



Productivity Commission's 5-Year Productivity Inquiry

The University of Melbourne Submission on the Interim Reports

Introduction

The University of Melbourne welcomes the Productivity Commission's second five-year Productivity Inquiry. In this response, the University addresses a selection of the issues raised in the Interim reports, focussing on Report 3 and Report 5. The higher education sector plays an important role in educating the nation's future workforce and produces much of the nation's novel and applied research that enables firms to become more productive. Research translation occurs across the disciplines including in the social sciences. There is significant scope for innovation, through novel and diffused applications to boost productivity, and recognising the role of universities in Australia's ecosystem is fundamental to devising policy and funding settings to incentivise desired outcomes (Report 3). The nation's future productivity also relies on a properly funded university sector that enables institutions to deliver fully funded research and education and training. The Job Ready Graduates funding arrangements have rightly been identified as flawed and in need of urgent reform (Report 5).

For further information or to discuss these issues further, Dr Julie Wells, Vice-President Strategy and Culture

Interim Report 3 - Innovation for the 98%

Diffusion and novel innovation are both important

In its report, the Productivity Commission argues that government policy has focused too much on cutting-edge innovation that does not apply across large parts of the economy. It suggests that the importance of diffusion, or small changes across many firms, is often missed. The University of Melbourne agrees that knowledge transfers across the broader economy are essential to increasing Australia's productivity but would also argue that novel innovation is crucial, generating large returns on investment, supporting startups and new jobs, and creating technologies that change lives as they are diffused across many firms. Novel knowledge is often the precursor to a productivity-enhancing impact once diffused. For example, [CSIRO](#) invented and patented wireless technology that has subsequently revolutionised the way we work all around the world. This was evident during the pandemic lockdowns where working from home was enabled through the once novel Wi-Fi technology that through diffusion has become ubiquitous. While we support a renewed focus on diffusion, it should not occur at the expense of the essential novel knowledge part of the ecosystem of productivity improvement.

Supporting novel innovation within Australia also means that innovations may be tailored to the local context. For example, in June 2021, the University of Melbourne and collaborators launched a [world-first project](#) that uses artificial intelligence (AI) to predict traffic congestion up to three hours ahead, optimising traffic in large cities and improving road safety as part of the University's smart cities ecosystem. The University, partnered with PeakHour Urban Technologies, the Victorian Department of Transport, and Telstra, has created a large-scale AI application hosted on Amazon Web Services, which can predict traffic conditions across Melbourne to reduce delays in hotspots. Local innovations such as these have the ability to unlock productivity across our cities.



Research policies need to support basic research as well as applied research

The benefits of research commercialisation are clear, driving economic growth and finding solutions to local problems. However, it is crucial that research policies support the full pipeline of research, including basic research. Basic research fuels the pipeline of discovery that, in time, results in translation and commercialisation opportunities. In short, innovation cannot happen without basic research.

Concerningly, funding for basic research at Australia's universities has been declining as a proportion of their total research activity for the last 30 years. The proportion of all R&D funds invested in pure and strategic basic research has also continued to decline to 37 per cent of all R&D expenditure, while applied research is now at an all-time high of 53 per cent. The Australian Government should renew its commitment to investing in basic research, including by revising the Australian Research Council's (ARC) legislative mandate and programs, supporting programs such as the Co-operative Research Centres as one mechanism to bring industry and researchers together, and by better measuring the broad impacts of publicly funded Australian research. An example is the [ARC Dairy Innovation Hub](#), housed at the University of Melbourne and drawing on the Bio21 Institute. The Centre works closely with industry to develop solutions to industry issues and to enable improved products. The close working relationship through the Hub aids diffusion of new knowledge, while being able to draw on the basic research developed out of Bio21. A recent project has our researchers working on a solution to [reduce the energy used to produce milk powder](#) by applying an emerging membrane technology called forward osmosis which was originally developed for water treatment.

More broadly, maintaining the amount and the quality of research currently delivered by Australia's universities is expensive, requiring ongoing investment in infrastructure and high-end equipment. It has been estimated for Go8 Universities that the full economic costs of research ranges from an additional 72 cents to 92 cents per dollar earned (i.e. for every direct research dollar earned the institution spent an additional 72 cents to be able to deliver the research). Australian Government funding falls well short of meeting these full costs. The gap between the full cost of research and Government funding has been growing, with universities largely covering the shortfall through international student revenue, and to a lesser extent through philanthropy and domestic tuition fees.

Recent developments have exacerbated the challenges associated with the underfunding of research. The Job-Ready Graduates funding reforms effectively included a reduction in base support for research, removing the proportion of CGS funding received by universities that had traditionally been used to cross-subsidise research activity. While the Research Sustainability Working Group was established in 2020 to provide advice on potential research funding reforms to take place alongside the Job-Ready Graduates changes, the Government did not introduce any such reforms. More significantly, the impact of the pandemic on international fee revenue will limit the capacity to cover the shortfall in research support. The University would therefore argue that any innovation strategy needs to include a commitment to covering the full costs of research activity to support the sustainability of university research.

Industry engagement is about more than commercialisation

The Productivity Commission suggests that when strengthening industry connections, universities should look beyond just direct research commercialisation, as channels for knowledge transfer are considerably broader. The University of Melbourne supports this notion and engages with industry through multiple channels. For example, through staff/post-graduate researcher placements ([APR.Intern](#) run by the Australian Mathematical Sciences Institute and the Australian Government's [Innovation Connections](#)), access to research infrastructure, as well as joint projects with industry through a large variety of funders.

The University agrees that more could be done to incentivise labour mobility between universities and industry, particularly for early-career researchers. For example, recent changes to the research block grant allocation formula intended to incentivise greater numbers of industry-embedded internships included a requirement that an agreement for the internship be in place within the first 18 months of a student's candidature. This weakens the incentive to grow internships where they are most valuable: it is towards the end of a student's candidature that they are most sought after by employers, both because their research skills are more advanced at this point, and because businesses are often seeking interns that will be available for employment in the near future. The 18-month requirement should be removed to open up this productivity-boosting initiative.

The University also supports research contracts, including consultancies, as this is often an effective method of diffusing innovative ideas and research. However, it is important to make a distinction between *research* and *non-research* consultancies. Many universities have ceased university-run non-research consultancies as these did not diffuse new knowledge and were found to conflict with and dilute research effort. More could be done to support research consultancies and reduce barriers, including through automated contracting tools.

The Productivity Commission suggests that skilled migration could provide a near-term option for accessing skills and knowledge unavailable in the domestic labour market. The University agrees with this assessment and would encourage the Government to consider ways to facilitate greater skilled migration, including by extending post-study work rights for graduates holding a bachelor degree or higher. Further, the Government could introduce a High Potential Individual (HPI) visa, like [that in the UK](#), to attract and retain world-leading researchers and enable graduating international PhD students to remain in Australia for longer.

Efforts to increase diffusion need to go beyond industry PhD programs

The Productivity Commission discusses the Federal Government's National Industry PhD Program as a method for increasing the supply of researchers with industry-relevant research experience. The University supports programs such as these as a means to increase collaboration between universities and industry. However, the University agrees with the Productivity Commission's assessment that increasing innovation outcomes and diffusion requires more than supply-side measures.

Many PhD graduates already have industry experience. However, most businesses do not have the capacity to fully utilise PhD graduates. As the Commission notes, companies often struggle to establish in-house research facilities because they require a significant investment of time and money – they cannot be stood up overnight. Businesses also need to accept that the research they undertake may not produce immediate financial returns. However, many firms do not have the



resources to take this long-term approach or to absorb the risk. This is particularly the case for SMEs, which dominate the Australian economy. As a result, any policies that aim to increase diffusion must consider incentivising and supporting businesses, including through targeted tax incentives (discussed further below) in ways that recognise the barriers for business.

Place-based policies (precincts)

The Productivity Commission argues that while clustering may promote innovation diffusion among participating firms, place-based innovation policies are unlikely to yield a significant and wide-reaching diffusion dividend. The University of Melbourne does not agree with this assessment. Australia's low innovation outcomes can be partly attributed to Australia's risk-averse business and investment culture and [flatlining investment by business in R&D](#). Place-based innovation precincts provide safe places to experiment and fail, allowing entrepreneurs to learn relevant skills to establish new companies (creating new high value jobs). This helps to grow a new business and investment culture that accepts and manages risks, and provides an environment for entrepreneurs to thrive, preventing brain drain.

These precincts also encourage other companies to establish themselves locally, increasing opportunities for collaboration and diffusion and creating jobs. For example, the [Melbourne Biomedical Precinct](#) alone is made up of over 40 hospitals, medical research institutes, biotechnology organisations and universities. However, its reach goes beyond its geographical boundaries, with collaborations across Victoria, Australia and the world.

The decision by CSL to locate its new \$700 million global headquarters on Elizabeth Street in Parkville is a clear example of the attraction of precincts to research intensive businesses. CSL earns 90 per cent of its revenue outside of Australia and there is an argument for it to relocate its headquarters to the US or Europe. However, the Biomedical Precinct means CSL remains co-located with [key partners](#) such as the University of Melbourne, Walter Eliza Hall Institute, Bio21, Monash Institute of Pharmaceutical Sciences and others. Within its new headquarters within the precinct, CSL has created two floors which will serve as incubator, office and wet lab space for new biomedical start-ups. CSL is investing in "precinct infrastructure" which will foster new businesses setting up in the area and further enhance the biomedical eco-system which has allowed CSL to grow into a global biomedical giant. Other businesses which have recently established a presence in Parkville include genomics businesses Illumina, Seer Medical and BioNTech.

Similarly, the new [Cremorne Digital Hub](#) will be established as a global destination for innovation and technology, attracting companies from around Australia and the world. Led by a consortium of founding partners including the University of Melbourne, RMIT, La Trobe University and Artesian Venture Partners, the Hub will build on the existing technology precinct, which is home to over 700 businesses and 10,000 workers, contributing \$4 billion to the Australian economy each year. Cremorne is home to four of Victoria's ICT companies that have attained billion dollar valuations: MYOB, REA Group, Carsales and SEEK.

The new technologies, services and know-how developed in place-based precincts also create new products and services that address [priority sectors](#) (as identified by the State and Federal Governments). New technologies manifest in new high-value products and services that respond to national economic needs. For example, the University of Melbourne is one of the leading partners in the Melbourne Biomedical Precinct. The impact of this precinct was clear early in the COVID-19



pandemic, when researchers from the Peter Doherty Institute for Infection and Immunity – a joint venture between the University and Royal Melbourne Hospital – were the first to [grow the live virus](#) outside of China and share this globally, assisting with vaccine and anti-viral drug development. Similarly, the Doherty was the [first laboratory to establish a COVID-19 PCR test](#) in Australia and diagnose the first patient. The agglomeration effect in the precinct attracts further investment, industry co-location and attracts expertise. For example, the University, with State Government support, is preparing to establish the Australian Institute for Infectious Diseases, which has in turn attracted a substantial philanthropic gift to establish the Cumming Global Centre for Pandemic Therapeutics. The power of precincts to attract high value investment and human capital, which generates new knowledge, cannot be replicated at this scale through diffusion.

Diffusion does not happen on its own. The critical link, well recognised both in Australia and overseas, is that economies benefit most when they can connect centres of innovation with the wider economy. Universities have a critical role to play in connecting, acting as a trusted, knowledgeable '[innovation concierge service](#)' between innovators, entrepreneurs and the wider economy, especially the SMEs that employ most Australians. This service, such as that provided by [Melbourne Connect](#) and the MEC suite of programs, helps innovators navigate what can be a confusing and complex innovation ecosystem.

Innovation precincts in Australia are also located in a range of settings, from inner-city regeneration sites to regional locations. Given they deliver economic spill-over benefits to their immediate locality as well as economy-wide, they can support targeted jobs creation, industry growth and other place-based government agendas. For example, the University's [NorVicFoods](#) venture in Shepparton is designed to strengthen the agri-food innovation system in the Hume region of Victoria. Supported by Victorian Government funding, NorVicFoods develops solutions to specific innovation challenges in the region, working with industry partners such as Fonterra, SPC and Sensand and drawing on University academic expertise. Likewise, the University is a partner in the Mallee regional Innovation Centre based in Mildura and is backing research with local industry including in hydrogen, water and agri research through the Victorian Drought Resilience Adoption and Innovation Hub. This highlights the benefits of localised spillovers generated by place-based innovation activity.

Foreign Direct Investment (FDI)

The University agrees with the Commission's view that FDI can facilitate innovation diffusion to Australian firms. University research capability is one channel through which to attract FDI to Australia. For example, the University has partnered with the Victorian Government to attract FDI through the collocation of overseas firms in the Biomedical Precinct, such as Illumina, which has established its regional R&D effort in the precinct, including through the [Illumina-University of Melbourne Genomics Hub](#). The company is bringing novel knowledge to genomics and is upskilling researchers and clinicians through its technology which is being diffused across the precinct and elsewhere. This is also a demonstration of the utility of place-based activity having an impact on productivity – it was a significant consideration in the decision for the company to locate in close proximity to the health infrastructure, clinicians and researchers with a talent pool emerging through the University's graduates, PhDs and post-doctoral students.

R&D incentives

The Review of the R&D Tax Incentive by Ferris, Finkel and Fraser provides a set of recommendations for government to boost additionality and better align the program's objectives with desired policy outcomes. We agree with the Commission that "focusing eligibility criteria on personnel costs could stimulate additional absorptive capacity by bringing additional researchers into firms." (p39). While also noting the potential pitfalls to reform, we nonetheless support, once again, the previous review's findings and urge government to improve the policy settings to deliver a boost to R&D activity within firms. For example:

- Tighten eligibility under the R&D Tax Incentive program, including restricting permitted activities to those that deliver additionality;
- Introduce a collaboration premium for the R&D tax incentive program to encourage additional spending on collaborative research with public research organisations;
- Increase the early stage innovation companies (ESIC) tax offset rate so that it is internationally competitive;
- Consider new ways to deliver support, including through the tax system, for the development of innovation precincts to help facilitate greater knowledge exchange between research and industry; and
- Introduce tax incentives for industry to deploy innovation professionals to work with/in universities to drive enterprise and commercialisation. The employment of PhDs should also be a permitted activity under the R&D tax incentive scheme.

Interim Report 5: From learning to growth

Job-Ready Graduates reforms

The University welcomes the Productivity Commission's analysis of the Job-Ready Graduates reforms. We note that the current Government is committed to conducting a review of the JRG package and that the key challenges associated with the reform package will fall within the scope of Australian Universities Accord process.

The central component of the JRG package was the overhaul of CGS funding clusters and student contribution bands. There are significant problems with these changes that warrant emphasis here:

- Deficiencies in the cost of teaching study: There were significant limitations in the cost of teaching exercise that were used as the basis for the new funding rates, some of these limitations were acknowledged by the authors of the study. Contextual factors (e.g. relating to geography, scale, course level and research intensity) result in delivery costs for particular disciplines varying widely between institutions. Similarly, the use of average costs fails to account for the difference in delivery costs between sub-fields within the same discipline. This results in more expensive sub-fields in disciplines such as engineering being significantly underfunded compared to the cost of delivery. Despite this being a priority skills area for government, there is a risk that underfunding may result in it being economically unviable for universities to offer some sub-fields over time.

- There is little evidence that students respond to ‘price signals’: One of the stated policy aims of the JRG reforms was to encourage students to enrol in courses that address skills needs by reducing contribution levels in those fields. As noted in the Productivity Commission report, there is little evidence that students respond to price signals in this way. Enrolment trends over 2021 and 2022 do not reveal a shift in direction towards course areas with lower student contributions under the JRG changes. This was confirmed by [recent University of Melbourne research](#) which found that university applicants are not particularly price sensitive under JRG. However, the research also found that JRG has disproportionately affected women and Indigenous students in terms of paying higher student contributions. We support the Commission’s view that students are best placed to make their study and career choices, with the right information and support.
- Price may not be an effective incentive for universities either: The Productivity Commission’s report notes that universities have an incentive to enrol students in high-margin courses, with the possible result of providers overenrolling students in courses that are not deemed to be priorities. However, [recent University of Melbourne research](#) found no evidence of overt revenue-maximising behaviour among universities under JRG. This suggests that price signals may not be an effective incentive for universities either if the Government is seeking to control the supply of future labour.
- The funding changes include an effective cut to research support: the changes sought to align the funding universities receive for teaching with the cost of delivery, in effect removing the proportion of CSP revenue that universities have historically put towards research. The Productivity Commission’s 2017 *Shifting the Dial* report correctly stressed that the introduction of cost-reflective funding of university teaching should only be introduced with corresponding reforms that compensate for the loss of research support. The JRG changes failed to do this, as discussed previously. A roadmap towards achieving funding to cover the full cost of research at Australia’s universities is needed.

Allocation of funding for subsidised places

The Productivity Commission’s report examines possible changes to the way in which funding for subsidised places is allocated, with a view to encouraging more competition between higher education providers and more innovation in course design and teaching models. It revisits the concept of a voucher scheme, to create a system “where funding follows the student” and that stimulates greater “competition between institutions, as well as between the VET and higher education sectors.”

The University of Melbourne agrees that the system for allocating subsidised places should be responsive to demand, so that institutions and courses that have proven to be attractive to students are properly supported to meet student demand. However, there are significant issues with a voucher scheme, as conceived, as a way of achieving this. The previous Government’s proposed voucher scheme for the allocation of postgraduate Commonwealth Supported Places – included in the eventually abandoned 2017 reform package – would have introduced major administrative issues, with the Government itself needing to assess student applications for a finite number of places, to some extent displacing universities’ own admissions processes. The scheme would also have meant a lack of certainty on their year-on-year allocation of subsidised places. Such a lack of certainty would impede curriculum innovation, noting that providers typically need some degree of



confidence in medium-term enrolments and funding outcomes to embark on innovations in course design and investment in teaching and research infrastructure.

It is also not clear a voucher scheme accurately identifies the barriers to student choice. There is no obvious constraint to student mobility currently: domestic students are eligible to apply to any university in Australia and are free to change institutions part of the way through their course if they wish. Funding already “follows the student” in the sense that universities only receive the CGS subsidy and the student contribution for the students that they enrol. Universities compete for a finite number of domestic students as well as for international students that enrol alongside them. It is difficult to see what additional value a full-blown voucher scheme would add.

One genuine barrier to competition is funding arrangements that discourage innovation in curriculum design and that limit institutional diversity in the higher education sector. The current funding settings continue to have a bias in favour of bachelor-level courses: since growth funding is only applied to bachelor-level courses, universities suffer a funding penalty when utilising CGS funding for non-bachelor courses. This constrains the availability of, for example, sub-bachelor alternatives to a three-year bachelor degree, thereby limiting the options and pathways available to prospective students. Similarly, it limits the availability of postgraduate places for those students taking a professional entry pathway at this level or who may wish to retrain into a high demand field after some years in the workforce. The ‘funding envelope’ now used to fund universities should attract growth funding across its full allocation and allow universities to meet the market for demand in courses aligned with their missions.

Teaching quality

The Commission notes the importance of ensuring that teaching quality and relevance is prioritised by tertiary education providers, and flags information for students and performance-based funding as two means of encouraging a focus on teaching quality.

Information for students

The University of Melbourne supports the provision of information on the learning outcomes delivered by universities and other higher education providers. Transparency around these outcomes supports informed decision-making on the part of students and represents one part of a broader framework of oversight and accountability, acting as a driver of institutional improvement.

However, we do not support the introduction of a combined rating system (e.g. a star rating) of the kind suggested in the report. While it is suggested that a combined measure may be more likely to be used by prospective students, the simplification involved in this approach is a weakness rather than a strength. It oversimplifies teaching quality and the value proposition of individual institutions. The current approach that provides students and the broader public with data relating to learning outcomes (e.g. student satisfaction, graduate employment, completion rates etc.) does a better job of informing students of the considerations relevant to teaching quality.

Performance-based funding

Performance-based funding was introduced by the previous Government, with the first iteration of assessments taking place in 2019. As the Commission’s report acknowledges, while the aim of incentivising improvements in teaching quality by tying funding to student learning outcomes is understood, there are risks associated with this approach, including the introduction of perverse



incentives (e.g. to enrol fewer students from equity cohorts with lower than average completion, graduate employment etc), and the possibility of punishing institutions for contextual factors that are outside of their control, and that are not a reflection of teaching quality. If the current Government is to continue with some version of a performance-based funding policy, it is important it carefully manages these risks and adjusts the scheme accordingly.

Lifelong learning

The University of Melbourne welcomes the acknowledgement that lifelong learning will play an increasingly important role in Australia's skills system. "As working lives lengthen and the economy's composition shifts over time, the positive spillovers from lifelong learning may increase as occupations change more rapidly and workers are required to upskill or reskill to meet evolving skills needs." (p.76). Key elements of the University's course profile reflect a recognition of the value of access to higher education beyond the initial phase immediately following secondary school. Our suite of masters programs offers a re-entry point for existing graduates who are looking to change careers e.g. our two-year postgraduate programs in nursing and teaching allow for quicker entry into those fields for degree-holders than completing another bachelor degree. The University also provides rapid upskilling and reskilling that responds to emerging skills needs through its [Melbourne MicroCerts](#) courses and also bespoke courses co-designed with industry. Melbourne MicroCerts are designed to 'stack' to open pathways to further study and earn credit toward postgraduate degrees.

Noting the growing need for Australians to access additional education and training throughout their work lives, a combination of funding sources will be needed to support this:

- CSPs and HELP loans will have some role in supporting lifelong learning. An individual's entitlement to the CGS subsidy and to HELP loans are now both capped and this could impede Australians who are legitimately seeking to upskill or reskill.
- In addition to the existing tax incentives for businesses to invest in training their employees, consideration should be given to mechanisms by which businesses that directly benefit from workers upskilling can contribute to the costs of it.
- Consideration should be given to tax incentives for individuals to undertake training related to future (rather than current) employment. The ATO has run a consultation on this proposition.

Equity and access

Equity and diversity are major priorities in the University's *Advancing Melbourne 2030 Strategy*. The Strategy commits to increasing "opportunities for students with high potential from all backgrounds and to support them in succeeding", and to developing "more inclusive student pathways and partner with other education providers to do so."

The Productivity Commission report rightly observes that "completion of valuable training is the goal of education, not enrolment." (p.99). Widening access to under-represented cohorts is an important aim. However, lifting equity participation rates should be recognised as one measure of success among others. What is required is a whole-of-system approach to equity and access that aims to build awareness and aspiration at earlier levels of education and expands opportunities for under-represented cohorts to enter the higher education system. This will require support for some cohorts of students to achieve the learning outcomes intended in the relevant study program. The University of Melbourne has sought to adopt this type of holistic approach, developing initiatives



tailored to specific equity groups, supports for students at all course levels, and support across the full student life cycle.

We also note that the higher education sector's performance relating to positive outcomes for under-represented cohorts will be supported by policy and funding settings that encourage innovation and sector diversity. This will allow for a range of access points and curriculum offerings that meet the needs and interests of these cohorts. For example, the University has developed the Bachelor of Arts (Extended) and the Bachelor of Science (Extended) four-year degrees specifically to improve pathways to tertiary education for Indigenous Australian students. The degrees provide Indigenous students, who have not obtained the educational results for direct entry into the Bachelor of Arts or the Bachelor of Science, with a specialised foundation year of bridging subjects ahead of the degree program. At least one year of residential accommodation is required as part of the degrees, provided by a partnership with Ormond College and Trinity College. Students undertaking these degrees receive other support, such as guaranteed accommodation at one of the University affiliated residential colleges, where they are provided with academic, pastoral and social supports.