

9 April 2021

University Research Commercialisation Committee
Department of Education, Skills and Employment
GPO Box 9880
Canberra ACT 2601

By email: urcs@dese.gov.au

Dear Committee,

Consultation on a new model for commercialisation of university research

As the voice of private capital in Australia, the Australian Investment Council is pleased to present its submission to the Department of Education, Skills and Employment for this consultation on *University Research Commercialisation*.

Private capital investment has played a central role in the growth and expansion of thousands of Australian businesses and represents a multi-billion-dollar contribution to the Australian economy. Our members are the standard-bearers of professional investment and include private equity (**PE**), venture capital (**VC**) and private credit (**PC**) funds, alongside institutional investors such as superannuation and sovereign wealth funds, as well as leading financial, legal and operational advisers. Our members include both Australian domestic and offshore-based firms.

Private capital fund managers invest billions of dollars into Australian companies across every industry sector of the economy every year. Australian-based PE and VC assets under management reached \$33 billion in 2019 with an additional \$13 billion in equity capital available to be invested in the short-term. Companies that partner with private capital fund managers contribute one in every nine new jobs in Australia and provide 2.6% of our nation's GDP.¹ The private capital industry can be a significant contributor to and driver of Australia's economic recovery and the development of Australia's industries of the future.

At this time, we believe it is vitally important that steps be taken to strengthen collaboration between private sector firms and universities to ensure that Australia can continue to build its innovative capacity to drive the next wave of economic growth for the long-term. There is a significant economic payoff for the nation which comes from the scaling-up of new fast-growth businesses: these businesses will create new industries and new high-value jobs. We must ensure that investment into research and innovation is maintained in the short-term, given empirical data tells us that these areas can see a drop-off in support following a major economic shock such as a recession.

A sustainable funding pipeline must be supported through a framework that better supports commercialisation of world-leading research and ideas, early-stage businesses will have the ability to drive innovation and jobs growth for the Australian economy.

¹ Deloitte Access Economics (2018) *Private equity: growth and innovation*, April



The Council looks forward to participating in any future discussion about the themes set out in this submission as part of the consultation process. If you have any questions about specific points made in our submission, please do not hesitate to contact me or Brendon Harper, the Australian Investment Council's Head of Policy and Research, on 02 8243 7000.

Yours sincerely

Yasser El-Ansary
Chief Executive

Introduction

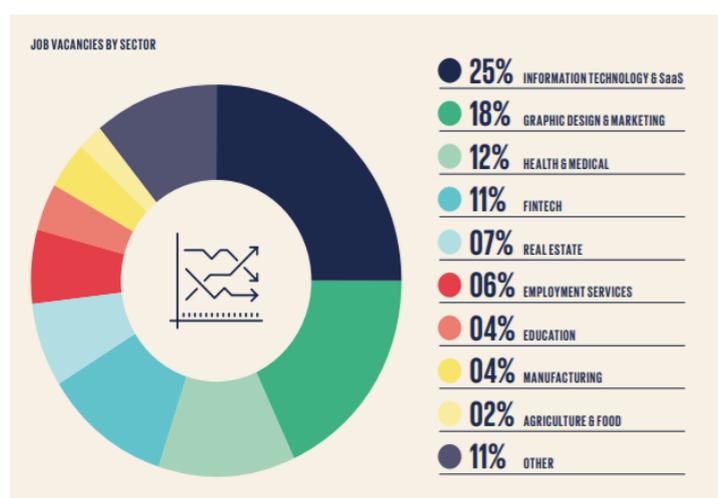
Through strong leadership and geographical separation, Australia has weathered the public health and economic implications of COVID-19 relatively well compared to most other developed nations. While the pandemic halted Australia's record period of uninterrupted economic growth, strong and decisive government intervention appears to have prevented what could have been a prolonged period of economic recession. This provides an opportunity to accelerate our transition into a more knowledge-based, high value-adding economy. The government's modern manufacturing initiatives are a positive step in this regard.

Despite our high standard of living, Australia has a long way to go on its transformation journey towards a more knowledge-based high-value adding economy. The latest available rankings of economic complexity, developed by Harvard University's Center for International Development, ranked Australia 87rd globally – the lowest ranked of all developed economies and lower than many developing countries. Since 1996, when Australia was ranked 57th globally for economic complexity, our standing has continued to deteriorate. Furthermore, Harvard University concludes that "Australia is less complex than expected for its income level. As a result, its economy is projected to grow slowly"², with Australia's growth projection to 2027 ranked 94th out of the 133 countries assessed.

This result is backed by the 2019 Global Innovation Index (GII), which ranked Australia 22nd globally, down from 20th in 2018, behind nations such as the USA, Republic of Korea, China and Iceland. "The 2019 GI found Australia to be weak across knowledge and technology outputs, creative outputs, and business sophistication, relative to the top 25 innovation nations globally."³ This shows that we need to do much more if we want to build and future-proof a sustainable and growing economy that can attract talent and capital from international markets.

It is therefore important that the economic challenges that Australia faces are recognised and tackled through leadership on long-term and visionary policy reforms. Industry as a whole has a role to play in informing and engaging with all sides of politics on these challenges. This includes the private capital industry, which invests in a wide range of Australian businesses, be they early-stage tech start-ups or long-established agricultural or manufacturing businesses. In particular, our members seek to invest in high-growth companies that use that capital to expand their workforce, increase sales growth and engage in new research and development.

Over the past decade, venture capital has been at the forefront of driving innovation through investment into businesses supported by new technologies in areas such as FinTech, cyber security, food technologies and health and medical services.



Source: Australian Investment Council

This is reflected in recent research by the Australian Investment Council⁴ which shows jobs in information technology or that are technology driven, account for a large proportion of job vacancies in venture capital-backed companies. The analysis found 1478 job vacancies in the portfolio companies of eight of Australia's most active VC firms, which represent approximately one-third of the domestic VC ecosystem.

Information Technology dominates job vacancies with 300 positions available (20.3%) and when combined with Software as a Service positions, they represent one quarter of the available jobs. Graphic Design & Marketing showed the next

² Harvard University's Center for International Development, *Atlas of Economic Complexity*, accessed 25 January 2021

³ Senate Select Committee on Financial Technology and Regulatory Technology, (2019) *Issue Paper*, p.3

⁴ *Future Jobs Barometer*, Australian Investment Council, March 2021



highest job vacancies (265 positions, 17.9%), followed by Health & Medical Services (182 positions, 12.3%), and FinTech (56 positions, 2.6%).

This could be boosted further through closer collaboration between industry and universities to support and accelerate the commercialisation of research in industries aligned to jobs and businesses of the future. This would help drive innovation and boost Australia's sluggish productivity growth. It is recognised by the OECD that businesses which invest in research are generally more productive, with turnover growth for high R&D intensity firms between 5.9 to 7.3 times higher than low R&D intensity firms.⁵

To realise the economic gains from the scaling-up phase of early-stage businesses, it is imperative that initiatives are put into place now to support the ongoing investment needed to sustain and grow our innovation ecosystem. It is important for the nation's prosperity that innovation coming out of universities and Australian businesses attract local funding, to safeguard against those ideas being transferred offshore – if that were to occur on a systemic basis it could lead to a permanent loss of intellectual property rights and the associated economic output and job creation outcomes in the domestic market.

These issues are addressed below in our responses to the discussion questions for this consultation.

Discussion Questions

1. Mission-driven research

a) Are Missions the appropriate priority-setting mechanism? Should they be accompanied by smaller, targeted Challenges?

As Australia transitions out of the COVID-19 pandemic we must ensure that the economy is underwritten by big gains in innovation and technology to drive increased productivity: achieving this will help to boost our global competitiveness and attract long-term investment from domestic and offshore sources. The Council supports 'mission-driven' research that serves a purpose in aligning national priorities with research commercialisation that will attract investment to scale-up companies for growth and expansion, and in doing so, create new employment opportunities into the future. A small number of targeted Missions should be identified as priorities for industry and university collaboration. However, these Missions should not in any way place constraints on innovation and new industries; indeed, it is university research that may well lead to the identification of new market opportunities for Australia, which in turn may lead to the formation of new Missions. In this context, Missions should be reviewed on an ongoing basis to maintain a dynamic ecosystem that supports innovation and commercialisation of new concepts as they discovered.

b) What criteria should be used to select Missions?

We believe it is important that commercialisation of university research is aligned with Australia's future industries which will underpin employment and economic growth. The key elements to success will be prioritising industries where Australia is already – or could be – a world leader, and 'going narrow and deep' in developing these industries.

The six core industries outlined in *Australia's Modern Manufacturing Strategy*⁶ could be used as the criteria for selecting the Missions. These industries include: Resources Technology & Critical Minerals Processing; Food & Beverage; Medical Products; Recycling & Clean Energy; Defence and Aerospace. Areas where Australia has a comparative advantage such as AgTech and Solar Energy could be used to drive the focus of the selected

⁵ Department of Industry, Science, Energy and Resources, *Australian Innovation System Report*, 2017.

⁶ *Make it happen: The Australian Government's Modern Manufacturing Strategy*



Missions. As a natural progression, university research will uncover new industries which could be added to the list over time.

The Council recommends any selected Missions are underpinned by technology as a business enabler. The productivity-enhancing impact of a vibrant innovation and technology sector can extend across almost all existing industries while strong domestic innovation and technology skills can develop new industry sectors, such as artificial intelligence and biomedical technology.

c) Is Australian research sufficiently linked to demand? Where are the opportunities to link supply to demand?

Currently, university research is predominantly focused on publication outcomes and the impact of achieving published research in order to secure positive global rankings. As has been demonstrated in numerous other sector reviews over recent years, this driver has skewed the focus of research and resulted in lost opportunities to translate and commercialise research into viable businesses.

It may well be that the research is linked to demand, but there is a knowledge and research translational gap between universities and the private sector. This is highlighted in the fact that just 1.6 per cent of innovating business in Australia collaborate with university research.⁷ As Australian researchers have a low rate of co-publishing with corporate co-authors compared with other jurisdictions (ranked 25th out of 35 OECD countries), and 23rd out of 34 OECD countries⁸ for the number of full-time equivalent business enterprise researchers (3.9) per thousand in industry in 2017, it is abundantly clear that there is more that should be done to foster an improvement in this area of collaboration.

Opportunities to link supply to demand will first require an understanding of why there is a low level of cooperation for research commercialisation among universities and industry. The Council recommends an environmental scan of university and private sector practices be conducted to gain a deep understanding of where there are barriers to translation and commercialisation and where there are areas of research excellence that could find viable market opportunities.

d) How can university researchers identify this demand?

The Council recommends that work be done to explore the merits of appointing a greater number of translational research managers across the tertiary sector to facilitate closer cooperation between university researchers and industry. The managers must have a deep understanding of the research being undertaken in their universities and have the capacity to develop and nurture relationships across business and industry with a view to achieving better commercialisation outcomes from the university's investment into research. It is envisaged industry experience will be a critical success factor for these roles. To the extent that Australia does not possess a sufficient depth of talent domestically, we should explore how best such talent and experience can be imported into the country in order to help transfer knowledge and skills to local counterparts.

2. Stage-gated Scheme design

a) Is a stage-gated model suited for the purpose of the Scheme?

In our view, a stage-gated model that allows for the selection of research projects with commercialisation potential, backed by public funding at the proof of concept and scale up stages, is a viable proposition. First, because it would provide a level of de-risking for future investors and second, it would allow for research that may otherwise remain at the publication level to be taken to the translational phase and potentially commercialised into successful new businesses. This would provide significant benefits to industry and research institutions, and deliver economic payoffs for the Australian community more broadly.

⁷ Department of Industry, Science, Energy and Resources, *Australian Innovation System Monitor*, 2020.

⁸ OECD, *Main Science and Technology Indicators*, Vol. 2019/2.



b) What is the appetite from industry and private investors to participate in such a Scheme?

Striking a balance between risk/reward is essential in attracting capital that can realise positive returns on investment. A sizeable proportion of the Council's private capital investment firm members invest into companies at the commercialisation and early growth stages of their life cycle. The stage-gated scheme would provide a level of de-risking in the translational phase which – all things being equal – would attract investment capital.

c) How should any stage-gating process be defined to ensure any additional incentive is maximised?

To facilitate the involvement of industry and research institutions, the stage-gating process would need to clearly define ownership of intellectual property and any equity holdings from the outset to ensure the risk/reward equation is attractive to private capital investors who will underwrite the risk in order to realise the potential commercialisation outcomes. A central register could be established for universities participating in the scheme. This could include criteria on the projects, their relevant industries and relevant papers published.

d) How should projects be selected?

Researchers could seek to participate in the program through a formal application process which would describe their project, including the underlying science and intellectual property rights, any (international) competition and the potential for commercialisation. The application could be accompanied by a high-level business plan. Applications would be assessed by a panel of experts including venture capital fund managers, industry and government who would determine a shortlist of projects. Researchers on the shortlist would pitch their projects to the panel and successful candidates would receive grants for proof of concept funding.

e) How should the success of projects be measured?

Recommendations in the *Collaborations between the Public and Private Sectors: The Role of Intellectual Property Final Report*⁹ are still relevant in this respect. These include:

- establishing an evaluation framework that complements excellence in research for Australia and seeks to measure the impact of research, including metrics for collaborations with industry;
- increasing reward mechanisms for researchers that are directly linked to university/industry collaboration performance; and
- increasing the weight given to industry collaboration and engagement activities in appointment and promotion criteria for individual researchers.

3. Incentives for participation

a) What broader incentives influencing the business and university sectors may influence their participation in a Scheme?

It can be argued that, in general terms, researchers have little or no incentive to participate in research translation in Australia. While many researchers want to take their research forward to the translational and commercialisation stages, time constraints, lack of funding and reward for effort are constraining this progression. This is further exacerbated by funding and career success which focuses on publication in peer-reviewed journals and conference presentations rather than research commercialisation. Introducing a recognition scheme for universities and academics actively participating in research translation would help broaden the focus from just published research to incorporate research commercialisation.

b) What would motivate businesses, universities or private investors to invest in this Scheme?

De-risking research commercialisation in the early stages through vetting the merits of the research and providing financial support to develop proof of concepts would provide incentives for investors. The right framework for de-risking the project for investors would have the flow-on benefit of attracting investment capital to good ideas which

⁹ *Collaborations between the Public and Private Sectors: The Role of Intellectual Property Final Report*, 2012 September



would in turn lead to a greater pipeline of new innovative businesses. This will provide direct benefits to universities, businesses, private investors and the economy as spin-out companies and start-ups from research organisations can grow into large, innovative companies.

Government support through a co-investment fund

A meaningful and proven way that the government can work with the private sector to boost investment for Australian entrepreneurs and Australian businesses over the medium-term is to utilise well proven co-investment funding programs.

A co-investment fund would have very little, or no, impact on the federal budget. It would potentially require an allocation of funding from the budget, which would amount to a capital account investment which would essentially be budget neutral. This program could be modelled on established structures using qualified fund managers.

For example, the Biomedical Translation Fund is a program structure that is well recognised within government as a leading private and public sector collaborative model and could form the basis for a new national co-investment fund. There are alternative models for such programs which could assess the merits of a structure that is based on a 'fund-of-funds' type approach, versus direct investment into underlying investee businesses. The private capital industry is open to canvassing the relative merits of each approach, which takes account of the priorities of the government in this area of policy.

Government co-investment to support early stage and high growth businesses is a well-tested policy response. Co-investment programs are heavily used in the UK, USA, Canada, New Zealand, Germany, France and many other countries across the globe. Domestically, various co-investment programs exist at the state level, complemented by targeted national programs. The Council can provide examples of these programs upon request.

c) Aside from co-funding, should universities or businesses have any additional requirements for participation?

There is an opportunity to further incentivise researchers by including them as expert advisers or directors on the companies developed through commercialisation of their research.

4. Industry-university collaboration

a) How may the Scheme incentivise or support better industry-university collaboration?

Utilise the expertise of the venture capital fund managers to partner with university research arms for the selection and commercialisation of research and investment into startup and early-stage companies that have good potential to provide employment and growth opportunities within Australia. Introduce translational research managers at universities – see 1d) above.

b) Would an Industry PhD program help improve collaboration outcomes?

The Council is supportive of an Industry PhD program that would build the capability of Australia's research academics in research translation and commercialisation and would help to reset the objectives for successful research outcomes. Building this capability would facilitate an alignment of university and industry objectives to achieve better collaboration outcomes and commercial success.

c) Are there skills gaps in academia or business that inhibit collaboration or commercialisation?

Currently there is a disconnect between the administration of universities and their research staff with universities often making demands over intellectual property and commercialisation of research that can sometimes have the effect of disincentivising commercial research outcomes. In general, university researchers have limited experience when it comes to the translation and commercialisation pathways for their work. To incentivise participation in a research commercialisation scheme, a capacity for translation needs to be established through training and guidance material to bring Australian researchers into alignment with researchers in other countries that have a more established track record both individually and within their institutions.



Meanwhile, industry is accustomed to working with the development of products and services that are relatively proven. This can cause some challenges when dealing with academic researchers who are subject to onerous ethics requirements and who may take several years or even decades to develop a proof of concept for their research.

The *Collaborations between the Public and Private Sectors: The Role of Intellectual Property* Final Report¹⁰ recommended the development and promotion of educational resources to assist industry and researchers to form and conduct collaborations. Resources should be easily identifiable and accessible to all stakeholders, particularly and be supported by relevant training. This approach has been successfully adopted by other countries as a mechanism to bridge the knowledge gap between industry and research.

Bring the best and brightest talent to Australia

Australia has a unique opportunity to be a 'destination of choice' for high calibre talent through its post-COVID-19 position, its attractive lifestyle, stable political system and future growth opportunities. To accelerate research commercialisation and the development of new industries, the Council recommends that the government's Global Business and Talent Acquisition Taskforce and Global Talent Scheme be utilised as a mechanism to attract the best and brightest talent from offshore while Australia builds a local talent base. The current environment may be conducive to encouraging the Australian diaspora who may have developed specialist skills overseas to return home. Translation and commercialisation skill sets may be one key area to focus on as part of broader efforts in this context.

d) How can we increase collaboration between university researchers and industry, particularly amongst SMEs?

The Council is supportive of innovation districts that connect universities with industries to create a culture of collaboration, innovation and public engagement for the development of new businesses and industries. Innovation districts are central for knowledge-based and novel economic activities with distinct benefits stemming from the co-location of researchers and industry.

Establishing innovation precincts with a specific industry focus – such as the Melbourne Biomedical Precinct¹¹ – would build significant opportunities for research commercialisation. The Melbourne precinct is amongst the top three biomedical research clusters in the world. It includes the University of Melbourne, Monash University, CSIRO, CSL Limited, Royal Melbourne Hospital, the Bio21 Institute, the Walter and Eliza Hall Institute and Biomedical Research Victoria. CSL's research and development headquarters is also located within the precinct.

The Council recommends government fast-tracks the commitment outlined in the *Statement of Principles for Australian Innovation Precincts*, Report to create a...“future where innovation precincts are an integral part of the broader national innovation system by 2030.”¹²

¹⁰ *Collaborations between the Public and Private Sectors: The Role of Intellectual Property* Final Report, 2012, September

¹¹ [Melbourne Biomedical Precinct](#)

¹² *Statement of Principles for Australian Innovation Precincts, October 2018*