Submission to Boosting Commercial Returns from Research

November 2014

The Cooperative Research Centres Association represents all Australian Cooperative Research Centres (CRCs). In addition, the Association has universities, companies and research groups as Affiliate and Associate Members.

Membership of the Association is optional for CRCs. The Association promotes best practice in research and translation; student supervision and contract management.

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Executive Summary

The Cooperative Research Centres Association (CRC Association) welcomes the opportunity to provide some comments on the government's discussion paper Boosting Commercial Returns from Research. We welcome and applaud the government's determination and effort to improve commercial returns from research.

In this submission we argue that the direct monetary benefits returns to research institutions, while desirable, will not be the most important factor that will result from an effort to boost commercial returns. The greatest benefits for Australia will be gained through better alignment of our public research institutions with Australian business and industry to improve productivity and create jobs through new and expanded enterprise. Further, the CRC Association believes there are many benefits in the environmental, social and policy areas that can be achieved through conducting research in a more focussed "commercial" fashion.

CRC Association believes government can make a significant difference to improving the commercial returns from Australian research. Improvements can be achieved with no cost to government in our view. We suggest three areas:

1. Change the Higher Education Block distribution to encourage industry and commercial returns and to remove current disincentives to publically-funded researchers working with industry;
2. Implement an Impact Measure in universities to encourage industry collaboration; and
3. Improve skills and training of publically-funded researchers in working with industry (and vice versa).

The objectives of commercialisation

Commercialisation of research does not make significant returns to research organisations anywhere in the world. For example, the royalty and licensing return at Stanford University of 87 million in 2013 represents about 1.8% of that institution's 2014 total expenditures.

The principal benefits from commercialisation of research are to the actual commercialising company, with the consequent benefits of new products and services, tax revenues and employment flowing to the wider community. For example, while the University of Melbourne has benefited financially from the royalty returns from the Oral Health CRC's Recaldent® range of products, the total benefits are much wider. The community benefits from improved tooth care, jobs from the manufacturing of the product and taxes on those employees as well as company tax.

It is very important to ensure a proper perspective on the role of commercialisation of research. The CRC Association is unaware of any examples anywhere in the world where commercialisation returns have replaced a significant portion of the budget of an institution. Later, we provide some detail to put this issue in perspective.

While the major financial benefits of commercialisation are yielded by businesses and the community outside of research institutions themselves, the research institutions benefit in many ways other than commercial. They are able to maximise their ability to "make a difference" to their community and building relationships with businesses often improves their ongoing research efforts.

The role of commercialisation is reflected in the Mission Statements of the various offices of technology transfer or licensing. For example, the Mission Statement of the Office of Technology Transfer at Caltech makes clear their role is not purely financial:

> *The primary mission of the Office of Technology Transfer (OTT) is to promote and facilitate the transfer of useful technologies to the commercial sector so that the public can directly benefit from the ingenuity and creativity of our outstanding researchers. Providing access to new and improved devices, drugs, services, etc., all contribute to improving the quality of people's lives. OTT strives to find the most efficient ways to take a concept developed by our inventors and turn it into a product useful in everyday life.*

In other words, universities in the United States regard commercialisation as a means of engaging with the business world, not as a significant source of revenue. We believe there is a lot of opportunity for Australian research institutions to improve their engagement with business.

Room for improvement

While noting that financial returns for the institution itself are not the primarily objective of commercialisation of research, the CRC Association still believes they are a good indicator of performance. We believe research institutions should seek to increase those financial returns, as part of a total strategy of greater engagement with business. There is good evidence that Australia lags in commercialising research and there is room for improvement.

It is worthwhile noting that commercialisation returns from research tend to be very patchy. In most institutions worldwide, the bulk of income from commercialised research comes from a small number of licenses. Patents are limited in their life and therefore royalty income from patents stop when patent protection finishes. The Vision Cooperative Research Centre has received over $250 million in royalty income from the Night and Day contact lens intellectual property, but the 20-year life of the patents has recently finished and so will the income source. Care needs to be taken in understanding commercialisation revenue streams to research institutions, especially if they are small institutions where a single license might distort figures.

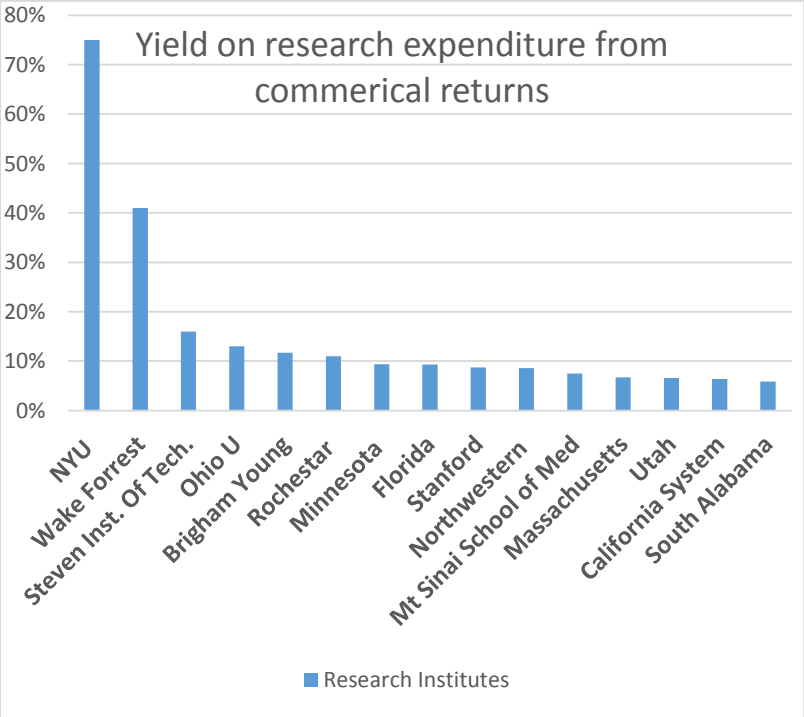

Figure 1: The top 15 top commercialising universities in 2006

Forbes Magazine compiled a list of the top 15 commercialising universities in the USA in 2006 (as measured by royalty and licensing revenue as a percent of total research expenditure). These results are shown in Figure 1, showing that the very best performer in that year, New York University, recovered 75% of the cost of its research budget in royalty and licensing income. Most of the top fifteen performers recovered less than 10% of their research costs from royalties and licensing income.

We have extracted similar figures from the most recent Annual Reports of each of the members of the Australian Group of Eight Universities (Go8). Some care needs to be taken in making comparisons because Australian universities do not report total expenditure on research. The proxy figure used here is the total income on direct research grants and consultancies received, excluding (indirect) block grant figures. The American figures above include equity from spin-off companies, which we could not extract for the Go8. The Australian figures come from their latest annual reports (year ended 31 December 2013), whereas the American figures are for 2006. Other Australian universities may be performing differently to the Go8.

The best performing of the Australian Go8 universities is the University of Queensland whose royalty and licensing income is 9.8% of its total research grant income. Like most of the top performing universities in the United States, the University of Queensland's royalty and licensing income is derived from a relatively small number of projects. No other Australian Go8 universities stand out as having significant income from royalties or licensing income. The Australian National University does not report any royalty or licensing income for 2013.

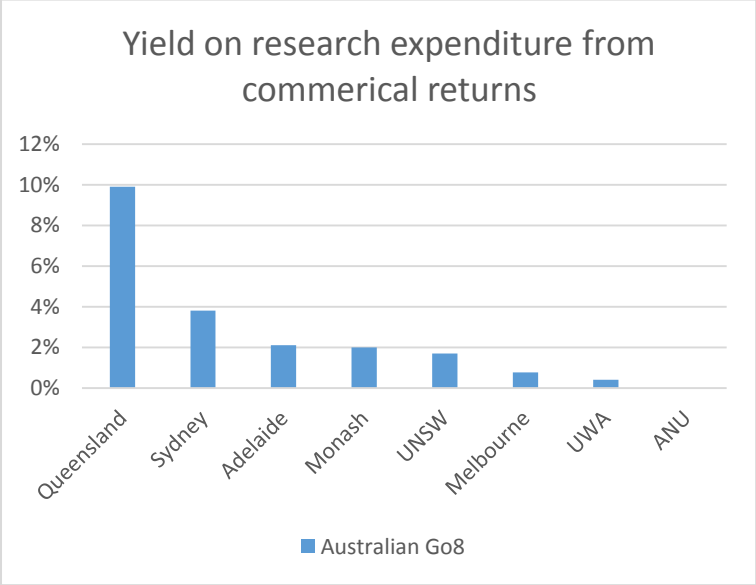

Figure 2: Royalty and licensing return on research for Australia's Go8 universities.

In Figure 3, we have combined the figures from the United States and Australia, but please note that while best efforts have been made to derive comparable figures, much more detailed data would be needed if direct comparisons are to be made.

Nevertheless, we believe the comparison is likely to at least broadly represent the difference between the two

countries. Again, while there is no possibility that Australian research institutes will become "self-sustaining" from royalty or license income (the "yield" represented in these figures is only against the research budgets of the intuitions, not their total budgets), there is room for Australian universities to improve.

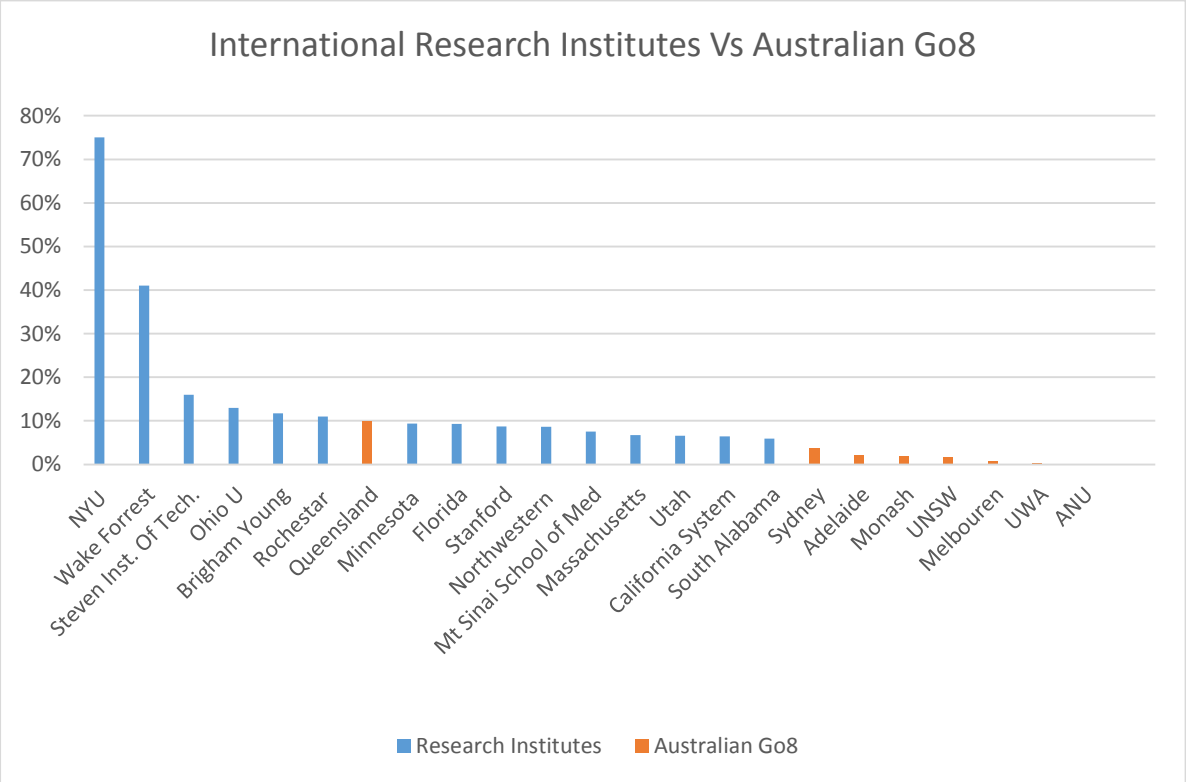

Figure 3: There is the opportunity for Australian universities to improve their returns from commercialisation of research.

We have noted that commercialisation income for universities can be very patchy. But that is not to say it is purely due to chance. There are lessons that can be learnt from those institutions shown in the figures above. Wake Forest University's Innovation Quarter is the fastest growing urban research hub in the United States. Wake Forest University sits in the heart of the US's tobacco industry and the changing nature of that industry and the closure of major cigarette factories made the university vastly accelerate its efforts in innovation.

The Stevens Institute of Innovation in New Jersey dubs itself "the innovation university" and has a long history of fostering inventiveness and innovation. Even so, the Institute has made further and greater efforts in recent years to "radically change the process of technology commercialization in a university environment". It operates bottom-up training and mentoring in a "technogenesis" program to respond to the "inefficient technology transfer processes with which modern universities struggle".

In the view of the CRC Association, UniQuest has contributed a great deal to the fact that the University of Queensland is the top-performing of the Go8. In general terms, UniQuest tends to employ staff that are bridge-builders between researchers and business, whereas our view of some equivalent university commercialisation offices is that they take much more of a "gate-keeper" role. UniQuests systems and procedures are widely understood at the University of Queensland and are transparent to business. Staff tend to be located out with the faculties and school and proactively looking for opportunities rather than centralised and requiring researchers to come to them.

Suggestions for improvement

The CRC Association suggests three actions the Commonwealth could take to boost the commercial returns from publically funded research in Australia. These are:

1. Change the Higher Education Block distribution to encourage industry and commercial returns and to remove current disincentives to publically-funded researchers working with industry;
2. Implement an Impact Measure in universities to encourage industry collaboration; and
3. Improve skills and training of publically-funded researchers in working with industry (and vice versa).

The Higher Education block scheme is the second largest item in the Commonwealth's "innovation pie" (to the R&D tax income foregone). The distribution of the Block Grants has a massive impact on the behaviour of researchers on Australia's university campuses (and remember that Australia is more reliant on its universities for its national research effort than just about any other country). In general terms, under the current system, returns are based on categories that favour nationally competitive research schemes over industrial schemes. The returns from the scheme are highly valued by university management because they are untied and therefore can be used in a discretionary fashion.

If the Australian government wants universities to work more with businesses, then a simple adjustment of the categories of the Higher Education block scheme would have an immediate and substantial impact. University managers would encourage researchers (or at the very least stop discouraging them) to work with industry. If the returns from the current categories 3 and 4 were boosted to those of category 1, or preferably to provide a premium to category 1, the government would spark immediate change. No additional investment from government is needed, although this would be obviously welcomed.

The Academy of Technological Sciences and Engineering has suggested a means of implementing an "Impact and Engagement for Australia" (IEA) metric that could run parallel to the "Excellence in Research for Australia" (ERA) measures. The CRC Association strongly endorses this suggestion and encourages the government to implement it as soon as practicable. We believe the Australian Research Council is the appropriate body to implement the measure in order to achieve efficiencies and complementarities to the ERA system.

Finally, the skills of the academic community can be lifted to improve Australia's research commercialisation performance. CRC Association believes the role of the Commonwealth government should simply be to encourage this to happen, but to leave implementation to institutions themselves (for example, the Commonwealth could implement an additional category under the Block scheme that matched a university's royalty and licensing income which is already reported annually).

We note that business also has a responsibility to seek out and work with innovators in Australian research institutions. A number of good programs exist from individual institutions, AusIndustry and State governments to facilitate this process. Tax incentives are available for business to do so. We have not concentrated in this submission on the business side of the research-business divide other than to note that improving the country's performance will require effort in all relevant quarters.