both the state and the private sector, and their economic

performance. Alastair Sim mentioned Israel and South Korea, which are good examples. The country that I came from—Ireland—is another good example. Although we cannot say that putting £1 million into innovation will produce X pounds in output, we can draw a direct line between a country's investment in R and D and its economic success.

John Mason: On the business side, is it the bigger companies that carry out R and D because they can afford to do so?

Professor von Prondzynski: No. In Scotland, given the particular structure of the economy and the predominance of SMEs, one could say that it is equally important for SMEs to move up the value chain. However, it is sometimes more difficult to persuade them to do so because of the factors—resources, manpower and so on—that we mentioned earlier. It is important that R and D is facilitated and funded in order to bring about success, but SMEs are just as important in that respect.

Alastair Sim: If we compare universities with companies, we see that a lot of activity in the former is happening in the SME space. For instance, Queen Margaret University is working with a lot of food companies on various practical aspects—it can change the product, the ingredients or the packaging, and the product becomes exportable because it has a longer travel life or is more appealing to markets that the company has not thought about. The creation of a virtuous cycle operates largely at the level of practical innovation: can a company change a product or market it differently in a way that will create growth for that company?

10:00

Sandy Finlayson: Professor von Prondzynski referred earlier to life sciences and the pharmaceutical industry. I have heard that it is about five times cheaper for big pharma to have small companies do the research rather than doing it in-house. There is a well-established trend for big pharma to buy up smaller research companies that are primarily doing research to create a product. Their business is not to get into the market as such—it is simply to create something really interesting and then sell it. There was a fascinating example in Edinburgh recently. Two Indian students at the University of Edinburgh set up a company called Two Big Ears in the field of virtual reality. Someone said to them, "Instead of getting finance, why don't you just sell the company to Facebook?"—so they did.

Professor von Prondzynski: That is a good example. The risk that we run is that such a company is sold to Facebook and goes off to California or somewhere else. That is why we need companies in Scotland that are capable of buying up ideas and intellectual property so that they do not end up travelling abroad.

Jackie Baillie (Dumbarton) (Lab): I want to follow up on John Mason's points. All three of you have said in different ways that innovation—and successful innovation in particular—is the future, because we cannot compete as a low-skills economy. John Mason started to tease out what we actually do to encourage SMEs, and we have discussed the predominance of SMEs in the Scottish economy. Getting the high-end companies to innovate is hard enough so, beyond the one or two notable examples that have been given, I am not convinced that we have actually bedded down innovation among SMEs. I would like to push you a bit further on what we need to do, and what the Government needs to do, to assist in that regard.

Sandy Finlayson: We were chatting earlier about the housing industry. It is shameful that 150,000 families in Scotland are on housing waiting lists when that problem would be so easy to solve. Following the publication of the updated Sullivan report, "A Low Carbon Building Standards Strategy for Scotland—2013 Update", all new houses in Scotland were supposed to be carbon neutral by 2016. Somewhere along the line, the housing industry managed to kick that particular can down the road, and it is building houses in the way that it has always done. I will ask Professor von Prondzynski to talk about RGU's expertise in that area.

It would be so easy to solve that problem. I am sure that I saw the other day that the Scottish Government is releasing a whole lot of land for new farms. If it can release land for new farms, it can do so for house building, and that would solve a big part of the problem. Perhaps Professor von Prondzynski can say a few words about his particular expertise in creating houses. I cannot understand why house builders are building and selling houses that are not fit for purpose in the modern world but I suppose that they do it because they can get away with it. RGU has particular expertise in that area.

Professor von Prondzynski: At RGU, we have the Scott Sutherland school of architecture and built environment. One of its key areas of expertise is environmentally efficient housing, which involves new forms of construction and the finishing of housing. We have done some experiments in that field, in partnership with construction companies. Nevertheless, as Sandy Finlayson indicated, the construction industry's interest in those developments is not what it should be. It is easier and cheaper to do what has always been done, or at least that is how it

appears to the industry—in fact, it is probably not cheaper.

To pick up on Jackie Baillie's question more generally, a major evangelising task is required. Like most things, it needs to be funded and organised if it is to be successful. That does not necessarily always have to be done by Government. For example, RGU will hold an open day for SMEs later this year. We will invite them specifically—not through a general invitation—to link with people in the university who are working on particular forms of innovation that can support specific SMEs. Other universities are running similar initiatives.

I think that that approach will help. However, we often get responses such as, "I can see that this could be really helpful for me and change the business, but I don't have the money or the time to work on it." We need programmes that will support SMEs to take up opportunities. They will often need to employ someone who can help to implement the idea. We need to put SMEs in a position in which they move beyond interest—which they often already have—to a belief that they can innovate without hitting their bottom line. That is the key driver.

Alastair Sim: That is all true. What else would help? To come back to the point about what the Strategic Board for Enterprise and Skills could achieve, it would be helpful if we could build an ecosystem in which our enterprise agencies worked more deeply with a wider range of SMEs and consistently referred SMEs on to universities that may offer an SME specific help with a particular business idea. There is room for growth in that respect.

The skills that we develop among our graduates will be crucial in driving growth and innovation. During the past few years, universities have put a lot of work into defining and delivering graduate attributes. That is very much about ensuring that graduates develop a wide range of employability skills, such as being a good team worker and a good analyst; that they are exposed to work-related learning in their degree course; and that they develop an entrepreneurial mindset so that, even if they do not immediately go on to a create business, they will at least go into a business with an idea of how they can take ownership by proposing improvements. To go back to Professor von Prondzynski's point, it is important to get new graduates into a business—for example, through knowledge transfer partnerships—who can go in there and challenge the view that it's aye been done this way by saying, "I've had experience of other approaches—let's think about those."

We also need to think about how we create the circumstances in which we invest in business scale-up, and how we provide mentoring and guidance for businesses in that respect. Our business schools can help with that. The University of Strathclyde is running an intensive 10-month programme for leaders of SMEs that are achieving a turnover of £1 million; it involves business mentors who encourage those leaders to think about how they can take steps to grow their businesses further. Edinburgh Napier University is running a similar programme that is tailored to SME leaders in the tourism sector. There are examples out there, but somehow we have to get the number of scale-ups to a critical mass that will generate its own momentum and move Scotland towards becoming a high-growth, high-skills economy.

Professor von Prondzynski: There is a very interesting point in relation to that. In the entrepreneurship and innovation scene, we sometimes go down a cul-de-sac in which people talk about unicorns and the pursuit of the next Microsoft. We should not be doing that because it is a waste. We need not to hope that we will create the next Google. Maybe we will, but that should not drive our policy. We need to ensure that companies can scale up in a realistic way, and that that can create the volume of business that we need.

People sometimes tackle the issue in the wrong way, and there is not enough money out there yet. I have looked at an operation in Edinburgh that offers scale-up opportunities for SMEs: it provides advice and, to some extent, facilities such as desk space and stuff like that, but no money. The reality is that, if we want innovation to succeed, we need to fund it. We are collaborating with Opportunity North East in Aberdeen, which is a private sector-driven local development body, to create an entrepreneurship academy that includes an accelerator programme. Again, however, it is important that we are able to fund that. We will be able to do so in the initial phase, but we need to look at how funding can be sustained in the longer term.

Alastair Sim: We should recognise that universities' interaction with business is essentially a loss-making enterprise for the public good, which is why it needs to be publicly funded, at least in part. There are challenges on that front. I referred to levels of ambition in England. In contrast, the level of funding that the Scottish funding council is able to allocate to knowledge exchange activities went down from £17 million in 2014-15 to £12 million in 2017-18. It has started to grow again, but if we are ambitious about the need to create a virtuous cycle, we need to look for that as a priority in future spending reviews. We need to up our investment so that we can build an infrastructure of knowledge exchange professionals, incubator facilities and all the rest,

which will enable us to be a catalytic influence in creating an innovative economy.

Professor von Prondzynski: To underscore that, during the next three years, my university is putting £4.5 million into an accelerator programme. There is not a penny coming from public money for that, and there ought to be.

Sandy Finlayson: The "Scottish National Investment Bank Implementation Plan" was published at the end of last week. I understand that legislation is needed to make the bank a reality, but the plan certainly reads as if it is a given. It talks about the bank receiving £135 million a year for the first two years and £200 million a year thereafter, with—I am speaking from memory here—about £85 million a year on top of that for infrastructure projects, which would include housing. Those sums of money are big enough to make a real difference.

Again, I stress the importance of ensuring that that money is invested as equity and not as debt. The banks can do the debt bit. It looks as if SNIB has been modelled in a similar way to the British Business Bank, which has been running the very successful enterprise capital funds programme that has played a huge part in creating the knowledge economy, especially in the golden triangle of London, Oxford and Cambridge.

The Convener: We will move on—

Sandy Finlayson: I should also say thank you for the SNIB initiative.

The Convener: We come to questions from Colin Beattie.

Colin Beattie (Midlothian North and Musselburgh) (SNP): We have explored a lot of different angles on research and development, innovation and so on. I will ask you a direct and simple question. Obviously, the university sector is very important in Scotland; it is one of our key strengths. However, we have discussed the issue of Scotland lagging behind in business R and D. If we compare Scotland to other countries that are doing better than we are, what difference do we see? What are they doing that we are not doing? Is it something that we can transplant here?

Professor von Prondzynski: I will say a little bit about my Irish experience, because Ireland has been doing that better so far. In the mid to late 1990s, the Irish Government took the view that, in order to sustain the economy into the future, it needed to attract high-value foreign direct investment that would be R and D intensive, and to do something about the development of indigenous enterprises and skills. There was a three-pronged approach, and all of it needed to be funded. Around 1997, the Irish Government decided that, over the following five years, it would put £500 million into those objectives. A key point was that all the initiatives that were taken forward had to be partnerships between industry and universities. No money would be made available unless there was an established partnership and it was clear how the partnership was going to work and what the outputs would be.

To sustain that work, the Irish Government established a major body in the form of Science Foundation Ireland. It brought over Bill Harris, a senior official from the National Science Foundation in America, to establish that body—incidentally, he has also been to Scotland to offer guidance to the Scottish Government. Through the establishment of Science Foundation Ireland, together with the more general funding that was made available for those purposes, Ireland succeeded in bringing in high-value investment. For a start, it brought in all the digital companies such as Apple, Google—in fact, I helped to bring Google to Ireland—and Microsoft, all of which were doing high-value R and D as well as production in the country.

The emphasis then shifted to life sciences. Some of the major companies—Wyeth, as it was at the time, Pfizer and others—were persuaded to locate their R and D in Ireland. The impact of that was that, when innovation was being spun out of universities, there was someone in Ireland to buy it, which meant that the value stayed in the country. All of that meant that, although when the recession hit Ireland just over 10 years ago it was very bad at first, within about two years, the export economy was booming again, although the domestic economy, including consumption and demand, remained low. That was the secret of Ireland's success. As you probably know, Ireland now has the highest GDP growth in the European Union—it is almost double that of the UK. It came out of the recession quickly in comparison with Greece, Portugal and other countries—it had quite a different trajectory. Ireland is not a bad example, given that the size of its economy and its workforce are roughly the same as those of Scotland. There are examples and key similarities that we can build on.

10:15

Colin Beattie: It is interesting to hear about that model. Are there other models that have been successful?

Sandy Finlayson: To go back to the Irish example, Enterprise Ireland is one of the largest and most active early-stage investors in Europe, so that has played a big part.

I was interested to see a report that one of the local intellectual property companies published the other day, which indicated that the number of

patent filings in Norway and Denmark is nearly twice the number in this country. There is no direct correlation between a patent filing and actual commercial activity, but nevertheless I thought that that was interesting.

Colin Beattie: Do we have any information on other models?

Sandy Finlayson: Israel is often cited. It is so successful possibly because it lives in a state of existential threat from its neighbours, so it spends a vast on technology and communications that are related to its defence in one way or another. There are something like 70 Israeli companies listed on the Nasdaq, and they get vast amounts of American capital.

Colin Beattie: Israeli companies are not really comparable to Scottish companies in terms of R and D and so on.

Sandy Finlayson: Indeed.

Colin Beattie: Are there other examples in Europe, apart from Ireland, that we can look at?

Sandy Finlayson: We can look at Germany, although the size of its economy is very different. I am intrigued by the fact that Germany is one of the world's most successful exporting economies. It is number 3 in terms of value, and possibly number 1 in terms of export surplus. It has managed to achieve that despite the fact that it is in the European Union, which does not seem to have held back its export strengths. That is probably because it makes really good stuff that people want to buy.

Professor von Prondzynski: The success is down to R and D and skills. Germany has a very different approach to education and training, certainly in comparison with Scotland, although we are now moving in the right direction with the new apprenticeships framework. Germany has had such an approach for generations, and it is a very sophisticated model that is built on quality. To give you another bit of my personal background, I am German by birth and, before I went to university, I did an apprenticeship in Germany. A focus on quality is drummed into people as part of their training, as is the idea that Germany will succeed only if its products and services are better than those of any other country. That approach has been built into the psyche of the country. Germany's economy is obviously different from Scotland's—it is much larger and has a different background—but there are specific elements of training and skills in which we can learn a lot from it.

Sandy Finlayson: Ferdinand von Prondzynski's point about the need to be world class is critical. We are living in a great global economy, and it is not good enough to do something that works only in Scotland. We have to think about how we can be the best in the world at something; we are not good enough at developing that mindset. That is a general observation, but we need more ambition, and we need to understand that it is important to succeed not just in Scotland but in the global economy.

Alastair Sim: If we are looking at small nations, we should look at Singapore, which is absolutely ruthless in attracting top talent from around the world. We talk about that in Scotland as well. If we want to be outward looking and dynamic, we have to be open to attracting talent from around the world. That will be a challenge post-Brexit, but we must keep emphasising the importance of such an approach.

In addition, we need to invest in fundamental research. Successful countries know that their economy depends on the constant generation of new ideas. Investment in fundamental research is a trunk from which the branches of more applied research can grow and can be translated into industrially applicable ideas. When an idea begins, whether it is in life sciences or engineering, the way in which it might be applied may not be apparent until 10 or 15 years later. If we do not carry out fundamental research, we will not get the excellent research and innovation in universities that translates into industrial growth.

Colin Beattie: There is a huge amount of knowledge and talent in our universities. How does the public sector make best use of that to better equip people in Scotland with the skills to be able to innovate?

Sandy Finlayson: There is a wonderful initiative called CivTech, which was launched about a year ago; it aims to improve the delivery of digital Government services. In the first programme, nine Scottish Government agencies were asked to come up with a problem to be solved. The ingenious part was that solutions had to be delivered for less than the procurement threshold, which is around £150,000. There was a competition, and 90 applicants looked at the nine different problems. The nine finalists were funded to work in CodeBase for three months, and each Government agency had its problem solved. The initiative created nine new companies—well, perhaps not as many as nine, but that was the intention in principle—and each one had a launch contract from the Scottish Government and could be separately funded to create a business. Everybody has heard of fintech, but the expression "govtech" is not so well known. I recently read a report that suggested that, in 2015, fintech was worth about £5 billion in annual investment, and govtech was worth about the same amount. That area is developing very quickly. Fintech is currently where it is, but the

report suggested that, by 2025, annual investment in govtech could be running at as much as £20 billion to £25 billion a year—the potential is enormous. I was recently on a panel with a lady from the UK Cabinet Office, who said that, because of the CivTech initiative, Scotland is leading the way in the UK and possibly in Europe. That is really exciting, and we could be doing much more with it.

The Convener: We move on to questions from Andy Wightman.

Andy Wightman (Lothian) (Green): I want to talk about the role of the state. There has recently been quite a lot of conversation about the entrepreneurial state, and you have all talked about the role of the public sector in providing investment, and probably capital too through the Scottish national investment bank. What is your view on the outcome of the enterprise and skills review and what the new strategic board intends to do?

We heard last week from the chair of the board about some of its early thinking, much of which seems to revolve around the need for greater alignment. She said that each of the agencies—the Scottish funding council and the two enterprise agencies, with a third one to be created—essentially takes guidance from Government on what it should do. In essence, Government tells those bodies what their priorities are. Broadly speaking, has the enterprise part of the public sector been delivering? Can the new board make any significant difference in achieving the pretty fundamental changes that you have all hinted that we need?

Alastair Sim: Yes, I think that it can. It got off to a bit of a rocky start in its origins, given the whole business regarding the potential abolition of the boards of Highlands and Islands Enterprise and the Scottish funding council. We think that the funding council is important, as it provides a challenge function to Government as well as to the sector. The discussion about how we create growth in Scotland must be a conversation rather than a direction, and the strategic board may possibly provide a space to enable us to have a creative conversation in which people creatively and supportively challenge Government, the agencies and business by saying, "Here's how things could be done better."

What would I like the strategic board to do to help? First, it should take a nuanced view on how we develop skills for a disruptive economy. As we look at what we want the economy to be in 10 or 20 years' time, we know that it will include jobs of which we cannot yet conceive, and that it will be more of a circular economy. We need to move away from slightly mechanistic skills planning models and think broadly, not just in relation to graduates but across the workforce, about how we enable people to develop a wide range of skills that can help them to invent and reinvent their contribution in a fast-moving economy. We also need to look at how we enable people, at various stages in their working lives, to come back to university, college or wherever to reboot their skills so that they can continue to contribute. There is room for the strategic board to be creative in that respect at a level that Skills Development Scotland has only just been starting to reach towards under its own steam.

I would like the strategic board have a very strong view on what the anchor institutions that drive economic growth and social cohesion in Scotland are. From my point of view, universities are a huge part of the anchor, not just on inward investment but because we create jobs and opportunities in communities. The vision for economic growth has to be driven by, among other things, a vision for making our places continually better. The board also needs to concentrate on research excellence. As I said with regard to Singapore, unless we fundamentally enable Scotland to develop research excellence, we will never grow the stuff that translates into business innovation.

The board needs to look at how we support SMEs better through the enterprise networks and universities to create a virtuous cycle of innovation, and at how we support scale-ups better. To pick up on Ferdinand von Prondzynski's points, the board needs to step back and think about how we can better connect with the international economy and lever in opportunities for inward investment. Scotland is not bad at that—outside the south-east of England, we are the part of the UK that is best at levering inward investment in, so let us not undersell ourselves. However, there is room to grow that further, and to grow further the international identification of Scotland as a place for investment and opportunity. Broadly, I would like the strategic board to concentrate on those areas.

Sandy Finlayson: The only point that I can add is that all the technology companies that I come across are screaming out for employees, and they cannot find techies anywhere. That seems to be a really big problem across the country at present.

Professor von Prondzynski: It is worth saying—Alastair Sim referred to it—that there is an on-going big debate about skills: about what we mean when we talk about skills, and what is required. There is interaction between the various agencies—the funding council, SDS and so on—but, as a priority, we need clarity on what the national skills strategy should be and who will need to do what in order to achieve its aims. We now have a strategic board that oversees all the

agencies, and it should be a key driver in that regard.

Andy Wightman: Thank you—that is useful.

Sandy Finlayson mentioned that the housing problem should be very easy to solve. Technically speaking, with regard to the work that has been done at Robert Gordon University and elsewhere, it is not a problem at all. However, the house-building industry still seems to operate on a speculative-volume business model, which does not deliver.

10:30

Sandy Finlayson: Mrs May is currently doing something in England to do with planning. There is a really big issue in the planning system, and it is very negative. Like Ferdinand von Prondzynski, I used to be a lawyer. Fifteen years ago, I worked on a key strategic housing development in Fife, and it has still not received planning consent. That is inexcusable. It is not the builder's fault, because the builder has been pouring money into the development year after year in professional fees and getting nothing for it.

The housing industry now seems to be concentrated among a small number of very large house builders. Previously houses were built by a much wider range of smaller builders, who were wiped out by the financial crash. The planning system could be sorted out relatively quickly, and we need to get smaller builders back into business. It would help if the Scottish national investment bank had a funding infrastructure that enabled it to make available funding to help some of those builders, through equity rather than debt. There is also the mortgage market, although we do not have enough time to talk about that today. With regard to social housing, we have £1 trillion under management in Scotland, a lot of which is pension fund money, and housing ought to be quite a good bet for investment. It would not be quite as secure as Government bonds, but it would produce a higher rate of return. If we take all those bits and pieces together and get a group of really bright people in a room to do some brainstorming, I am sure that a solution can be found.

Alastair Sim: I will mention some of the technical solutions. I was recently excited to see that the Construction Scotland innovation centre has a new factory in which it is testing new ways of building houses to make them efficient, high quality and low carbon. Essentially, it is moving the business model from putting up bricks and mortar on site for months to making high-precision components in a factory. Those components can be taken to the site and assembled in a much shorter timescale into a nice snag-free, low-carbon house. Through initiatives such as that, which is a university-industry collaboration, we can start to find not only structural solutions but technical solutions that could enable better housing to be constructed more quickly.

Andy Wightman: If Sandy Finlayson wants to feed into the consideration of the Planning (Scotland) Bill, which is currently going through Parliament, he would be very welcome to do so.

I have a question on spin-out companies, about which we have heard mixed messages. You have said that, broadly speaking, we are not doing too badly. However, Professor von Prondzynski said that it is not good that those companies are all gobbled up fairly quickly and sold out of the country; we have heard mixed messages on that specific aspect. Some of you have said that the proceeds from sales are reinvested and that people continue to innovate and build new companies in Scotland on the back of previous ones. In other words, although a company might be sold abroad, the people who sold it might not be going with it. Can you say something about spin-outs, and what we can do to increase their numbers and their resilience?

Professor von Prondzynski: One thing to note is that the value of most spin-outs lies in the intellectual property that they hold. There are different ways of commercialising intellectual property. It does not have to be done through a spin-out; it can involve licensing or other methods. There are two aspects. First, if I look at the matter as a university head, my key objective is to maximise value for the university and, to some extent, for the state. I would want to ensure that a discovery that is made is commercialised, and that the commercialisation reflects the input that has been made. In my university capacity, I would probably worry a little bit less about where exactly the intellectual property ends up. That does not make a whole lot of difference to the university, as long as we get a return on our investment.

However, from a national point of view, there is an additional element. We need to ensure that the intellectual property, as it makes its way into value, creates that value in Scotland to the greatest possible extent, because the investment came from the university, the taxpayer and so on. Spin-outs are good—there are no mixed messages there. Universities should be setting up spin-out companies, and Scottish universities have been remarkably good at that. There is a positive message in that regard. However, the ecosystem into which the spin-outs move needs to encourage the retention in Scotland of as much of the value as possible. A number of things need to be done to achieve that. One of the key drivers is the need to look at who is going to buy the company in the end, and to ensure that the chances are as great

as they can be that the buyer will be in Scotland, so that the further exploitation of a particular discovery benefits our economy to the greatest extent.

If a university spins out a company and it is brought by Bristol-Myers Squibb, and off it goes to America, there is still some value in Scotland, so we have not lost out completely, but it is not maximised. We need to reach a situation in which we can benefit more from that.

Sandy Finlayson: Wearing my lawyer hat, I take a slightly different position from that of my university colleagues here. Over the years, we have been involved with countless spin-outs from all of Scotland's universities, and we have found that there are big differences between universities in their experience of dealing with those companies and in particular with the vexed and thorny issue of intellectual property. Cambridge has been more successful than Oxford over the years, partly because it is a bit more anarchic and it lets the IP go—it gets something for it, but it is much less interested—whereas Oxford tries to control the whole thing. Those universities that take a relatively open view on the release of IP will do more deals and, at the end of the day, they will do better out of it. Do you agree, Ferdinand?

Professor von Prondzynski: I agree with that completely. Universities often control their IP far too tightly, and they damage themselves by doing so.

Alastair Sim: Spin-outs are important, but they number in the tens and hundreds, so they are not a fundamental component of the interaction between universities and business. Each year, more than 3,000 Scottish companies interact with universities in the area of continuing professional development, and more than 16,000 companies engage with universities in the field of consultancy. Spin-outs are an important component, but we need to cherish a much richer ecosystem of university interaction with business, and build on that.

Professor von Prondzynski: I agree with that. Generally speaking, spin-outs have a much longer burn, depending on what sector they are in.

Sandy Finlayson: Wearing my converge challenge hat, I note that Universities Scotland has on its website—Alastair Sim can tell me if I am right about this—an ambition, or an aspiration, to increase the number of student start-ups, as distinct from spin-outs, by 25 per cent.

Alastair Sim: That is correct.

Sandy Finlayson: I know that the University of Edinburgh has privately set a target to double the number of student start-ups this year.

The Convener: We move on to questions from Kezia Dugdale.

Kezia Dugdale (Lothian) (Lab): My question leads on from the last point about spin-outs. I will start with a more philosophical question and then move on to the issue of skills. To what extent is it the core business of universities to drive economic growth?

Alastair Sim used a phrase that hit home with me—he said that innovation

"is ... a loss-making exercise for a public good".

In my view, universities exist to drive academic excellence and to promote quality teaching and learning. To what extent is the need to drive economic growth now the core business of universities?

Alastair Sim: To put it broadly, universities' core business is, among other things, to be good citizens. As very large charitable enterprises in the Scottish economy that wish to make a full contribution to the common good—which I think is an objective that is shared not just among university leaders but among the university community more widely—we believe that we can achieve that by contributing to economic growth and social inclusion and to creating the sorts of places where people want to live and build families. We make a wide range of contribution, and I think that contributing to inclusive economic growth is fundamental to our role as good citizens.

Professor von Prondzynski: I agree with that. Obviously, all universities have to work carefully to ensure that we use our resources in a way that meets the expectations of those who fund us and that benefits society as a whole. Our core business is teaching and research, and we undertake those in a way that maximises quality and output. However, universities are now recognised globally as key drivers of economic development. We cannot, and should not, ignore that. That aspect takes a number of forms.

We may need to—and we all want to—support Scotland's national economic objectives. However, individual universities have certain specific obligations. For example, my university has a particular obligation to support the development of north-east Scotland and to ensure that the regional economy benefits from what we do. That includes economic and urban regeneration, in which we can make, and have made, major contributions. As Alastair Sim said, we want to be good citizens and to do what we can to support national objectives, and we do that through our core business. However, we also ensure that we exercise whatever positive influence we can.

Sandy Finlayson: I have had the great privilege of going round all our universities while we have

been sorting out our long-term plans for the converge challenge. I was very impressed to find that every single one of our universities has one or more centres of excellence in areas in which they are the best in the world or in Europe. For example, Abertay University has the best computer gaming faculty in Europe, and it is one of the top 10 such departments in the world. The University of the Highlands and Islands has the most widely dispersed videoconferencing facilities of any university in Europe, and it achieves excellence in nursing, which I did not previously know.

Every one of our universities is aiming to be the very best that it can be in its disciplines. Universities have to do that, for the simple reason that they need students, and they will not get students unless they are really good at what they do. Nonetheless, graduates have to get jobs, so universities are becoming much more aware of the importance of entrepreneurship and of the fact that self-employment and setting up companies will be bigger features of tomorrow's workplace.

Kezia Dugdale: I want to move on to the question of how diverse our universities are. I am conscious that some universities in Scotland get about 80 per cent of their money from private sources and just 20 per cent from the public sector, and that balance is flipped for other institutions. Institutions therefore focus on innovation to different degrees. We have talked a lot today about Scotland's growth sectors—life sciences, chemistry, informatics and financial technology. However, the degree to which students receive enterprise-based teaching or gain the skills to innovate depends on the subject that they study. I have visited the University of Edinburgh's chemistry department, which has a great record in producing excellent spin-out companies and puts working in business at the heart of what students are taught. However, I am sure that that is not happening in the English literature department or in politics or arts subjects in general.

To what extent are core entrepreneurial skills taught as standard across all university subjects? Is it the case that, while we are good at teaching those skills in subjects that relate to Scotland's growth industries, we are not good at doing so in the vast majority of university subjects?

Sandy Finlayson: I will let my two colleagues come back to that in detail. I will answer in one sentence. I keep hearing, from a business perspective, that we need to get more people learning the STEM subjects—science, technology, engineering and mathematics—than are learning the humanities.

Professor von Prondzynski: The STEM subjects are obviously very important, but all subjects that universities teach can make significant contributions, and the nature of the contribution will vary depending on the subject. Kezia Dugdale mentioned art. Gray's school of art, which is a significant part of the Robert Gordon University, has, as one of its key initiatives, involved itself in urban regeneration in Aberdeen. It has also developed links with other parts of the university to work on design, for example, in which there are great commercial opportunities.

We live in an era of growing interdisciplinarity. When I was a student, most students simply studied their subject and knew relatively little about anything else. These days, we encourage students and faculties to engage much more across disciplinary boundaries, which means that the commercial opportunities that can be pursued will not necessarily come only from within chemistry or engineering. We now encourage that kind of interaction, which adds great value. As a university leader, I do not take the view that some of our subject areas are nationally important but others are not. They make different contributions, and we can enhance those contributions considerably by encouraging collaboration between disciplines.

Kezia Dugdale: I appreciate that, but I want to push you a bit further. Last week in evidence, Scottish Enterprise told us that, in China, enterprise skills are core modular subjects across the whole curriculum. Are you considering doing that in your institutions? Would you like the Government to dictate that approach to the institutions? Who makes that decision, and to what degree are we achieving that aim?

10:45

Professor von Prondzynski: We will generally not answer, "Yes" in response to the question, "Would you like the Government to dictate that?" That said, the Robert Gordon University is about to introduce an entrepreneurship module that every student of the university will take, regardless of their subject. That will come on stream in autumn this year. I am not suggesting that every institution should do the same, but it is increasingly desirable to ensure that students, whichever subject they are studying, have an opportunity to look at how they can make use of their learning, and not just on a personal level but for the wider public good. There is something in that approach, but we have to let each university find its own way of expressing that aim. I am genuinely reluctant to say that there should be a diktat that says that institutions have to do what Kezia Dugdale has suggested, because there may be different ways in which they can achieve similar results. However, I agree that we need to look at that kind of initiative.

Alastair Sim: An approach to learning that helps students to develop the skills that will enable them to succeed in the workforce is now integrated in the curriculum. We can look at humanities and social sciences as an example. Social sciences have always been quantitative, but the humanities are now much more quantitative disciplines, too. There is, for example, much more emphasis on developing teamwork skills among students as they tackle their subjects. Students in my generation were pretty much given a book and a library card. However, if you go into a university library nowadays, you will find that it is configured principally to provide spaces where students can come together and work collaboratively on exercises, quite often—as Ferdinand von Prondzynski said—in an interdisciplinary way. That is important in enabling students to develop the skills that employers say they value.

Data from the Confederation of British Industry and from graduate careers advisers show that 90 per cent of employers want graduates to have a wide range of attributes that will enable them to succeed in the workforce and that 80 per cent are not that bothered about the person's subject discipline—they are simply looking for a rounded person who can come in and contribute quickly to the business. We are on the case in making sure that students' experience increasingly prepares them, whatever subject they are studying, for the changing demands of the workplace.

Kezia Dugdale: I will push you a bit further on that idea. If the Government said tomorrow, "We would like all Scottish universities to have a mandatory module on business skills," what would you say and how would your institutions respond?

Alastair Sim: The problem from a student perspective is that making something mandatory is a terrible turn-off.

Kezia Dugdale: We make basic maths and English skills mandatory. Why not do the same for basic business skills?

Alastair Sim: I will give you my personal, honest view. Rather than make everyone do something that they might feel is not contiguous with the subject in which they are interested, institutions more often apply a subtle approach in which they build work-related learning into the curriculum—for example, through solving problems that companies have contributed. Rather than taking someone offline and saying, "That is your subject—this is entrepreneurship," universities say, "Through your subject, you are learning the skills that will stand you in good stead in the workplace." There are different ways of doing it. I admit that I start worrying when anyone says the word "mandatory" to me.

Sandy Finlayson: One of my ambitions for the converge challenge is that every Scottish student should be aware of what we do in the initiative, which we now bill as the leading pan-Scotland entrepreneurship development programme. We are keen that every Scottish student should be aware of what we do—they can access our website and see what starting a company is all about, as there are stories on the website about alumni companies and so on. We are trying to do that with a staff of five people, and we have some way to go, but we are doing what we can.

Kezia Dugdale: Thank you—that is an excellent advert and plug.

The Convener: We move to questions from Dean Lockhart.

Dean Lockhart (Mid Scotland and Fife) (Con): Good morning. As it happens, the pen that I am using today comes from the Roslin institute, which is the home of Dolly the sheep. Despite the colour, it is not a Liberal Democrat pen.

With regard to how universities are funded, what are the incentives and rewards for institutions that focus on innovation? Is an additional funding pot available to universities depending on the level of innovation that they produce?

I have a related question on the commercialisation of innovation. I get the point that, when a university sells or monetises innovation, it is seeking to maximise its own return. What policy steps could we take to try to keep that innovation in Scotland? I appreciate that such a decision is largely commercial—for example, if there is a higher bid from China, Japan or elsewhere, an institution with an obligation to increase its return might sell an innovation outside Scotland. Is there anything that other countries do to keep innovation at home?

Sandy Finlayson: I know about the Roslin institute and Roslin Technologies from a professional perspective, so I cannot say anything about the detail, but I can talk about what is in the public domain. A company called Roslin Technologies was set up with the exclusive rights to commercialise what comes out of the Roslin institute. It was financed by a large amount of money from a financial institution, which got so excited that it went out and set up a new fund in order to do that. If the new set-up works, there will undoubtedly be more money from that source. It is an interesting initiative.

Alastair Sim: With regard to the funding stream, the Scottish funding council's university innovation fund is scheduled to commit £13.5 million in 2018-19 to support knowledge exchange professionals and facilities in universities. That is welcome. It is driven by metrics in the sense that, every year, the universities will feed back metrics

on their interaction with business, which drives the allocation. However, it is pretty small beer, especially in comparison with the UK Government's ambition to put £250 million a year into the higher education innovation fund for England. Times are tight, but we are ambitious for the Scottish funding stream to grow so that we can undertake more activity with business.

Another important source of funding is the funding council's research excellence grant of approximately £260 million a year. That supports our research staff and infrastructure, which enables universities to bid for research contracts on the basis of the staff that they can provide to supply consultancy services for business. That funding stream has been protected in real terms, which is an achievement, but in Scotland we do not currently have the resources—and we are not seeing the consequentials in higher education—that enable us to match the scale of funding in England, where the UK Government is seeking to put £2 billion a year extra into research and innovation by 2020-21.

Professor von Prondzynski: To pick up on Dean Lockhart's question about how we can keep discoveries in Scotland, the state and its agencies could run a much more targeted programme of foreign direct investment to look for high-value, knowledge-intensive investment. That would be key. I used to do that in Ireland—I took part in a lot of trade missions to achieve those aims and was very successful in doing so. By doing that, we would create a buyer in the country, which would make a difference.

Sandy Finlayson: We could do much more by getting the public sector to trade with the SME sector. In America, there is a requirement on public sector bodies to make a percentage—around 20 or 30 per cent—of its purchases from the SME sector. There may be some sort of requirement in this country, but I suspect that it is observed in the breach.

I will give you a specific example. I am currently talking to a chap who is involved with one of the most amazing medical developments that I have ever seen. It is to do with proton beam therapy for cancer. He cannot get any engagement from the national health service whatsoever—the NHS does not think that the technology works, although it has been working fine in other countries for many years. There is a real risk that that specific innovation will go to the far east, given that there is no engagement in Scotland. That is one example—I could give you others.

Dean Lockhart: Thank you for that.

The Convener: That is all that we have time for today. I thank our guests very much for coming in.

10:54

Meeting continued in private until 11:20.

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