Session 2

Patrick Nolan: Okay, well thank you all. I hope you all enjoyed your morning tea and got plenty of caffeine. From the buzz in the room, obviously the Wellington coffee was as good as ever. So welcome to the second session of the day. This is very much a Treasury-themed session.

We're going to hear from Gabriel Makhlouf. He's the Secretary and Chief Executive of the Treasury. Gabriel was previously in the UK civil service where his responsibilities ranged from policy development on domestic and international tax and welfare policy through to large-scale customer-focused operational delivery.

We will then hear from Sir David Ramsden who's the Chief Economic Advisor from HM Treasury. Dave was appointed to the Treasury Board in June 2007 and in 2008 was appointed Chief Economic Advisor. He's also the Head of the UK Government Economics Service and very kindly spoke for us yesterday at the Government Economics Network event, so I'm very much looking forward to hearing him again. He's also a Trustee of Pro Bono Economics and is also President of the Society of Business Economists, on the Council of the Royal Economic Society and a Governor of the National Institute of Economic and Social Research.

I'm very much looking forward to hearing these presentations where the speakers will link back some of the earlier discussions and the theme of innovation back to some of the issues around the broader economic narrative. That's enough from me. I'll pass over to Gabriel. Thank you.

Keynote address:

Gabriel Makhlouf, New Zealand Treasury

Gabriel Makhlouf: Thank you Patrick, and good morning everyone. I'm very pleased to be here and even more pleased to be delivering the first of today's keynote addresses alongside my friend and colleague Dave Ramsden.

When I spoke to the inaugural Productivity Hub Symposium [in 2013] I noted how a cross-agency body like the Hub models the right approach to understanding productivity and its challenges. I'm confident that gatherings such as this, bringing many perspectives, experiences and values together, generate ideas that should be good enough to survive formidable intellectual examination and debate. And since that symposium two years ago, the Hub's done a lot of work to unpick the so-called paradox at the heart of New Zealand's productivity.

Why do our very good policy settings, combined with our immense natural capital, our skilled and energetic workforce and our reputation for innovation and agility in business, leave us with persistently low productivity growth compared with other countries?

> As Paul Krugman said… "Productivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker."

Now productivity – that's going to be the structure of my talk and I'll come back to that – now productivity does, of course, matter. As Paul Krugman said over 20 years ago now, "Productivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker." I agree with Paul Krugman.

I pointed out to somebody, more than one person actually over the past few years and quite recently, that the answer to improved productivity is not a lower exchange rate. And you will be surprised, the number of people who actually think a lower exchange rate is the road to greater productivity. And actually that's a concern. I told this individual that if that was the way that he thought, he was on the road to doom, and he was both shocked and unhappy at that. But if only the newspapers actually spent some time talking about productivity rather than talking about the exchange rate, we might get a better and more informed discussion out there.

> …the answer to improved productivity is not a lower exchange rate.

But moving on, it's important that we're clear on some other things that also matter and I hope it won't surprise anyone in this room if I say that it remains a fundamental truth that successful economies need, among other things, a stable and sustainable macroeconomic framework, sound monetary policy that delivers stable and predictable prices, a prudent fiscal policy and debt that's under control. And it remains true that a well-regulated financial system matters, that properly functioning markets matter, that price signals matter and that incentives matter.

> …we have a productivity challenge and all sectors of the economy need to respond to it. The public sector… has a big role to play in contributing to improve its own effectiveness,… and business needs to play its part too. In fact, how business responds is at the heart of the productivity challenge.

But first let's turn to some facts. In terms of official productivity statistics, average annual labour productivity growth has been 1% over the period 2008 to 2014. Multi-factor productivity growth has averaged 0.1% over the same period, so that capital deepening contributed the remaining 0.9%. There's been a slowing in average labour productivity growth over recent growth cycles to around 1.3% per annum, and amid the global improvements in trend productivity associated with the benefits of ICT, New Zealand's per capita income gap with the OECD average did not materially reduce during this period – this despite the fact that our average real GDP growth was 2.6% over the 1995 to 2013 period. So we have a productivity challenge and all sectors of the economy need to respond to it. The public sector is a big part of the economy and has a big role to play in contributing to improve its own effectiveness. That's a road we've been travelling on and will continue to travel, and business needs to play its part too.
In fact, how business responds is at the heart of the productivity challenge.

Helen Anderson
@HelenAnderson43: Gabs Makhlouf says 97% of NZ firms have <50 employees. We have a productivity challenge in all sectors #innovatenz @treasurynz

Statistics New Zealand has just released their business demography stats showing that as at February 2015, New Zealand had 502,170 businesses, up 1.9% from February 2014. These businesses had just over two million paid employees – that's over 2.3% up from the previous year. Of the 502,000, 353,000 have zero employees and of the remaining 149,000, 90% have fewer than 20 and 97% have fewer than 50. We know that rich data about these businesses helps us understand current productivity levels and identify where improvements can be made. And the firm-level work the Hub has been doing and the new insights this is generating on New Zealand productivity is making a significant contribution in this area. And I commend the Hub and the Commission for the work that they've been doing in productivity, generally.

> …firm-level data is giving us unprecedented insight into the specific local forces at work on productivity across the country.

As recent work has indicated, firm-level data is giving us unprecedented insight into the specific local forces at work on productivity across the country. It can, for instance, reveal significant variability and performance between individual firms, even within the same industry. And like in so many other areas of the economy, data helps us to understand elements of productivity that may otherwise remain obscure. Taken together, the firms for which we have this kind of data make up the majority of New Zealand employment and with careful application this material becomes a solid foundation from which we, all of us, can address future challenges.

> Productivity and production tends to be what we focus on, but there is a far bigger game involving how and what we consume, whether it's provided by the public or private sectors, from technology-enabled services in transport and infrastructure, to broader forms of infrastructure, planning such as telecommunications, and to services more generally.

At the same time it's important that we ensure we can indeed capture all productivity data. Productivity and production tends to be what we focus on, but there is a far bigger game involving how and what we consume, whether it's provided by the public or private sectors, from technology-enabled services in transport and infrastructure, to broader forms of infrastructure, planning such as telecommunications, and to services more generally.

As Robert Solow said back in 1987, "You can see the computer age everywhere, but in the productivity statistics." And there remains a strong suspicion, certainly in my mind, that our current data sets are not capturing the immense impact that ICT and digitisation, in particular, has had on our lives. Nor that we're capturing all services productivity data. And this measurement challenge is faced by Statistics New Zealand and all its peers around the world.

So that brings me to an important theme that I want to talk about: innovation and the pace at which it spreads or diffuses throughout the economy. It is the key to lifting aggregate productivity. The Productivity Commission has been working on a narrative which is important for continuing to build our collective understanding about the possible drivers of New Zealand's productivity performance and where policy responses may lie. And I want to draw on a number of conclusions of that work here.

Helen Anderson
@HelenAnderson43: Productivity improvements from technology don't diffuse well in NZ – Gabs Makhlouf @treasurynz #innovatenz But is there evidence for this?

The broader policy challenge is to cement in the dynamic policy gains that lift productivity growth with rapid technological change. Continuing future gains in GDP per capital will become more dependent on skills and investment in innovation and other forms of knowledge-based capital.

There are a number of reasons why technological diffusion may not work particularly well in New Zealand. First, weak international connections may limit the extent to which new technology diffuses from the globally most productive firms to the most advanced New Zealand firms. And second, small and insular domestic markets may reduce diffusion to firms within New Zealand further away from the frontier – so-called "laggard firms". So fixing the diffusion machine is a key policy challenge. The broader policy challenge is to cement in the dynamic policy gains that lift productivity growth with rapid technological change. Continuing future gains in GDP per capital will become more dependent on skills and investment in innovation and other forms of knowledge-based capital.

> …while technological advances proceed apace at the global productivity frontier, the diffusion machine appears to be broken, especially across firms in the services sector… weak investment in knowledge-based capital is a potential explanation, among others.

Ongoing technological change also implies a focus on diffusion as a key source of productivity growth and policy focus. The diffusion of new productivity-enhancing technology from high to low productivity firms is a key driver of productivity growth. As the world's most innovative firms innovate and push out the global technology frontier, they create space for the most advanced firms nationally to adapt and adopt frontier technologies to local conditions and, in turn, this allows laggard firms to use the technology in their own production processes. But it's not a smooth process and much can go wrong along the way.

During the 2000s, productivity growth for the world's most productive firms was much stronger than for the laggards and substantial productivity gaps have opened up, particularly in services. So while technological advances proceed apace at the global productivity frontier, the diffusion machine appears to be broken, especially across firms in the services sector. And there are a number of possible reasons why such diffusion has slowed, but weak investment in knowledge-based capital is a potential explanation, among others.

> …limited international connection prevents leading domestic firms from growing and adopting frontier technologies… knowledge-based capital is also critical in facilitating technological diffusion. If lagging firms under-invest in these assets, they will struggle to adopt new technologies and lift their productivity growth.

In particular, international connection via trade, capital, people and idea flows is a key channel for the diffusion of new technology. In small economies, access to international markets in all its forms and whether through trade, foreign direct investment, outward direct investment, employment of skilled migrant labour, etc., also allows productive firms to grow and benefit from scale and specialisation, while at the same time maintaining or even increasing competitive pressures. It follows that limited international connection prevents leading domestic firms from growing and adopting frontier technologies.

Knowledge-based capital, which includes assets such as product design, inter-firm networks, R&D and organisational know-how, is more conducive to productivity growth than other capital assets. And as well as being important in pushing out the frontier, knowledge-based capital is also critical in facilitating technological diffusion. If lagging firms under-invest in these assets, they will struggle to adopt new technologies and lift their productivity growth.

> To improve productivity, we also need to recycle and up-cycle, adapt the old, reconfigure the old, re-examine and find new uses for the old in the face of change.

But productivity is not only about enhancing the new – as if new challenges demand the exclusive use of new tools. To improve productivity, we also need to recycle and up-cycle, adapt the old, reconfigure the old, re-examine and find new uses for the old in the face of change. Change is the only constant. Being smart about the use value of new tools and how they will interact with older mechanisms and levers will be a great advantage.

It's important that our frameworks for understanding contestability are dynamic enough to enable new ways of doing things and new markets, rather than holding us to old and established understandings of productivity. And part of this is about understanding markets from the perspective of the end user, the consumer, rather than simply looking at how concentrated the existing competitive playground looks. And debates about market power in New Zealand tend to be polarised, with some suggesting that we are so small and isolated on the global stage, that we should emphasise economies of scale as much as possible, and others pointing out our smallness as a reason for using policy to promote competition more actively, i.e. to drive efficiencies.

> …properly functioning markets matter and there is a continuing need to detect and prevent anti-competitive conduct, even when the market is seemingly competitive.

As I said earlier, properly functioning markets matter and there is a continuing need to detect and prevent anti-competitive conduct, even when the market is seemingly competitive. It does appear from the Commerce Commission's work in the construction sector, for instance, that the meaning or impact of damaging collusive behaviour is not well understood. And two weeks ago the Government released an issues paper calling for submissions on potential reforms to section 36 of the Commerce Act, including reforms to the market power prohibition and the potential introduction of market power studies for the Commission. And I urge anyone interested or concerned with these issues to read the paper and make a submission.

> …do our skills and labour markets operate efficiently? Do our professional and vocational qualifications operate to promote the competition and innovation that could make a difference to productivity? We should keep an open mind and avoid the risk of becoming complacent about the quality of our policy settings.

The question of properly functioning markets isn't simply about whether big or small firms can compete. It's about all markets and whether they are functioning well. For example, do our skills and labour markets operate efficiently? Do our professional and vocational qualifications operate to promote the competition and innovation that could make a difference to productivity? It is accepted wisdom that our policy settings are right and are working well, but perhaps some of them may no longer be fit for purpose. We should keep an open mind and avoid the risk of becoming complacent about the quality of our policy settings. That might be part of the explanation of the so-called paradox when we look at our productivity performance. We may need to challenge accepted paradigms if we want to ensure that our markets are functioning well and encouraging the competition, entrepreneurship and innovation that make a difference to productivity and ultimately our living standards.

> …given the centrality of cooperatives in the New Zealand economy, …do cooperative structures support innovation and promote increased productivity?

As I noted earlier, most of our firms are very small and one response to some of the disadvantage of size has been the development of cooperatives. Although they are most prominent in the primary sector, the cooperative form is widespread throughout New Zealand business, including in retail, insurance and finance. Cooperatives meet some obvious interests and provide some real advantages in the New Zealand context. They provide a strong sense of control for members, an effective mechanism for spreading risk and better ability to weather cyclical downswings in revenues. However, there are certain disadvantages. They're typically less transparent in performance reporting. Owners are more motivated by growing the value of their own business than providing for the growth of the cooperative and usual market disciplines faced by conventional, structured entities tend to be less visible. So given the centrality of cooperatives in the New Zealand economy, are the advantages of this corporate form sufficient to outweigh any advantages? Or to put it another way, do cooperative structures support innovation and promote increased productivity?

> Diverse thinkers illuminate blind alleys and uncover new pathways.

Technology has certainly aided businesses in communication and data collecting, but at the core of business lies the human element.

How can we marshal our common understanding and sense of purpose? While technology may help greatly in improving elements of manufacturing, distribution and design, its use value for people in workplace of all kinds remains its greatest attribute. Whether it's fostering new relationships and new markets or improving efficiency in existing processes or attracting fresh thought and talent to business, people hold the key to improving productivity. So productivity's not only, as we're sometimes told, about scale. To me it's also about being smart and embracing the human element in all its diversity. Diversity of thinking drives innovation. It helps identify opportunities quickly and inventively. Diverse thinkers illuminate blind alleys and uncover new pathways.

> The question we should be looking to answer is, how do we deepen our integration into the Asia-Pacific region?

Let me get back to the issue of distance. New Zealand remains challenged, in being a small market far away from large trading partners, and technology has not yet eliminated distance completely, but it has brought us closer than ever before to the rest of the world. And I remain positive about the potential of technology to bring us even closer. But the reality is that in terms of productivity, the challenges of distance still loom large. We haven't been able to benefit from agglomeration of economic activity in our particular location to the same extent as, say, countries of similar size that are in or close to the EU. But while we are far from European markets, we are part of the fastest-growing region in the world. The question we should be looking to answer is, how do we deepen our integration into the Asia-Pacific region? How do we take advantage of our increasing closeness to the global centre of economic activity? How do we take advantage of that closeness to improve our productivity?

> We need to share experiences, build agile and resourceful innovation, promote its diffusion, deepen our international connections and make sure we use all of New Zealand's diversity of talent and ideas.

You'll be glad to know that I'm about to wrap up. The Government's efforts to support improvements to New Zealand productivity are concentrated around the Business Growth Agenda, and depend, of course, by sound management of the nation's finances and a state sector that is focused on delivering outcomes and improving its own productivity. But meeting the challenge of improved productivity is a task that we all have to face up to, public or private sector, big or small firm. If we had all the answers I wouldn't be here speaking to you today. We need to share experiences, build agile and resourceful innovation, promote its diffusion, deepen our international connections and make sure we use all of New Zealand's diversity of talent and ideas.

Thank you to the Hub for inviting me here today. [Applause]

Patrick Nolan: Now I will ask David to take the stage. Thank you.

Keynote address:

Sir David Ramsden, HM Treasury

David Ramsden: Well, thank you very much to the Hub for inviting me to speak today. This is my second consecutive day in this room. Luckily, for me, compared to yesterday, based on London time it's only 25 past 10 in the evening for me today, so bear with me.

> There should be a body called "Macroeconomists Anonymous" that one can confess to.

Confession, first of all. I'm a macroeconomist. There should be a body called "Macroeconomists Anonymous" that one can confess to. I'm going to give you a macro perspective on productivity. But I am also a data hound, so I hope I can rise to Gary Dunnet's challenge. I'm Chief Economic Advisor at the Treasury so I'm going to be giving my perspectives on productivity as what we call in the Government Economic Service back in the UK, a professional practitioner – so if you like, both the analysis that I corralled for our ministers in the UK and then how that led to the policies which were announced in the Productivity Plan that was published in July in the UK.

> I am guilty of what Kaj called "small country syndrome".

Quite a lot of my themes will be common to what Gabs [Gabriel Makhlouf] had to say. I am guilty of what Kaj called "small country syndrome". I'm going to assume that you might be strangely interested in the UK and want to know a bit about it, but I am going to try and put it in more of a global context and also nod to New Zealand. And my first slide, hopefully, does that.

The main message of this is that any of us dealing, certainly with a puzzle or the bit of the paradox for New Zealand that follows from the crisis, we're really not alone. If you look, this chart shows growth rates in the decade up to the GFC in 2007 and then productivity growth rates since then, taken from the OECD database – and you might be able to pick out the G7. I didn't ring it, but it's marked.

You can see it there in the middle. Growth slowed from 1.9% in the pre-crisis decade to 0.9% so the difference, which is shown by the little diamond, is 1%. New Zealand is somewhere in between the G7 and the UK, marked in red, with a shortfall of about 1.2 or 1.3%. The UK, productivity growth of close to 2% in the pre-crisis period. It's only just regained its pre-crisis level, as you can see, and so the shortfall is more like 2%. And this in the UK, when you add it up over the seven years, that comes to something like 13 or 14% in terms of the productivity shortfall, compared with the pre-crisis period, and we've been calling it the productivity puzzle for a few years.

> Productivity growth stats pre / post GFC by @DaveRamsden1 a little alarming #innovatenz

I do want to get onto the policy so I'm not going to dwell on all the explanations. Lots of people for the UK and other countries have tried to quantify the different contributors to this puzzling gap of 13 or 14%. And the relative size of the hexagon shows my preference ordering and I'm just going to focus on three today.

First, and I'd argue the most important, is impaired reallocation of resources – particularly, evidence for the UK suggests – from low productivity companies to high productivity companies. And I think given the nature of the financial crisis and the way it impacted on the credit allocation mechanism, this intuitively seems very appealing. I know Eric Bartelsman, who's speaking later, has done analysis on the Euro areas that suggests that actually the cleansing affect in the Euro area was rather stronger than the analysis that various people had done for the UK, suggests it was in the UK. So it's quite interesting how the Euro area crisis played out and did actually enable some cleansing, if I understood Eric's analysis.

The OECD have done a lot of work on the slowing down TFP [total factor productivity]. For the UK specifically, there's been some really interesting analysis that shows increased dispersion in rates of return on capital in sectors, and actually at the GEN [Government Economics Network] Conference yesterday we heard that similar results applied for New Zealand. And then you get within the labour market, lots of evidence of less churn, a big slow-down in job-to-job moves. So these are all suggestive, if you like, intuitive factors, but it's also suggestive, it's why I've stayed away from trying to put a hard quantification, but you've got the size of my hexagon.

The second issue I want to flag is data measurement issues that we've already heard about today, and actually over this year I've increased the size of this hexagon because I've got more and more convinced that it's an issue and I'm going to come back to it at the end.

Then thirdly, and again others have talked about this already this morning, the sectoral story, obviously relevant in New Zealand in terms of the primary sector and also, I think, in Australia. If you were looking on the right-hand side you'll see that Australia is actually one of the countries that's not seen a productivity shortfall. And I don't know if this is consistent with Eric's cleansing theory. I reckon it probably is, because look at Spain's performance – it is almost off the scale.

> …financial services before and after the financial crisis… were measured as being very strong contributors to productivity [before] and have shown weak, measured productivity since, but are in a more sustainable place as a sector.

The sectoral story for the UK is really more around financial services before and after the financial crisis, where they were measured as being very strong contributors to productivity and have shown weak, measured productivity since, but are in a more sustainable place as a sector.

> …what's striking is that the UK and the US are often thought of as having similar labour markets – very flexible, encouraging lots of participation, but actually the trend of US participation … has really been markedly downwards since the crisis.

I want to move on. There's lots of commonality to these factors and they will apply to different degrees to different countries, but it is also worth remembering wider context and here's a chart that I particularly liked to show when I was in the US recently for a productivity conference at the Peterson Institute two weeks ago. These are participation rates, so some measure of labour supply – and the left-hand side is the G7 and various other countries, or some of the G7 and then New Zealand and Australia. Then the right hand is just blowing out UK and the US.

And what's striking, along with New Zealand, what's striking is that the UK and the US are often thought of as having similar labour markets – very flexible, encouraging lots of participation, but actually the trend of US participation, showing in grey, has really been markedly downwards since the crisis. And as we heard from the minister at yesterday's GEN Conference, New Zealand has had a really impressive participation performance, as has the UK.

> A really, really big question is, what's going to happen next to productivity growth? … such a prolonged stretch of poor productivity growth hasn't been seen in the UK… since the 19th century outside of wartime.

A really, really big question is, what's going to happen next to productivity growth? In the UK this is a series going back to 1860, so that gives you a very long perspective and it does show that such a prolonged stretch of poor productivity growth hasn't been seen in the UK, really, since the 19th century outside of wartime. We are finally seeing at the end – you can just see the little tick up at the end, the pickup in productivity growth – but this does lead to a big question.

Most people think of financial crises as impacting in some permanent sense or semi-permanent sense on the level of productivity, but the growth rates will eventually recover to their pre-crisis rate or thereabout. In the UK's case that would imply productivity growth getting back to about 2%. That is indeed what the OBR [Office for Budget Responsibility] and OECD forecast. Remember, that doesn't mean we get back what we lost in the puzzle. That would be the permanent bit, but we would at least stop that puzzle increasing. But that is a judgement and the fact that the data is finally picking up is a help.

> French workers are much more productive than UK workers but there are huge constraints on how many hours, for example, they're allowed to do…

But just thinking about the consequences of this, our independent fiscal council, the OBR, estimated that in a high productivity scenario, public sector net debt would fall from – it's forecast to be about 70% of GDP. That's 70, just because I know it's much lower in New Zealand. It would be 15% lower in a high productivity scenario, but it would be over 15% higher in a low productivity scenario and rising. So we've got a puzzle in the UK and that's added to our long-standing gap – what Gabs was calling the paradox for New Zealand – and this gives you where the gap is now on the latest data. It shows Germany as the leader amongst the G7, relative to the UK, with productivity about 33% higher than the UK. In France and the US – productivity is about 32% higher. Remember that context point though. French workers are much more productive than UK workers but there are huge constraints on how many hours, for example, they're allowed to do – that labour supply point I was making earlier.

When I was preparing for this slide I got my team to put in where New Zealand would be, and New Zealand would actually be below the bottom of this scale. They would be more than 20% lower than the UK. So I thought, oh God I'm going to get really hammered if I put such an obviously incorrect number into the chart. [Laughter] And so they did loads of QA and then emailed me that I picked up somewhere in Singapore to say, actually the numbers are right. But it just shows you where New Zealand is and what a challenge New Zealand faces.

> …US productivity growth is really beginning to flat-line. So conferences and hubs like this are really becoming very important in the US.

I just want to mention something. I'm going to come back to data, but just in terms of growth rates, you can see why productivity's really rising up the agenda in the US. The UK's known it's had a worry, really since early on in the recovery phase and that is shown by the dotted blue line, showing growth really not picking up very much. Whereas the US, in the early stages of the recovery, are doing pretty well. That's the red dotted line. But then more recently, and particularly on the latest data, US productivity growth is really beginning to flat-line. So conferences and hubs like this are really becoming very important in the US.

> …every member of the OECD where average wages are above UK levels, productivity is also higher.

Gabs has already emphasised and quoted from Krugman about productivity being the single most important determinant of average living standards. You can see from this really tight correlation between living standards, average wages and productivity, every member of the OECD where average wages are above UK levels, productivity is also higher. So all of this background and analysis has framed our advice to the Government on how it should pitch its thinking about productivity and the policies it should follow.

And we've gone for this two-pillar approach. Think of the left-hand side of the classic capitals that Gabs was talking about – physical, human, infrastructure. Think of those as the ingredients and then on the right hand side in a dynamic, flexible economy, how they're mixed together. And if you like, the Government's agenda is about very much encouraging the left-hand side long-term investments and then promoting a dynamic economy on the right-hand side.

> …large companies do nearly all the business investment in the economy… large companies do the vast proportion of R&D… and then we also know that large cities contribute most to growth and also to innovation.

Kaj was talking earlier about markets as complex, adaptive systems and in the kind of analytical work we've been doing in the Treasury, we increasingly think of productivity, and particularly given that a lot of the analysis is firm level, as an emergent property of a similar set of complex adaptive systems. But that's not to say that there aren't some constants that easily get forgotten about and we've heard about some of them earlier today.

It is worth remembering – I haven't got the exact stylised facts in my notes – but large companies do nearly all the business investment in the economy, certainly in the UK and I think this true of the wider EU, and as we heard from Sarah, large companies do the vast proportion of R&D. And then we also know that large cities contribute most to growth and also to innovation.

> …we're really trying something transformational in the UK in terms of funding three million new, quality apprenticeships through a levy on large employees.

So in terms of some policies – I haven't got time to go through all of these – they were first set out in July and then with an update last week with the Government's latest policy announcements, including some serious funding commitments. But I do want to mention a few, and this comes to the point about learning from each other through events such as this, through peer to peer learning, learning through events convened by the OECD and the like. So under skills and human capital we're really trying something transformational in the UK in terms of funding three million new, quality apprenticeships through a levy on large employees.

Secondly, infrastructure, which I know is key also here, the UK Treasury is getting over its traditional resistance to hypothecation, creating a roads fund from the car tax. And we've done some serious learning. I think New Zealand has an independent body that we've drawn on to establish recently the National Infrastructure Commission under the interim chairmanship of Andrew Adonis. Flexible and fair markets, a reformed planning system to ensure more land is made available – I know what a huge issue that is in Auckland. It's a huge issue in London.

The competition plan that was published at the end of last week to further bear down on prices and costs and it's very striking. This is my first visit to New Zealand and to Wellington and in the prices of some goods you can see quite a tangible difference with back home, which again is another way of reflecting the size of the gaps.

Resurgent cities – this is very important in the UK, as I'll come back to in a second.

> …20% of the UK economy is the public sector and we … have done what we think is a really innovative analysis on how you can improve efficiency and productivity while maintaining and enhancing outcomes in the public sector…

What I haven't put on the slide – and given that this is a conference about innovation I feel I've let down my colleagues in the Government Economic Service – 20% of the UK economy is the public sector and we in the Government Economic Service have done what we think is a really innovative analysis on how you can improve efficiency and productivity while maintaining and enhancing outcomes in the public sector – work that's not just informing the recent announcements about spending, but also the wider public sector reform agenda.

This is a conference about innovation, so these are the announcements that were made last week when the Government set out its detailed spending plans for the next five years and spending on science – constant in real terms, so that's quite a significant boost. And then $6.9 billion going into research infrastructure and a whole set of other policies highlighted there, which obviously work alongside the UK's R&D tax credits that it has for big and small firms.

> London accounts for 28% of UK GDP, while New York accounts for just 8% of US GDP.

I want to finish with a couple of issues, one around this issue of agglomeration that Gabs was just focusing on. So this is some analysis that we've done of EU countries. These are by NUTS regions [nomenclature of territorial units for statistics]. A NUTS region is a population of 800,000 to three million and we've looked at the range as a percentage of EU GDP and you can see that the UK is really an outlier in terms of, particularly, the productivity of inner London. London accounts for 28% of UK GDP, while New York accounts for just 8% of US GDP. And my team have put in a really interesting comparison on GDP per capita by region for New Zealand and not being that familiar with all the regions, I'll look forward to reactions to that.

Helen Anderson
@HelenAnderson43: #innovatenz Sir David Ramsden UK chief economist shows Wellington GDP per capita 2nd to Taranaki. Wellington's not dying. @Wellington_NZ

> Many of the UK's comparative strengths are in sectors that tend to have less need to invest in machines and equipment. So-called intangibles, knowledge assets, many of these are not captured in national accounts and they're critical for these firms.

A final point on measurement before I wrap up. Many of the UK's comparative strengths are in sectors that tend to have less need to invest in machines and equipment. So-called intangibles, knowledge assets, many of these are not captured in national accounts and they're critical for these firms. And what we did in the Treasury was update some work by Carol Corrado and Jonathan Haskel and their collaborators on adding these investments into fixed investments, more traditional investments. And you can see that the UK invests 44% more in intangibles than in traditional assets, and more than any advanced countries as a share of GDP. And when you look at all the investments together, the investment gap with the UK with others, narrows a lot with total investment actually higher in the UK than in France, Germany and the US.

> On average, countries with larger service sectors build more knowledge assets… [this] highlights the measurement issues for the modern economy, particularly for modern economies with large service sectors.

And again, my team's just put a negative correlation line through investment in tangible goods and the size of the manufacturing sector. On average, countries with larger service sectors build more knowledge assets. And this is another stylised fact but it really just highlights the measurement issues for the modern economy, particularly for modern economies with large service sectors. The UK are 80% of GDP; New Zealand I think approaching 70% of GDP. And we've actually commissioned Charlie Bean, former Deputy Governor of the Bank of England, to do a review of just how good the UK is at measuring the modern economy and his interim report is going to be published on Wednesday, UK time [see Bean, 2015].

Some final conclusions from me. There is a lot of complexity in analysing productivity and we have to admit the uncertainties. That's why we use language like "puzzles" and "paradoxes". But we shouldn't become prisoners of that, and it is really important to keep developing our analytical techniques. This is why the firm-level analysis that we've been talking about today and yesterday, I think is so important and is so much easier now with big data sets and with data linking. And I think the work on data linking that we heard about at the GEN Conference yesterday, just to join Gabs also in congratulating the Hub for pushing this kind of agenda and using its convening power to do that.

> …if it works,
> build on it, if it doesn't,
> try something else.

Measurement really does matter. Based on this analytical approach and recognising all the uncertainties, for me it does imply taking a pretty broad approach to looking at what the evidence implies for what works, experimenting; if it works, build on it, if it doesn't, try something else. But the scale of the challenge and the shortfall in living standards makes this an absolute priority in the UK in terms of policy. Institutions, I think, are really important for this. Again, it was a theme I was saying yesterday, but I've really been impressed by the work I've seen at the Productivity Commission here in New Zealand. As I said, we are looking in the infrastructure space to really push the agenda forward. The Infrastructure Commission in the UK is going to be looking at three priorities for the UK for producing a framing analysis for next spring, on energy, on transport in London and then on northern connectivity.

And then finally, learning. As I've said, I think networks, the OECD has just set up a network. New Zealand – you have this Hub. Peer learning. I think all these things are incredibly important to help us try and solve what I think is the challenge of our times.

Thank you very much indeed. [Applause]

Discussion

Patrick Nolan: Well, thank you Gabriel and David. Two fantastic presentations. I always like the comparisons between New Zealand and UK because we tend to call quite different things the same thing. So we both have productivity puzzles or productivity paradoxes, but we're dealing with quite different economies. But both presentations drew out some key themes, particularly around what the OECD refer to as the broken diffusion machine, the importance of knowledge-based capital – how that also relates to some of these issues around measurement, particularly the measurement of intangibles.

As Gabriel also discussed, the discussion paper that's gone out on section 36 is important, as we know that competition's an important driver of productivity. So an awful lot for us to pick up on there.

You'll know the routine by now, so please put up your hands if you've got any questions. We'll start over there and then Adam.

When we look at the transformation that's gone on in the primary sectors over the last 20 years… I would have thought people are better off. Why aren't we seeing aggregate productivity going up

Brian Bell: I have a question for Gabriel. My name's Brian Bell from Nimmo-Bell. We're agribusiness consultants. Well, firstly I share your scepticism that we're measuring the right stuff. When we look at the transformation that's gone on in the primary sectors over the last 20 years, the massive shift out of sheep and into dairy, profitability increased massively, return on capital increases, revitalisation of those regions that have moved into dairy – I would have thought people are better off. Why aren't we seeing aggregate productivity going up?

Patrick Nolan: Yeah, great. We'll take them as a cluster – and then Adam.

Adam Jaffe: I would just be interested in both of you, given what's going on as we sit here, in Paris. Neither of you mention climate change. Obviously improved technology is part of the story as to how we deal with climate change, but does it change in any more direct way how we think about the problem of productivity growth to acknowledge that we have this other big problem out there.

Patrick Nolan: Okay, great. Two very big questions. So Brian asked if we're mis-measuring productivity in agriculture. And David, I know one of the challenges measuring productivity in the UK is a lot of the decline's been in sectors where it's relatively hard to measure, such as financial services. So there's a measurement issue there, and also climate change. So I'll start with Gabriel.

Gabriel Makhlouf: If I could answer your question about what's happened to agriculture productivity, I suspect we'd probably have a big answer to New Zealand's productivity question. I don't know, is the honest answer.

> …just go to Fieldays and you'd be amazed at how high tech it is.

What I do know, one of the things when I was in Fieldays – I was saying to someone earlier – when I went to Fieldays back in June, one of the things that struck me was what an amazing adopter of technology the agricultural sector was. Some of you may be surprised to hear that. But I tell you, just go to Fieldays and you'd be amazed at how high tech it is. And so it just feeds my suspicion that we're somehow not capturing… I don't want to sound as if I'm beating up on Statistics New Zealand, [laughs] because I'm not, because I think it's a global challenge. But yeah, I don't know, is the answer to the question. And I suspect productivity's probably better.

The climate change question. It's obviously relevant. From New Zealand's perspective, we are pretty persuaded that technology will help us to manage the methane part of our emissions and you'd have thought that will have an impact on productivity, so there'll be a win/win situation – improvements in productivity and tackling methane emissions. But I'm not sure I can answer it more than that, to be honest.

> I think productivity is probably the challenge of my time, but I would see climate change as probably the challenge of all times…

David Ramsden: On that second question, look at the macro level. I think productivity is probably the challenge of my time, but I would see climate change as probably the challenge of all times, as it were. Nick Stern, who was my predecessor as Head of the Government Economic Service, has been forceful in this. And picking up on Gabs' point about win/win, you can see how both of those challenges can be advanced through the right technologies. I was very conscious of time or I would have at the bottom of my slide on UK policy measures to support science and innovation, I had the additional investment going into what is a really ambitious nuclear programme in the UK, and then right at the bottom additional money on the manufacture of ultra-low emission vehicles. A lot of the time in treasuries you've got trade-offs and it would be really exciting if this was a win/win. The challenge is that quite a lot of the technologies are unproven and so it's having the confidence and deciding on which ones. Either you support the private sector in doing all that or you have to step in on, but I think it's a really great point to emphasise, this week of all weeks.

Patrick Nolan: Okay, thanks. Beth and Bronwyn.

> Do you think there's a role for getting the accounting standards to come up to speed with the 21st century [for measuring intangibles]?

Beth Webster: Beth Webster, Swinburne University. Dave, just a comment about your comment about measuring intangibles. One of the reasons measures of tangible – that's assets, that's plant and equipment – is so good is it's embedded in the accounting system and every corporation measures it in pretty much the same way and it's in all their annual reports, etc. That is not true for intangibles and that's why people like John Haskel etc., have to reverse-engineer those data and the data are a little bit fuzzy and not necessarily comparable across countries. Do you think there's a role for getting the accounting standards to come up to speed with the 21st century on this matter? And I don't mean capitalising them – I just mean measuring them.

McGuinness Institute @McGInstitute: Discussing why we need to standardize ways we measure intangibles in annual reports – fully support! #innovatenz

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David Ramsden: I do, and great strides have been made by the various statistical authorities, getting for example, R&D, in getting software in. But as you move down the spectrum the softer intangibles, management, the work of John Van Reenen, I suggest, is incredibly important. How do you measure that?

Measuring disruptive technologies is a huge agenda in the US…

No, so I think in terms of measurement, I'm really hoping that the interim report of the Bean Review is going to really give a push on this kind of thing. But then obviously on more some of the issues that would be one type of innovation, but more some of the issues that this conference is talking about. Measuring disruptive technologies is a huge agenda in the US as they try and make sense of things. I think one of the reasons they're so focused on their productivity growth slow-down is the evidence does suggest that they have these global frontier companies and at the same time this slowing in productivity. And it's trying to make sense of that really stark contrast. I was in a conference in London. Olivier Blanchard just put the question out there, "how do you measure the value added or the productivity of Google?" And that's someway short of some of the really disruptive, the sharing economy, that kind of thing.

Beth Webster: Could I just, add one thing? London is home to the International Standards Accounting Body, so you're really in the box seat for influencing the debate. [Laughter]

David Ramsden: Yeah, I'll take that one away [Laughter].

Patrick Nolan: Bronwyn.

Bronwyn Hall: I just wanted to suggest one possible, not total explanation, but suggestion for the technological adoption in the agricultural sector coupled with relatively low productivity growth in the agricultural sector – those two look to me like they might be linked – which is they may be coming from things like food safety regulation, which has been changing quite a bit, especially when you get into exporting, when you're heavily into exporting, because the people to whom you export, set requirements. And I just wonder if that's a contributory factor. In other words, there's unmeasured quality change we could say that people aren't willing to pay for, but is being forced on them, and we may be in favour of that but they're not willing to pay for it.

David Ramsden: Could I just pick up on that in the context of the comments I made about financial services. There were a lot of financial services, many of them originated in the UK, collateralised debt obligations, tricky things to measure, but I think we now know the limited value of some of them. And there's been a lot of regulation in the financial services sector. So I think some of your quality points will really apply.

Bronwyn Hall: Well I think particularly in agriculture.

David Ramsden: Yeah okay. No, I think in financial services it's more auditors, but compliance people, but even so it will be impacting on the data. But I think there's a parallel in terms of what you were saying about regulation which wasn't on any of my hexagons.

> …what role does public sector productivity play in all this?

Patrick Nolan: Great. Actually we're pretty much at time, but I'm going to exploit my position as Chair and ask one last question. Dave and then Gabriel. Dave, you mentioned the role of the public sector in the UK was at 20% of the economy. We've talked a lot about the firm-level measures and thinking about diffusion among firms – just quickly, what role does public sector productivity play in all this?

> … I think we need to do more to measure particular departments and do it in a full way, not in a kind of crude classic outputs and inputs, but getting onto outcomes.

David Ramsden: Well, I think it plays a very big role. For example the ONS [Office for National Statistics], our statistical authority, has been at the forefront of trying to introduce quality improvements into measurement of education, health services. And looking at those, the quality adjusted data, productivity has indeed been rising, but the National Accounts System that we're all constrained to use doesn't allow you to take those quality adjustments into account. So that's one aspect of it where I think we need to do more to measure particular departments and do it in a full way, not in a kind of crude classic outputs and inputs, but getting onto outcomes. That's the real challenge, because that's what citizens want.

But then I think this links to something we were talking yesterday – the work that the Productivity Commission has done on investments – the social, the interventions and all of that. And I think that's the really challenging but exciting bit where you start joining up across different services, making sense of the various inputs from various departments or agencies and the outcomes, and the potential for win/win/wins. Yesterday we were hearing stories, in fact, one of the stories from the UK, of someone who'd had an extraordinary set of interventions to improve their living environment on the first floor and they couldn't climb the stairs in their house. It's the analogue, as you were implying, to the firm-level stuff, getting under the bonnet of that kind of thing. And I think the data is beginning to be there. Getting linked data is also tricky within government, and I think using each other's data sets and having the capacity among civil servants to be able to do that kind of data linking, data science analysis.

Patrick Nolan: Great, thank you. Gabriel.

Gabriel Makhlouf: Just to follow on from Dave and not to repeat him too much, when you're 25% plus of the economy, you're a big player, and you've got a big role to play, as I said earlier. But just to dig underneath that a bit, Dave just mentioned the social investment which I described. Those of you who were here yesterday will have heard Steven Joyce talk about it. For me it's about modernising policy making. That's what I keep going on about, and it's about using our new ability to combine these new analytical tools with data and this almost exponential availability of information to really understand what's driving the demand for government services. And to target it so you can see if we can get this right, our productivity is going to improve, so there's a big play.

> …we are the people who advise the Government on regulation and regulatory settings and that can have a completely overwhelming dominant impact on productivity.

But the two things I want to just talk about in particular. One is to pick up from Bronwyn's point. I didn't mention it when I spoke, but we are the people who advise the Government on regulation and regulatory settings and that can have a completely overwhelming dominant impact on productivity. So making sure that we're making good regulation. I can't overemphasize how important it is, which is one reason why the Treasury has invested as much as it has done in our regulatory work.

> …I think we've got a big part to play. But I am also quite hesitant about saying that because sometimes it sounds as if we are the people who've got the answer to productivity – and it's definitely not just a government issue.

The other thing I want to mention in terms of the role of government: it's our position really to support the community more generally in improving connectivity and the use of digital. So the Government's got these two results which go by the name of Result 9 and Result 10, two of its 10 Better Public Service Results, which are all about improving the digital connectivity between business and government and between individuals and government. Actually, that's entirely in the hands of the public sector to actually introduce that in a way that will make a big difference to businesses, to individuals and to the economy. So in all sorts of ways, I think we've got a big part to play. But I am also quite hesitant about saying that because sometimes it sounds as if we are the people who've got the answer to productivity – and it's definitely not just a government issue.

Patrick Nolan: Great, thank you. That's a good note to finish on, so if you could just join me in thanking the speakers. [Applause]

Right, we will be back here at quarter to one, when we will hear from Beth Webster and Adam Jaffe.

> "Back from Innovate New Zealand team break. No sausage rolls. None at GEN 2015 either. Is the Kiwi conference tradition dying? Is this the end of days?"

You'll be pleased to know there's been a little bit of debate on Twitter, but I have to say it's not quite the debate I anticipated. I'm not going to name names, but one person tweeted "Back from Innovate New Zealand team break. No sausage rolls. None at GEN 2015 either. Is the Kiwi conference tradition dying? Is this the end of days?" [Laughter] And then someone else has tweeted, "Pleased to see I'm not the only sausage roll aficionado in attendance." So I guess we've achieved our outcome. We've hit our target of creating a debate, but it's not quite the one we wanted. But please do keep tweeting and I'll see you here at quarter to one.