

Universities Australia Submission to the Inquiry into Australia's Future in Research and Innovation

February 2016

Universities Australia (UA) welcomes the opportunity to provide a submission to the Joint Select Committee on Australia's Future in Research and Innovation. In this submission, UA outlines the importance of long-term investment in Australia's higher education and research sector to our trade and investment performance.

Universities play an essential role in driving Australia's international competitiveness and productive capability. Effective investment in the university sector is critical to building and maintaining goodwill, trade and investment. Australian universities are also the major providers of education services to international students, an \$18 billion export industry. Universities provide skilled graduates, underpin our research and innovation efforts, and are the cornerstone in delivering education services internationally.

In total, university education added an estimated \$140 billion to our economy in 2014.¹ The value of the stock of knowledge generated by university research was estimated at \$160 billion in 2014, equivalent to almost 10 per cent of Australia's GDP.² Universities are central to Australia's ambitions to seize the new wave of economic prosperity and create an 'ideas boom'.

A number of critical elements are needed to improve Australia's ability to grow the economy, create new jobs and improve productivity. As outlined in the National Innovation and Science Agenda, cultural change is needed to bridge the divide between industry and the research sector. This requires strong policy direction and support. UA looks forward to working with the Government and industry to realise the ambitions outlined in the National Innovation and Science Agenda (NISA) in putting innovation at the heart of the Australian economy.

Recommendations:

UA recommends that the Australian Government continue to invest in our higher education and research sector as part of measures to improve Australia's trade and investment performance. In particular, UA recommends that:

- (i) as a priority, Innovation and Science Australia should consider how to incentivise industry to collaborate with the research sector, undertake additional research and development and increase the innovation performance of our exporters;*
- (ii) the Global Innovation Strategy should be expanded to include investment in strategic international research collaboration, particularly to support Australia's involvement in the European Union's Horizon 2020 programme and other major untapped international*

¹ Deloitte Access Economics 2015, *The importance of universities to Australia's prosperity*, Deloitte Access Economics Pty Ltd, Canberra.

² Ibid.

research funding cooperation opportunities, and to deepen Australia's engagement with the Asian region; and

- (iii) *policy should be coordinated across government to support both the innovation agenda and international education, providing effective visa arrangements and increasing opportunities for work-integrated learning.*

National Innovation and Science Agenda

UA strongly supports the Australian Government's renewed focus on innovation and science. The National Innovation and Science Agenda (NISA) is a vital first step in creating the cultural change needed to build new industries, transform the Australian economy and secure prosperity into the future.

The successful implementation of the agenda will require a strong international focus. Increasingly, our nation's capacity to innovate will depend on the strength of the international partnerships and relationships we build with emerging countries and existing innovation powerhouses.

Australia's ability to transform world-leading research and innovation into new products and processes has been hampered by limited access to venture capital and short-term and stop-start approaches to increasing available capital and providing commercialisation funding. The initiatives in the NISA around access to capital are very welcome and, combined with other sectoral initiatives to create and package opportunities for investors, should lead to an improvement in the overall numbers and success rate of innovation investment.

The creation of Innovation and Science Australia provides the opportunity to take a more strategic approach. The effectiveness of individual initiatives, like the Industry Growth Centres, could be enhanced by addressing trade and investment issues across sectors. The centres have been tasked with improving the capability of sectors engaging with international markets, accessing global supply chains and increasing industry and researcher collaboration. Achieving these goals will substantially improve Australia's ability to facilitate technology exports and increase our international competitive advantage.

UA's [Keep it Clever: Policy Statement 2016](#), notes Australia needs to make a major step-change commitment to achieve greater industry-university engagement and collaboration. The initiatives in the NISA provide an excellent starting point, but much will depend on the longevity of the commitment and a permanent shift away from short-term, piecemeal programme approaches.

Industry and research collaboration

In considering the barriers to collaboration, we must acknowledge the different roles played by industry and the research sector in our innovation system. Research organisations deliver a range of public good outcomes—for example, in relation to improved healthcare, environmental management and public policy. These are equally as important as the commercial outcomes. Crucially, the fundamental, or basic, research that generates the ideas and intellectual property for commercialisation must continue to be supported and valued. Countries with

strong innovation track records recognise and safeguard this pathway. In considering a major overhaul of the UK's research system, Sir Paul Nurse successfully argued for the importance of broad-based, pre-competitive research as a defining feature of UK's successful research system.³

There has been considerable discussion on where Australia ranks in the OECD in terms of businesses collaborating with higher education and public research institutions on innovation. This is a complex issue with a range of contributing factors. The reforms to university funding and introduction of a new impact and engagement assessment announced in the NISA will provide a strong impetus for change within universities. However, our ability to tackle this issue effectively requires change in both the universities and industry. The creation of Innovation and Science Australia and particularly the review of the R&D Tax Incentive, provide an opportunity to improve the effectiveness of incentives for industry to undertake R&D and to collaborate.

The move to a continuous application round under the Australian Research Council (ARC) Linkage Projects is a positive initiative that will remove a major barrier for industry to collaborate with researchers. The Innovation Connections initiative, which expands and refocuses the existing Research Connections programme, provides another avenue to drive new collaborations led by small and medium enterprises (SMEs).

Australia's performance in producing cutting edge innovation and the levels of research and development in our innovative firms is underwhelming. The percentage of innovative firms in the manufacturing and services sectors that undertake R&D, either internally or with a partner, is the lowest and second lowest respectively in the OECD. In addition, only 9.3 per cent of large firms in Australia (27 of 28 OECD countries) and 9.2 per cent of SMEs (21 of 28) introduced products new to the market in the period 2010 to 2012.

There are a range of other indicators that highlight the low-levels of cutting-edge innovation in Australian industry. As discussed in the 2014 *Australian Innovation System Report*, despite clear evidence of the benefits, Australian businesses tend not to pursue innovation as a priority and there is a relatively poor culture of innovation in Australian industry. This report also states that Australian exporters are, on average, not high performers in innovation by OECD standards.

This is despite considerable investment by the Australian Government. The R&D Tax Incentive has experienced the greatest increases in expenditure compared to other types of Australian Government support for science, research and innovation (SR&I). The incentive has grown from around 15 per cent of total SR&I spending in 2005-06 to almost 30 per cent in 2014-15. The review of the effectiveness of the R&D Tax Incentive currently being undertaken represents an important opportunity to ensure that the maximum public benefit is returned from this substantial investment through revenue foregone.

A long-term and sustained approach, guided by the evidence, is needed to create cultural change in both our research sector and in our industries. Australia's universities have already been making significant changes to improve their links with industry and increase the flow of knowledge between the research sector and broader society. UA looks forward to continuing to work with the Australian Government and industry to address this long-standing issue and improve Australia's collaboration performance.

³ Nurse, P 2015, *Ensuring a successful UK research endeavour: A review of the UK Research Councils*, p. 15–31.

Leveraging international research and innovation collaboration and investment

The university sector welcomes the Australian Government's announcement of a Global Innovation Strategy, supporting collaboration with international research-industry clusters. Increasing our linkages with innovation hotspots around the world will improve our ability to import and export leading edge technology and increase our access to international supply chains. The landing pads are another welcome initiative to support entrepreneurs in reaching out to the world.

However, the cuts to the Endeavour Scholarships and Fellowships scheme announced in the 2015-16 Mid-Year Economic and Fiscal Outlook is at odds with the Government's acknowledgement of the importance of international links for Australia's competitiveness and productivity.

It is critical that public investment in international research and innovation collaboration is predictable, strategic and long-term, and made on a larger scale than at present. A fragmented and inconsistent approach is inefficient, reduces the potential return, and creates an uncertain environment for researchers, business end-users, and potential international partners. UA's members are concerned that universities in competitor countries have much greater access to funds that support international collaboration than Australian universities.

As a relatively small country, responsible for just under four per cent of the global research and development output, it is essential that Australia's research and innovation efforts leverage international investments and advances.⁴ International collaboration provides Australia with access to research breakthroughs occurring around the world and gives our researchers access to international funding streams, expert networks, and specialist facilities and data that are beyond Australia's capacity to provide. Researchers in Australia are highly sought after as international collaborators with half of our research output published with an international co-author.

The majority of Australia's international research collaboration efforts are initiated by individual researchers or individual universities. Funding to facilitate research partnerships, including in areas where there is a common national priority or challenge, has been substantially reduced in recent years, significantly restricting the ability of Australia to leverage the investment made by other countries. Only two international research collaboration programs remain; one each for collaboration between Australia and India, and between Australia and China. Our capacity to undertake larger scale, formal collaborations has been limited by the inadequate and inconsistent levels of national funding and support provided. For example, Australia has no overarching strategy or flexible funding to engage with the European Union's Horizon 2020 programme. Horizon 2020 is the biggest European research and innovation programme, with nearly €80 billion in funding available from 2014 to 2020, and is strongly aligned with Australia's areas of research interest.

⁴ Thomson Reuters 2015, *InCites*TM, Thomson Reuters.

Other leading research-intensive countries offer international research funding cooperation opportunities. Accessing these, however, generally requires Australian Government co-investment.⁵ Strategic research collaboration is essential to driving deeper engagement and stronger economic ties with the Asian region. The impact of the Global Innovation Strategy could be substantially increased if it was expanded to support research collaboration and innovation with leading countries in our region and around the world.

Workforce

The university sector is central to reaching Australia's ambition to continue as a high-wage, high-skill economy, providing graduates with the skills and knowledge needed to thrive in a rapidly changing labour market. Australia's universities are transforming themselves to meet the challenges and opportunities presented by these changes. Work-integrated learning, flexible study options, technologies enhancement, and a greater focus on entrepreneurship are just some of the ways universities are responding to the demands of a rapidly changing economy.

Countless reviews, papers and policy documents have highlighted the need for Australia to invest in its people. Increasing the number of research-skilled employees in our industries is critical to improving productivity and innovative capacity. In order to achieve these goals, we need to ensure that our research training system is internationally competitive and provides the flexible learning options and skills needed to ensure graduates can succeed in whatever profession they choose. The current review of Australia's research training system provides an opportunity to consider these issues, along with how we can increase linkages and internships with industry, both domestically and internationally.

The Australian economy's demand for university graduates is increasing. Australia's economic future is dependent on ensuring an adequate supply of 'knowledge workers' to support the future labour market. It is estimated that the economy will require approximately 2.1 million more university graduates than it needed in 2015. The top five industries projected to need the largest increases in skilled graduates over the next ten years are:

- education and training;
- health care and social assistance;
- professional, scientific and technical services;
- public administration and safety; and
- financial and insurance services.

Each of these industries will require additional workers with over 100,000 new university qualifications over the ten years from 2015 to 2025, equal to a 30 per cent growth in demand.⁶

⁵ Ang, I, Tambiah, Y, and Mar, P 2015. *Smart engagement with Asia: Leveraging language, research and culture*. Report for the Australian Council of Learned Academies.

⁶ Deloitte Access Economics 2015, *The importance of universities to Australia's prosperity*, Deloitte Access Economics Pty Ltd, Canberra.

International education is of increasing importance to our economy. In 2014, Australian universities enrolled over 310,000 international students from more than 140 countries. International students help to fill skills gaps in our workforce, with former international students making up around one third of the skilled migrants to Australia in 2013-14. They make valuable permanent migrants as they have had the benefit of an Australian education, often in professional degrees designed to meet the needs of professional accreditation for practice in Australia.

The Australian Government's National Strategy for International Education, expected to be released in the first half of 2016, is necessary to ensure Australia's continued success in delivering international education services and creating strong education and research links globally.

The improved visa arrangements outlined in the NISA are another important element for attracting and retaining entrepreneurs, highly skilled innovators and international higher degree graduates. If Australia is to remain competitive in research and innovation, we need to explicitly recognise and value the contribution that higher degree international students make to national productivity and the national research efforts. This means ensuring they are given priority and that remaining in Australia is an attractive option. Robust and well-designed visa arrangements are critical to the success of Australia's international education industry and ensuring their integrity has been a key focus of UA.

In order to maintain our position as a leading international education provider, Australia must ensure that our education and research reputation remains high. As highlighted by the Australian Government, Australia's universities are facing a number of funding pressures that, if not addressed, may compromise our third largest export industry. Australia's competitors are making significant investments in their knowledge infrastructure and this inquiry provides a timely opportunity to consider the changes to our research and innovation system needed to boost Australia's trade and investment performance.