

**Dr John Bell**

Address to the National Press Club 3 June 2014

Ladies and gentlemen,

If you are a researcher, you resign yourself to a certain benign neglect from the nation's journalists.

Then, in the last few weeks, you find that you have become the rabbit in their headlights.

That has been the recent experience of a number of our researchers.

For example, the cuts to CSIRO's budget have attracted extensive interest from the media.

It's not just an issue for researchers. Business is also in the headlines.

Government programs designed to nurture start-up firms, and help small and medium sized enterprises (SMEs) to grow, have been cut, put on hold or abolished.

When coupled with the decision to invest \$20 billion in a new medical research fund, it's not surprising that researchers – and journos – are confused.

The ecosystem around our researchers is changing – and they don't know why, or what next.

It's hard for them to know what to tell potential investors, students or global partners.

Projects that have taken many years to grow to scale, may now no longer have the chance to deliver returns.

All this would be serious enough if Australia's innovation system was performing well.

But it isn't. As the report we are launching today shows, our innovation system is failing in a number of key areas. Here are five of the problems:

- By world standards we are under-investing in research.
- We lie well behind the leaders when it comes to the availability of venture capital.
- Our levels of research collaboration between universities and business are the lowest in the OECD table. We come in at position 33!
- We lack effective mechanisms to support the growth of SMEs.
- Our firms have little engagement in international collaboration, way less than most of the OECD.

We seem to regard funds spent on research and building business capability as an expense, rather than an *investment* in Australia's future.

Such investments are not a case of 'living beyond our means'.

They are *necessary* to create jobs for future generations of Australians.

Underlying the recent Budget announcements is a serious lack of understanding of the need for government measures to help create the sort of economy that will ensure our competitiveness in the 21<sup>st</sup> century.

It won't happen without government help. Other countries recognise this. We need to do so too.

To be competitive in the 21<sup>st</sup> century, we need an effective innovation system.

And financing it not something that can wait until the federal Budget is back in surplus.

The UK and the USA have both faced budget deficits. That has not stopped *them* continuing to invest in innovation.

And it should not stop us.

If it does, we will find ourselves getting left behind. In our region, we already lag China, Singapore, Korea and Taiwan in a number of key indicators of innovation.

We need to be concerned about generating productivity growth if we are to maintain our standard of living.

As our report shows, *innovation* is an important driver of productivity growth, and underpins the creation of future industries.

We are not just talking about *technological innovation* in this report. Innovation can occur through new approaches to management, marketing and financing, and can draw on humanities, arts and social sciences inputs.

And we are not just talking about new-to-market inventions or a small handful of top-performing firms. We are talking about building capacity right across our economy and our society, to lead and take advantage of technological change.

Now, if innovation is important to productivity growth, where are Australia's best prospects for achieving innovation-based growth?

We were specifically tasked to look at manufacturing.

I know that some of you will find this a surprise.

After all, is not manufacturing in decline?

Well, yes – it has been declining.

But its contribution to GDP is \$100 billion a year.

And as Phil Ruthven pointed out last week, 21 of Australia's 100 most profitable companies are in manufacturing.

Manufacturing also employs around one million Australians.

Of course, we know that the services sector is the biggest sector of the economy.

However, manufacturing and services are now often integrated in a single firm.

Many manufacturers no longer just sell a product.

They also sell accompanying services - that enable the buyer of a product to get better value from the purchase.

This is good for business, but it also means that it is no longer possible to classify companies as being *either* in manufacturing *or* services.

It also means that the nature of manufacturing jobs is changing – and so are the opportunities for Australians.

One aspect of manufacturing examined in the report is what is referred to as advanced manufacturing.

Advanced manufacturing involves the innovative application of technologies, processes and methods to product design and fabrication.

Our report includes some great examples of Australian companies already in this space.

The problem is, there are not enough of them.

Our report also notes the dominance of small and medium sized enterprises in our business sector.

The innovative and fast growing ones are sometimes called ‘gazelles’.

Gazelles are noted for being nimble and quick to respond to threats.

And what our research has shown is that, to qualify for the gazelle label, a firm needs both innovation and good management.

Good business management understands international trends.

Good business management knows how to position a business in global value chains.

Good business management knows how to collaborate with other players in these chains.

But unfortunately, good business management is not in plentiful supply in Australia.

Professor Roy Green at the University of Technology Sydney has shown that, on a number of indicators of management performance, Australian business management is decidedly mediocre.

Yet other recent work has shown that there is a very clear link between the quality of management and firm productivity.

There is a role here for Australia's universities and industry associations to help to raise the quality of our business management.

But let me come back to the gazelles.

What can we do to ensure that our gazelles grow into strong Australia-based multinationals?

For starters, we need to make much better use of our publicly funded science base in universities and public research agencies.

Australia is somewhat unique among OECD countries in that a very large proportion of our researchers are in the public sector.

We need to put more effort into *building on* our public sector research skills to help create new products and processes.

We also need to provide a business environment in which technology-based start-ups get the sort of help that is available in other countries.

But this is just the beginning of the shift in culture we need to encourage right across the business community, in established industries and new industries alike.

No-one can be immune from this change. No-one can afford to be complacent.

So in order to create a gazelle-friendly business environment, there are some things that need to be fixed.

When you look at the best performing, knowledge-led economies, one thing stands out. It's the extent to which universities and businesses work together.

The chart on page 14 of the summary shows that Australia's level of collaboration between the higher education sector and business places us in position 44. This is appalling.

If we came in 44<sup>th</sup> at the Olympic Games – and, I might add, behind New Zealand - the government would convene an emergency Cabinet meeting.

Well, this is more serious.

Collaboration is important for a number of reasons.

Collaboration between universities and business helps to prepare work-ready graduates.

It gets research students interested in working in the private sector.

It can even encourage some of them to start business of their own.

And it facilitates the flow of new ideas from universities to business.

We know that there are barriers to greater engagement between researchers and business.

- There are challenges in finding businesses to work with.
- There is also pressure to focus on publishing research in learned journals, rather than spending time collaborating with business.

These are barriers which need to be overcome.

Most OECD governments provide a *range* of measures to encourage business collaboration with universities.

Here in Australia we have the very successful Cooperative Research Centres Program, which is delivering a good return on investment for the government and for the other parties involved. But it is a big ask for companies to sign up to the seven-year commitment generally required for a CRC.

We also have ARC and NHMRC programs.

The problem is that, in spite of these measures, we are bottom of the OECD league table.

Australia's current measures to encourage collaboration are clearly inadequate. New measures are needed if we are going to get a better return on our substantial investment in public sector research.

We offer some suggestions in the report.

The second thing that needs fixing is venture capital.

Australian gazelles are undernourished when it comes to venture finance.

The Commonwealth Government's Innovation Investment Funds have helped.

Without them, things would now be even worse.

Other OECD countries have moved ahead of us and adopted novel ways of financing innovative SMEs.

Crowd sourced equity funding is just one example that we discuss in the report.

When it comes to measures to assist the gazelles, OECD country governments appear to be focussing more of their assistance through *direct* targeted support.

This sort of support is not about propping up unsustainable firms. It is assistance that recognises system and market failures that, if not addressed, result in less than optimum productivity and economic growth.

It recognises that today's gazelles can be tomorrow's business leaders, if they can access help when they need it.

New technology-based businesses struggle to grow at the speed necessary to establish themselves in the market. They often can't afford specialist help. Their owners are time-poor.

Some of the measures to help them, described in our report, are relatively new.

But many have been in use overseas for a number of years. They are tried and tested.

I want to pick just one example.

The US Small Business Innovation Research Program has been adapted and copied around the world.

SBIR finances early stage R&D projects in small firms. These are often spinouts from universities. SBIR support comes through a two stage, competitive process. No matching funds are required.

The application and assessment process is very rapid. Successful applicants get \$US 150K for a feasibility study which can lead to \$US 1 million to undertake R&D and, in some cases, more for funds for commercialisation.

The SBIR Program effectively provides venture capital, making the US Government the biggest source of venture capital in the world. And remember, this is the land of free enterprise that i am talking about!

Victoria and South Australia have implemented adaptations of the SBIR Program. Adequately resourced, a Commonwealth Government version could be very effective.

One of the aspects of the US SBIR Program (and its counterpart technology transfer program) that we like, is that it is funded from what the Americans call a small business set aside.

The set aside legislation requires US Government agencies with R&D programs over a threshold of around \$100 million to set aside a very small percentage of their funds for measures to assist small business.

In our report, we describe a number of other measures to help the gazelles to grow. Examples include the UK's Knowledge Transfer Partnerships, and the US Manufacturing Extension Partnerships.

Not only do we need new measures like these to assist the gazelles to grow – we also need some better *delivery* mechanisms.



The use of intermediary organisations to deliver assistance to SMEs has proven to be very successful in other OECD countries and in Victoria. The Small Technologies Cluster in Melbourne is a good example.

Intermediary organisations aid research translation and facilitate the uptake of new technologies.

They understand and articulate market needs to researchers. They sit outside the bureaucracy.

When it comes to Australian support measures for SMEs, two concerns have been consistently raised with us - the frequent changes to Commonwealth Government assistance measures, and the lack of scale in some of these measures.

The ink is hardly dry on the last lot of changes before new changes are being proposed.

There is a lot of instability in what limited support is available to Australian SMEs.

This makes it very hard for companies to plan for sustainable growth.

If we want to see a significant improvement in our performance, as a nation, we have to be prepared to invest.

However by OECD standards, direct assistance to Australian firms was already very low, even before the recent Budget.

Another area requiring attention if we are to improve productivity is the development of an innovative workforce.

Increasing the proportion of women in science and engineering will improve our innovative capacity.

But increasing fees for university engineering courses is likely to have the opposite effect.

Our science and engineering graduates need to be adaptable, recognising that many of today's jobs did not exist a decade ago.

Our graduates also need interpersonal skills, business skills and entrepreneurial skills.

They, and their employers, need to continue to invest in training, because lifelong learning has become a necessity.

At the same time, there needs to be wider recognition of the contribution of social sciences, arts and humanities skills to innovation and productivity improvement.

Our case studies illustrate the importance of this for companies as diverse as Cochlear, Westpac, and Halfbrick Studios.

I have spoken about *graduates*, but we also need to raise the language, literacy, numeracy skills, and understanding of science, in the wider community.

By doing this we will increase productivity and help to ensure Australia's competitiveness in the 21<sup>st</sup> century.

### ***Conclusion***

The report that we are launching today was not put together on a Sunday afternoon with a couple of glasses of red wine.

It has been prepared by an expert working group from the Australian Council of Learned Academies. Our report is on the ACOLA website.

We represent a sector that understands the stakes in play – a sector that sees the potential for Australia; has experienced the sort of opportunities that exist overseas; and wants to drive the same transformation in Australia.

The Academies have a unique capacity to provide independent, evidence-based advice; and this Expert Working Group has been on the case since September 2012.

The project has received inputs of ideas and views from eight workshops held around the country.

Altogether, more than 160 people have contributed to the project. Some are here today.

This report provides a *global perspective* that has been lacking in some of the national conversation to date.

It finds that there is an *urgent* need for Australia to increase innovation, to lift productivity and build future industries.

It identifies good practice models to show how to go about this in a cost-effective way.

In a piece in *The Conversation* on 20 May, Professor Roy Green pointed to the serious dangers Australia faces if we do not develop world-competitive knowledge-intensive industries, including advanced and specialised manufacturing.

Addressing the findings of this report will help to reposition Australia as a competitive economy based on a highly productive innovation system.

Thank you for your attention.

The report is available at [www.acola.org.au](http://www.acola.org.au)