

University Research Commercialisation

April 2021

The Committee for Economic Development of Australia (CEDA) is pleased to provide this submission in response to the consultation paper on University Research Commercialisation. CEDA is an independent, membership-based think tank, with almost 700 members across the business, government and not-for-profit sectors, including most Australian universities.

CEDA pursues better economic and social outcomes for the greater good. Australia's success over coming decades will be underpinned by having a dynamic, competitive, and vibrant business sector that is innovating and creating new sources of value in our economy. To this end we have established a business dynamism and competitiveness research program exploring how dynamic Australian companies are (e.g. through the capabilities and risk attitudes of managers), and the steps necessary for Australian business to become more dynamic and innovative.

One such step is facilitating more effective collaboration and commercialisation of research between universities and businesses. Such efforts have the potential to build on Australia's impressive economic recovery to date, provide alternative revenue streams to universities and contribute to Australia's longer-term prosperity by stimulating investment, innovation and productivity growth.

CEDA supports a targeted and coordinated mission-led approach.

CEDA supports an ambitious, mission-led approach to tackling major challenges of national importance. Missions should be bold and inspirational, with wide relevance to society.¹ Missions should also be complemented by smaller, targeted challenges that create clear, time-bound targets for investment and innovation.

The Federal Government should avoid setting too many missions as this could result in the fragmentation of intellectual capital, investment and risk. Successful missions require consolidated efforts. The CSIRO has already announced a program of 12 national missions, which exceeds the number of national priorities set in jurisdictions such as the UK and Japan.² The NSW R&D Action Plan has also established a missions-led approach – the first mission to better prepare for and respond to bushfires is likely to overlap with the CSIRO mission of mitigating the impact of natural disasters.³

CEDA recommends aligning the commercialisation scheme with existing areas of national priority, rather than setting new missions. Missions should also be coordinated with relevant initiatives underway at a state government level.

While the consultation paper explicitly asks for suggestions to encourage participation by small and medium-sized enterprises (SMEs), CEDA recommends focussing on supporting successful businesses and promising ideas of all

¹ Mazzucato, M. (2021), *Mission Economy: A Moonshot Guide to Changing Capitalism*, Allen Lane.

² CSIRO news release (August 2020), [CSIRO sets sights on new 'Team Australia' missions program](#).

³ Accelerating R&D in NSW Advisory Council (2021) [Turning Ideas into Jobs – Accelerating Research & Development in NSW Action Plan](#).

types. Missions should spur action across disciplines, sectors and actors, to tackle goals (and the technologies required to support these goals) that businesses working individually are less likely to support.⁴

A range of mechanisms are needed to facilitate better collaboration.

The consultation paper references potential mechanisms to bring together the supply of research with the demand for research. Roundtable discussions with CEDA members have identified significant barriers to collaboration between universities and businesses. There is a need for better understanding of needs and capabilities on both sides, and for a common point of engagement. Businesses want to know how to identify the knowledge that currently exists within universities, and would like a way to effectively engage with the university sector as a whole (rather than relying on ad hoc relationships or approaching each university individually). Universities want to better understand the ways in which businesses want to engage, and need better ways to showcase their capabilities. Academic staff can lack the skills to demonstrate their capabilities in a way that resonates with business. Sharing data is also critical to sparking innovation.

A traditional market framework of supply and demand is more appropriate when there is a well-defined problem in search of a solution – and even then markets may not produce an optimal outcome if broader public benefits are not accounted for. Effective collaboration does not always begin with a well-defined question. Unlike the linear model of technology readiness presented in the consultation paper, in reality the research and development process is not always linear, and often serendipitous.⁵

Sometimes it is only when businesses and universities work closely with one another that they make new discoveries or find innovative ways to apply existing knowledge. These connections help to provide real world problems to basic researchers, and better data, tools and techniques to applied researchers.

One of the strategic priorities of the NSW R&D Action Plan is to establish an R&D matchmaking platform. This new platform, as well as previous attempts such as UniGateway in Victoria, should serve as valuable case studies for the national scheme.

Establishing long-term partnerships between businesses and universities is a particularly effective way to foster collaboration. There are many ways to encourage this, including entrepreneurship programs, student internships, precincts and hubs, and collaborative use of specialised technology capabilities and other facilities.⁶ Committing to programs of collaborative work also fosters long-term relationships, although businesses typically prefer to start slowly by first committing to a single, smaller project.

One way to strengthen links between supply and demand would be to increase the number of people with experience in both research and business. The US does this well, with around one third of all early career doctorate holders in the social, behavioural and economic sciences employed in business or industry.⁷

CEDA supports an industry PhD program. Internships have proven to be effective ways to foster collaboration, and to help businesses access and understand the vast stores of existing knowledge within universities. Many businesses have a lot to gain from learning about existing technologies, which they can then apply in creative ways. An industry

⁴ Mazzucato, M. (2021), *Mission Economy: A Moonshot Guide to Changing Capitalism*, Allen Lane.

⁵ For example, see Ben Shneiderman's critique of the linear model of research and development and alternative framework, available at <http://www.cs.umd.edu/hcil/newabcs/>.

⁶ One example of success is the UK Catapults network, which has been much more successful in building deep, long-term relationships than one-off programs – see UK Department for Business, Energy & Industrial Strategy (2021) [Catapult Network Review](#).

⁷ National Center for Science and Engineering Statistics (2019), [Survey of Doctorate Recipients, 2017](#), Appendix Table 5.

PhD program could also be an effective way to increase post-doctoral employment within Australia's most innovative companies.

The federal government's model for university research commercialisation therefore needs to permit and support a range of mechanisms for business and research collaboration. In some cases, this may include building deeper formal and informal links through physical proximity (e.g. hubs), while in mature markets (where there is a well-defined demand for research) it may involve more transactional platforms.

Governments can play a critical role in de-risking private investment.

CEDA agrees that government funding can play a critical role in de-risking private investment, particularly early-stage, high risk investment. CEDA supports Mariana Mazzucato's view that risks need to be effectively shared – government should be the investor of first resort not the lender of last resort. Financing should be tailored to support the different risks and stages of missions (e.g. grants may work best in the early, highest risk phase).

As well as learning from programs in the US and Japan, there may also be opportunities to adapt or scale up existing programs here in Australia, including the national Business Research and Innovation Initiative or the new Small Business Innovation Research program in NSW.⁸

Australia should also look to draw on the most effective aspects of financing mechanisms in smaller economies like New Zealand. The New Zealand Callaghan Innovation non-recourse loan program began in 2015 as a pilot. In 2020 due to the success of de-risking science commercialisation with university intellectual property, the size of the loans was increased from \$450,000 to \$750,000 while only requiring \$250,000 of matching equity funding from investors. This provided university start-ups with \$1,000,000 of initial funding to support their establishment in the first two or three years. Importantly the commercialisation teams could obtain a \$35,000 grant to research and deliver a pre-incubation report to attract the support of investors. This program has been successful because it attracts investors into the science commercialisation sector due to the government seriously reducing the risk of the initial company formation, while still requiring investors to have meaningful 'skin in the game'.

Governance arrangements should be based on risk and broad expertise.

Experience from other jurisdictions suggests that a hybrid of central coordination and decentralised responsibility for missions works best.⁹ The national scheme will need an advisory board with deep experience across all aspects of research and commercialisation, to assess the performance of the scheme and advise on any necessary adjustments to its operation over time. A separate, independent panel of experts should be convened to select projects and oversee implementation. These experts should be selected with an eye to the risk appetite in selected areas – both in terms of the risks that the government is seeking to encourage and also those risks it is seeking to manage. Governance arrangements are too often dominated by those risks that need to be managed, while neglecting to encourage positive risk taking.

Robust metrics are needed to design solutions and measure performance.

While few would dispute the overall finding of underperformance in research commercialisation, the metrics we choose to measure our performance matter. There are information gaps in what businesses are currently doing to

⁸ Accelerating R&D in NSW Advisory Council (2021) [Turning Ideas into Jobs – Accelerating Research & Development in NSW Action Plan](#).

⁹ Accelerating R&D in NSW Advisory Council (2021) [Turning Ideas into Jobs – Accelerating Research & Development in NSW Action Plan](#).

improve collaboration and commercialisation, and the extent to which this activity and expenditure is being converted into outcomes. The National Survey of Research Commercialisation has ceased, and the findings of the Innovation Metrics Review have not been publicly released. Accurate and timely measurement is important for designing the right solutions, bringing about the right cultural change, and assessing progress in the future. A new model for university research commercialisation should be underpinned by an effective and comprehensive suite of metrics to measure performance and incentivise the right behavioural change from the research, business and government sectors.

Broad metrics are also required to determine what success looks like for each mission. Traditional cost-benefit and net present value techniques are not well suited to analysing ambitious, long-term projects with potentially large public benefits.

CEDA consents to this submission being made publicly available and would be pleased to continue working with the Department, universities and businesses in pursuit of improved collaboration and commercialisation.