

Response to discussion paper

Boosting the commercial returns from research

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The discussion paper explores some of the reasons behind the low *'innovation dividend'* in Australia, i.e. the relatively low conversion yield from research into commercial products and processes. The paper points out that despite the high quality of our research, we rank at the bottom of the OECD in the proportion of research organizations collaborating with research providers. As former Minister (2007-2011) Kim Carr noted *"As Minister for Science and Research I am proud to invest in this world class asset [i.e. university research]. As Minister for Industry and Innovation, I question why so few businesses share my enthusiasm."*

I believe that the discussion paper has correctly identified many of the root problems, not the least of which is cultural in nature and include long held views of what constitutes excellence in research. One cannot help but agree with the report which states that *'Industry experience and past success in solving industry problems are not generally part of the metrics of academic excellence'* (page 14). Put simply the drivers and incentives that would encourage research collaboration, risk taking, and entrepreneurship are notably absent from our research culture and ecosystems. Given the present settings which reflect long held practices (and prejudices) it is perhaps not surprising that so few (<3%) Australian businesses actively involved with innovation sourced their ideas from universities or other research providers.

Given the importance of addressing this problem for Australia's future, and the persistence and tenacity of this problem over many years, one may question whether the program proposed in the discussion paper is too timid to have a real impact. One may applaud the initiatives that reduce barriers, (eg streamlining IP arrangements and the taxation of employee share schemes), and increase access of businesses to research expertise and infrastructure (eg by securing support for NCRIS research infrastructure in the long term). Nevertheless, one may question whether such initiatives address the core of the problem which is largely cultural in nature. I would suggest that we need to address the roots of the problem in different ways, so that we can begin to change the culture, and lay the foundations for a more prosperous Australia.

Internationalization: The report recognizes that Australia lags behind other countries in its commercialization of research. And yet, the report is silent re the internationalization of research, development and commercialization. In my view, this is very serious omission. *In fact we need to recognise that the markets for our innovation and products are almost always overseas.* Israel's National Agency for industrial R&D cooperation MATIMOP (<http://www.matimop.org.il/>) is a good example of the effective role of government in shaping the innovation ecosystem, with an emphasis on international collaborative R&D ventures. A core strategy is to engage in R&D with countries in

which it is likely to find markets for the products to be developed. By any measure the MATIMOP's approach has been a spectacular success. We should learn from this experience, *changing our point of reference from domestic to international*. We need to recognize that venture capital markets are far more active overseas and that their appetite for seeing companies over the 'valley of death' far exceeds the rather risk averse and conservative (*small!*) Australian venture capital market. We need to move from a modus operandi of invent in Australia and develop and commercialize overseas to one in which the R&D is international in its focus from the very start. In the short term I would encourage the government to consider a substantial increase in funding for international R&D programs, for example encouraging Australian participation in programs such as the European Union's Horizon 2020. In the medium term I believe that we need a dynamic international R&D collaboration program based on successful overseas models.

Education: The relative lack of interest of industrial leaders in R&D can, to at least some degree, be traced back to the fact that many of our captains of industry have little or no scientific or technical training. This is not the case in other OECD countries where leaders, both political and industrial, often have a background in science and engineering.

I would therefore like to suggest that Universities be encouraged to develop a national university level curriculum on the intersection of politics, science, technology and society to ensure that all university graduates (i.e. our future leaders) have some fluency in science and technology and in the political process. Universities would be funded to teach it, and be paid according to the number of students taking the subject. Such a measure may sound drastic but it would address the deplorable fact that very few of our leaders have any real understanding of the nature of science and technology and its potential impact on society. In the US, nearly every college student does at least one science course. Some claim that this is one reason that many more Americans, compared to Australians, believe that investment in science leads to prosperity. If this belief were more widespread, it would filter into increased interaction between industry and our universities.

Research, Commercialization and Development: Germany has for many years supported the Fraunhofer Institutes which are dedicated to application oriented research. These institutes have been a driving force in Germany's dominance in advanced manufacturing, and support a diverse industrial base. I believe that it is time that we considered the establishment of a national institute for translational technology as a partnership between industry, universities and government.

This institute would exploit existing and future investments (in nanotechnology, biotechnology, etc.) and match the 'grand challenges' with the technology base. It would be the first of its kind in Australia and could seek a strategic partnership with the Fraunhofer institutes (Germany) in terms of end user focus (<http://www.fraunhofer.de/en/institutes-research-establishments.html>). This institute would provide a fertile training environment for the next generation of entrepreneurs and be the preferred place for the meeting of minds of researchers and industry. The leadership of the institute would be established via a competitive process in which international universities and research organisations would be strongly encouraged to participate.

I thank the committee for the opportunity to comment on the discussion paper and hope that the consultation process will result in a more dynamic innovation ecosystem for Australia.