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In September, 2008, the Australian Government released a report, [venturousaustralia](#), containing a comprehensive review of the national innovation system (“The Review”). It was assembled by Dr Terry Cutler along with an 11-member expert panel, and also incorporates suggestions from over 600 public submissions. It calls for urgent action because over the past decade, Australia has fallen behind its peer countries to a dramatic degree in terms of its investments in education and R&D (Nelson, 1983). This is a source of concern because it is unclear how long the boom in natural resources will continue to fuel the economy; innovation is therefore seen as an important source of future growth.

The Review contains 72 recommendations covering a broad range of areas including: (a) reforming the educational sector, (b) encouraging the private sector to invest in innovation and to take a leading role in the commercialisation process, (c) increasing funding towards universities and research agencies, (d) incentives, fellowships and programs to increase the quality of research, (e) reforming the intellectual property system and improving the flow of ideas among universities, firms and other research agencies, (f) replacing the existing system of R&D tax concessions with tax credits, (g) R&D grants to improve linkages between research institutions and market-oriented firms, (h) attracting international knowledge flows and venture capital to Australia, (i) increasing the level of innovation within the Government, and (j) implementing new institutional structures to manage R&D nationally.

In short, the Review touches upon every aspect of Australia’s National Innovation System and proposes changes throughout. It also reports of a deep rift in perceptions towards innovation amongst the various players (government, academics and industry), although these are not surprising and also likely to exist in most other countries.

The concerns raised by The Review, as well as its recommendations, are in line with other similar efforts, such as by the Australian National Innovation Summit (1999) and the Annual Innovation Index (Gans and Stern, 2003; Gans and Hayes, 2007). Indeed, it is worrisome that Australia has not made much progress in building innovative capacity over the past decade, during which the earlier reports were publicly available.

Overall, The Review is extremely important in presenting an ambitious agenda for re-architecting Australia’s future. In this IdeaCheck, I analyze whether it is consistent with academic fundamentals, and whether it is a good blueprint for action.

Is the Review Consistent with Academic Fundamentals?

Academic researchers have reached a clear consensus that producing new knowledge is a highly uncertain process, and that commercializing new knowledge is risky and prone to market failures. Therefore a party investing in its early production may not reap the future returns. As such, individuals and private firms are likely to under-invest in innovative activities. Yet, numerous studies suggest a strong link between innovative activities and economic growth, as well as positive social and economic benefits of having a high level of education and innovation. This argument has been used as a motivating force (including in The Review) for an active role by government to invest in R&D as well as to help resolve market failures.

However, controversy surrounds the question of how much governments should invest in R&D (as opposed to other areas such as healthcare, welfare, etc.) and the optimal degree of public support for private R&D (Hall, 2002; Klette, Moen & Griliches 2000). These are important issues which I hope will continue to be the subject of energetic public debate in Australia. However, to the extent that Australians have elected a government that has chosen to invest in creating a robust national innovation system, the real question at hand is whether or not the



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The Review is aligned with what has been learnt from academic research, and whether it offers to make good use of the money invested.

From this perspective, there is good news. The Review is in line with key insights from recent research on managing innovation. These include:

- National Innovation Systems are complex systems, and they need to be managed as coherent sets of activities involving multiple participants, not piecemeal. Partly because of this, complementary sets of activities are often agglomerated within geographic clusters, such as the electronics firms, venture capitalists and research universities in Silicon Valley.
- Well-developed institutions are important for nurturing a highly-skilled and innovative workforce.
- Highly skilled people are crucial in the process of knowledge creation, including “star” individuals who are highly productive and occupy central positions in the social networks that link them to other innovators.
- Firms are central to the commercialization process. They are increasingly relying upon relationships and alliances with other organizations for innovative activity, as well as being connected to a global network of scientists and innovators outside their firms for new ideas. Startup firms are an important part of the innovation ecosystem because they are often more willing than existing firms to explore new approaches.
- Innovation should not be viewed only to include scientific research, but more broadly to encompass new business practices, art, and other forms of human endeavor. Good ideas often come ‘knowledge brokering’ across different domains to create unexpected but valuable combinations (Hsu and Lim, 2006).
- Innovation is a cumulative process. Hence, a delicate balance must be managed between the intellectual property rights of inventors, customers and firms. Moreover, mechanisms have to be in place to allow for the effective flow of ideas among innovators, as well as for ideas to be transformed into commercial applications.

In my opinion, the Innovation Review does a great job of incorporating a strong understanding of these issues into its analyses and recommendations.

Is the Review a Good Blueprint for Action?

The Innovation Review is clearly written and provides a comprehensive set of recommendations. It addresses the major issues that are raised in similar documents produced by other countries. It also does an amazing job of integrating good ideas from the large number of public submissions (which in itself is quite an achievement). Moreover, The Review takes a broader perspective towards innovation than in many other countries, where the focus is exclusively on science and technology. So, it presents Australia with a compelling vision for creating a vibrant national innovation system.

However, as a plan for action, the Review does raise several concerns.

Firstly, there are too many recommendations (six dozen, in all!). The risk is that many of the recommendations will end up being left on the shelf. For example, the government may be tempted to focus more on tax credits, leaving aside some of the other recommendations that are more difficult to grapple with but equally important. Undoubtedly, the large number of recommendations is consistent with innovation being a complex issue, but The Review needed to have presented a clearer way to prioritize among these recommendations.

Secondly, The Review for the most part does not suggest tangible milestones, a timeframe for achieving goals, nor an appropriate person or organization to be responsible for implementing each recommendation. In fact the endpoints (which are specified on the final page of the overview section) are noticeably vague. While reading the



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Report, I felt it would have been much more helpful if the 5-7 most important recommendations were highlighted, along with intermediate milestones and a “champion” identified in each case to be responsible for its implementation.

Thirdly, while I have stated that The Review is ambitious, I wonder whether it is actually ambitious enough to achieve the stated goals. While Australia deliberates about how to implement this Review, the other countries are not standing still. Many of them have quite similar plans and a number of them are already aggressively implementing changes to their own innovation systems. Australia is trying to catch up to a moving target.

Finally, for the recommendations to have real impact, many important changes will have to occur at the micro level. These will require significant effort and time to implement. For example, in my teaching and research experience, I come into contact with numerous students, scientists and innovators. I have been surprised by the overall lack of a vibrant entrepreneurial culture. Many whom I’ve met are talented and inventive, but few have articulated to me an intense desire to form entrepreneurial firms to commercialize new ideas. Among those interested, many are ill-equipped to actually act upon their intentions because they lack the requisite skills, exposure to hands-on entrepreneurial activities, a support network of other entrepreneurs, and access to relevant sources of funding such as venture capitalists. This is a disquieting because The Review gives entrepreneurial firms and workplaces a central role in its vision of the future. Actually creating such entities will require big changes in mindsets and skillsets.

Conclusions

Overall, there is a lot to like in The Review. It sets an ambitious agenda for revamping Australia’s National Innovation System. It contains many interesting suggestions for improvement across a broad range of areas. However, a great deal of work is needed ahead to make *venturousaustralia* not just a dream, but a reality.

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