

Charles Darwin University

Boosting the commercial returns from research

Comments on the discussion paper

Are the issues soundly framed?

Leaders and governments routinely express dissatisfaction with the commercial returns on their country's publicly funded research and the inadequacy of university-business links in their jurisdiction. No one is more aware of the "never-enough" character of innovation, commercialisation and entrepreneurial networking than those in universities who are actually involved in the process. *Boosting the commercial return from research* covers a number of important topics, but overlooks two key characteristics of business and universities in the Australian innovation system.

Australian universities are successful businesses

The first priority of any business is its own vitality. Australia's universities are resilient and entrepreneurial institutions in a sector that is globally recognised for its successes. Our universities achieve success through competent governance and management, sharp focus on core business of education and research, unremitting pursuit of international opportunities, and swift and effective adaptation to shifts in the expectations of their many stakeholders. The most important role for Australian universities in boosting the commercial return from research is to continue to be successful global innovators in their core business of research and education. As Stephen Allott explains¹ the real questions for innovation policy are people centric. With adequate funds and ongoing community support Australia's universities will ensure that well-educated graduates and researchers are available to meet the requirements of business and other sectors.

A vibrant university system exists in Australia. "Supply side" failure is not the core concern and policy changes designed to control and modify the activities of Australian universities will miss the most critical

¹ 2006 City Lecture, available at https://www.chass.org.au/letters/pdf/City_Lecture_060306.pdf

needs. The appropriate public policy setting for universities is explained by former Cambridge Vice-Chancellor Alison Richard in her opening address to the Universities UK September 2008 meeting²:

*The quality of what we provide and our capacity to attract talent are both at risk. Ironically, in my view one of the greatest risks is driven by the growing appreciation of the relevance of universities, in many ways so welcome: the problem is that the **conception** of relevance is often narrow while the **fact** of relevance encourages meddling. As institutions charged with education, research and training, our purpose is not to be construed as that of handmaidens of industry, implementers of the skills agenda, or indeed engines for promoting social justice. Responsive to and helping shape the national policy context, we need the independence and autonomy to chart our individual institutional courses, and to experiment.*

The persuasiveness of this point is reinforced by the obvious fact that by independently and autonomously charting its course in education and research, Cambridge University enables many opportunities in the UK innovation system external to its own business. These include the breathtaking commercial success dubbed the “Cambridge Phenomenon³” -- the tendency for new science and engineering-based firms to spring up around Cambridge University. These have been often founded by talented scientists and engineers who built distinctive customer focused business models using a “soft start” approach to overcome the heavy capital demands of developing proprietary technology. Australian universities have, each in their own way, similar success stories about the way that their education and research has enabled opportunities in the commercial and business sectors.

It is important to recognise that the Cambridge Phenomenon was not built on the idea that there is something fundamentally inferior about universities performing R&D for government clients compared with business clients. Government procurement of R&D services has been an important feature of many countries’ innovation policy, and Australian governments are also heavy consumers of R&D (valued at around \$900,000,000 in 2012). It would be perverse and counterproductive to adjust the calculation of research block grants to favour business clients over government clients for university R&D services, given the critical role that university R&D conducted for government clients has played in developing commercial opportunities in many countries.

² <http://www.admin.cam.ac.uk/offices/v-c/role/speeches/20080910.html>

³ <http://www.cambridgephenomenon.com/>

Australian business is poorly positioned to boost commercial returns from research

Boosting the commercial return from research fails to analyse four key business statistics that go a long way to indicating the most promising directions for adjusting public policy.

First, there is a reprise of the oft-reported OECD Scoreboard showing the bottom-of-the-table rank of Australia for “firms collaborating on innovation with higher education or public research institutions” without acknowledgment of its telling counterpart: Australia also appears last on the OECD Scoreboard list for firms collaborating with suppliers and clients. It is safe to conclude that collaborative innovation by Australian firms is not inhibited by the university supply side, but by features and practices of the businesses that comprise the demand side. Australian businesses simply do not report entering into collaborative innovation with clients, or suppliers, or universities. Given this phenomenon, it is folly to expect supply side adjustments to universities to have great impact – although of course marginal improvements can always be made.

Secondly, the OECD Scoreboard places Australia second last in the percentage of firms receiving public support for innovation in the “SME” (5.6% of firms) and “all firms” (5.8% of firms) categories. Consistently with this placement Australian firms rank second last for the fraction of R&D active firms in manufacturing, and third last in services. These profiles show that it is not university-business links that need to be addressed directly. Rather, business and government must work together to establish conditions that are favourable to business-university collaborative innovation. To approach world performance, approximately five times more Australian SMEs need to receive public support for collaborative innovation. This is not a problem where the universities can assist directly, although the provision of more public support for business R&D would benefit from alignment with the deep and relevant R&D capabilities of universities.

Thirdly, the OECD Scoreboard ranks Australia second last for the amount of direct government funding as a proportion of GDP for business R&D, and 17/35 for the total public funding of business R&D when the R&D tax incentive is included. There is also indirect evidence that the R&D tax incentive has been accessed (in value terms) mainly by large firms in the mining and manufacturing sectors, and that more needs to be done to make the R&D tax incentive subsidy available to SMEs in other sectors. Again, business and government must work together to establish conditions that are more favourable to business-university collaborative innovation.

Finally, the OECD Scoreboard also lists the statutory corporate tax rates for 34 countries. Only six of these countries have rates higher than Australia.

The forces inhibiting collaborative innovation by Australian firms are clear. Australian company tax is relatively high and public funding for business R&D is paltry by international standards. Moreover not

enough of the modest public support that is provided for business R&D is making it into SMEs. In this operating environment it is not at all surprising that Australian firms avoid the financial uncertainties of collaborative innovation with other businesses and with universities.

Business R&D and commercialisation are gambles. The owners and managers of Australian firms will approach the gamble by looking for odds that are comparable to those faced by competitor firms. When other governments support our business competitors with high public subsidies for business R&D, they understand the benefits. To boost the commercial returns from research, public policy for the Australian innovation system needs to drive towards internationally benchmarked levels of public support for business R&D, particularly in the sectors and firm-size range that Australia intends to grow.

To stimulate greater innovative collaboration between business and universities, it is necessary to increase public support for business R&D either through direct support or support through the R&D tax incentive, and to drive this additional support in the direction of business-university R&D cooperation. The R&D Tax incentive is an important part of this equation. The 2007 report of the Australian Productivity Commission on Science and Innovation has prompted a number of improvements to the R&D tax incentive scheme and more changes are required.

One attractive option for a government faced with serious public expenditure constraints, but intending to reduce company tax rates, would be to reduce the effective company tax rate *indirectly* by adopting an R&D tax incentive that yields higher tax offsets (refundable or non-refundable). Ideally, this could be linked to a premium offset rate for the business costs of R&D employees compared with equipment and asset costs, in order to incentivise the flow of researchers between business and universities.

We turn now to the specific issues raised in the paper.

Creating stronger incentives for research-industry collaboration

Modest changes in research-industry collaboration may occur if competitive grant rules are modified to recognise industry-relevant experience and research block grant arrangements are adjusted to support greater end-user focus. These changes might be beneficial, or they might enhance the valorisation of pure research among the most gifted Australian researchers, and hence be counterproductive.

The most effective incentives would redress the demand-side failures that are inhibiting cooperative innovation in Australian business. The R&D tax incentive is the high-value element in this equation and therefore the most prospective policy instrument. Important gains could be made if the government delivered further improvements to the R&D tax incentive. The desirable changes would hold the real value of the tax offset for equipment and facilities at its present level (i.e. the value of the combination of the tax

credit and accelerated depreciation allowance) while raising the value of tax offsets for employment costs of the R&D workforce. This measure would shift the balance of public subsidy of private commercial interests towards R&D in knowledge-intensive sectors. These sectors offer superior growth opportunities for a high-cost economy such as Australia. The measure would reduce the cost of transferring R&D workers between business and universities and could make Australia a more attractive global supplier of business R&D.

Supporting research infrastructure

Australian researchers in universities and in industry require access to the best research infrastructure if they are to compete in the world. Cooperative arrangements to acquire and operate expensive research infrastructure generally offer the optimal return on public and private investment.

It is widely recognised that serious problems have emerged with the provision of world class research infrastructure in Australia, and agreement about core policies could help address the necessary future adjustments. These policies should include (a) using research quality and national priorities as joint threshold criteria for the selection of infrastructure, (b) selectively providing infrastructure that will accelerate R&D in situations where it is important for Australia to be in the global competition, (c) supporting an abundance of opportunities to access the best overseas research infrastructure which will often be superior to the best Australia can provide on-shore, and (d) being cautious about further high levels of investment in information infrastructure services in view of the rapid progress made in low-cost, high quality commercial provision.

Providing better access to research

Charles Darwin University commends all of the proposals under this heading.

Increasing industry relevant research training

The paper reports that the proportion of all researchers working in business appear to be low in Australia compared with other countries. However, the ABS count of FTE researchers in Australian universities includes approximately 42,000 FTE research students and 32,000 FTE academic and professional R&D employees. This compares with approximately 65,000 FTE R&D employees in business. Therefore there are approximately 3 FTE R&D employees in business for each 1 FTE R&D employee in universities. This ratio significantly favours employment in business R&D. Whether or not the Australian ratio is low is not obvious, since there are significant differences between countries in relation to the employment status of research students and in the uptake of research degrees in medical and legal professions. The conclusion that Australia and the UK are outliers in this statistic should be tested by a careful review.

Given the 3:1 employment ratio, there are compelling benefits in exposing research students to business values. Charles Darwin University would be eager to implement appropriately funded programs to enhance the opportunities for research student training within commercial and business settings.

Measurement of outcomes

It is unfortunate that Australia has not progressed beyond the research impact measures captured in the survey of research commercialisation, which focuses on measures that are essentially irrelevant in service sectors and do not capture the tacit aspects of knowledge transfer.

Given its location in Northern Australia, its abiding commitment to regional engagement and its unusual profile of very high research intensity in a small institution, Charles Darwin University is well placed to support a project to develop a new and relevant set of measures of industry engagement and benefit. We encourage the government to initiate a project to improve Australia's approach to measuring and evaluating university benefits to private enterprise.

Capitalising on the Medical Research Future Fund

Charles Darwin University acknowledges the potential for the MRFF to transform publicly supported medical research in Australia. We commend the following threshold criteria for the fund:

- Fully fund the direct and indirect cost of all research, to avoid market distortions and to redress the indirect cost shortfall of grant funding to Medical Research Institutes;
- Ensure that translation and community benefit are central to the objectives of all investments;