

Taking the long view of universities and their unique research role

February 11 2015, by Michael J. Biercuk



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Increasing university-industry collaboration and boosting the commercial return from research is [currently under review](#) by the Australian government.

The Minister for Industry (and recently for Science), Ian Macfarlane, has

said the government "[expects](#)" universities and research organisations to be "open for business" and do more on inventing, patenting and commercialising research.

But is this really a good idea? Is it good policy to ask – and even offer incentives for – university researchers to work on problems posed by or of primary interest to commercial entities?

On its face, improving ties to industry doesn't sound like a terrible idea, despite some reservations and observations of similar moves overseas.

It is widely recognised that university-led fundamental research has enormous [social and economic benefits](#). Why not support the process by an appropriate government-driven incentive structure?

Phrased a bit more cynically, the proposition sounds decidedly less favourable.

Try this hypothetical presentation instead:

It is widely recognised that university-led fundamental research has enormous social and economic benefits. Nonetheless, government should shift away from investing in these public benefits and instead subsidise industry by outsourcing university research teams – on the public purse – to help achieve short-term private gains for commercial entities.

University academics ask the big questions in science, technology, medicine, the humanities and the arts. They dedicate their entire lives to problems with the potential to truly change the world, even if no one will make money off them.

Who would take up that mantle if the best researchers started turning more and more towards short-term projects most likely to produce

capital returns for private investors?

The government's view

Chief Scientist Ian Chubb's [report](#) points out Australia's poor relative global performance in business collaboration and the patenting and commercialisation of university research.

The appropriate response, according to Minister Macfarlane, is for academics to "[make themselves relevant](#)". This implies that they aren't relevant at the moment – that they're working on the wrong things.

The criticism of Australian Research Council (ARC) grants by [some Coalition MPs](#) makes plain the that belief that academics are somehow failing the public isn't uniquely held by the Minister. Academics, in their minds, are awarded taxpayers' money that is "wasted on projects that do little, if anything, to advance Australians' research needs".

In order to boost the direct economic impact of Australian academic research – according to the general argument – we need appropriate incentives for academics to link more closely with industry. Academics need to start delivering what the private sector wants and needs.

Reports abound of new metrics for research performance based on "[impact](#)" and [patents filed](#) rather than knowledge gained and published, and even a possible [diversion](#) of ARC funds away from standard academic proposals towards industry-defined topics.

The value proposition

Putting aside the government's fundamental misunderstanding of how entrepreneurial and outcome-focused most academics are, what specific

additional value does an academic researcher bring to the economy at large, relative to, say, researchers working in industry? Why shouldn't academic researchers be given incentives to boost innovation by working on industry-focused problems that have more direct commercial impact?

For starters, as the Chief Scientist's [report highlights](#), the majority of local industry apparently doesn't even consider itself innovative.

Less than one in two Australian firms identify themselves as innovators. Just 1.5 per cent of Australian firms developed new to the world innovations in 2011, compared with 10 to 40 per cent in other OECD countries.

Businesses today are, by and large, focused on the short-term, and therefore are largely unable to consider investing in projects that might take a decade or more to realise a commercial outcome. They exist to generate profits for their leaders and shareholders, which requires constant revenue and profit growth today.

Universities, by contrast, exist only to engage in the generation and dissemination of knowledge. Relating to research, successful university programs therefore bring three main differentiating value propositions:

the ability to work on problems for the public good, with little or no commercial gain, but potentially large social value consideration of problems that might be of great commercial value in the long-term, but require dedicated research on timescales that are unacceptable to commercial entities investment in critical capital-intensive infrastructure needed especially for technical fields.

Universities have become almost uniquely positioned to focus on these challenging but vital problems which would otherwise fall through the gaps.

Developing vaccines for diseases such as tuberculosis and malaria – which provide low capital returns – are [great examples of this](#), according to the World Health Organization (WHO).

The world would benefit tremendously – socially and (in the long term) economically – due to improved vaccines for these diseases.

But research costs are high, and it's difficult to charge premium prices for immunisation against so-called "poverty diseases". There is limited financial justification for a private sector entity to lead a major program in this area. But university scientists drive this research forward for the good of humanity.

Interestingly, an increase in patenting by academics – as advocated by the Minister for Industry and Science – has been identified as an impediment to innovation in this space, an observation also made more generally by the Chief Scientist.

Infrastructure is more than just roads

Most important is the notion of infrastructure investment. It's critical to remember that Google, Facebook, Twitter and other high-tech companies only exist because long-term investments were made – using public sector resources – in building the hardware that allows for ultra-fast internet connectivity, or microprocessors powerful enough to handle countless transactions in a split-second.

Creating this hardware necessitated the construction of high-cost, special-purpose research infrastructure including precision labs that start-up businesses simply couldn't justify in the early days of these technologies.

The same is true today. With a few exceptions (which don't apply to the Australian technology sector), industry generally shies away from capital-

intensive R&D infrastructure projects.

Only universities are filling the gap, as demonstrated by major research facilities being [developed across the country](#) – such as the [Australian Institute of Nanoscience](#) at the University of Sydney – while industry is shuttering manufacturing centres (think auto industry).

Where to from here?

By all means, let's address legitimate shortcomings of Australian research, from the small number of unproductive academics and poor visibility of academic research with true commercial potential, to onerous and counterproductive IP policies in academia.

A thoughtful set of [recommendations](#) on science, technology, engineering, and mathematics (STEM) strategy that the Chief Scientist put forth provides some ideas on how to support the sector's ability to drive local innovation.

But perhaps after all of this discussion it's time to re-examine the original proposition and turn it on its head.

Let's provide incentives for local industry to truly collaborate with universities – to invest in the future through new public-private partnerships in critical areas with long time horizons.

And instead of asking universities to be more responsive to the short-term requirements of today's businesses – forsaking a long-term role only they can fulfil – let's make sure that universities are supported to undertake the research that will build tomorrow's industries.

Diverting academics away from long-term efforts conducted in the public interest creates a critical gap in the innovation system. And we

will all be poorer for that.

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Citation: Taking the long view of universities and their unique research role (2015, February 11)
retrieved 26 April 2024 from <https://phys.org/news/2015-02-view-universities-unique-role.html>

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