



Australian Private Equity & Venture Capital Association Limited

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Department of Education
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Canberra ACT 2601

Email: reviewconsultations@education.gov.au

Dear Sir/Madam,

Boosting the Commercial Returns from Research

The Australian Private Equity and Venture Capital Association (AVCAL) welcomes the opportunity to make a submission to the Government's consultation on reforms to boost the commercial returns from research.

AVCAL represents the venture capital (VC) and private equity (PE) industry in Australia, which has a combined total of over \$25 billion in funds under management for domestic and offshore investors. VC and PE firms invest in innovative, high-growth businesses across all stages of development, and across almost every corner of our national economy. These investments help to support around half a million jobs, and contribute over four per cent every year to our national economic output every year.

For some time, AVCAL has consistently maintained that policy changes need to be made to strengthen the nexus between publicly-funded research and real economic outcomes for Australians.

At a macroeconomic level for Australia, the slow-down of the mining boom brings with it the urgent need to build on new areas of competitive advantage to ensure our future prosperity. As a result, we need to take every opportunity possible to position the nation to effectively compete with other jurisdictions that have implemented targeted policies aimed at improving their capacity to translate home-grown research into commercial successes.

While the Government's discussion paper "Boosting the Commercial Returns from Research" (the Discussion Paper) canvasses a range of important issues, in our view the single most significant impediment to improving the economic returns from publicly-funded research in Australia today is the lack of patient risk capital to fund commercialisation efforts.

It is apparent to us that there currently exists a very real risk that if we don't take decisive action in this area in the short-term, we will continue to see a deterioration in our capacity to drive private capital funding into the translation and commercialisation of research outcomes. AVCAL's submission in response to this consultation process explains in greater detail the context of the underlying issues, and the case for urgent action in this area of policy.

AVCAL SUBMISSION: BOOSTING THE COMMERCIAL RETURNS FROM RESEARCH

The Government's discussion paper, "Boosting the Commercial Returns from Research", canvasses a range of relevant and important issues, including the need for stable, predictable funding for a high-performing national research sector, better targeting of research, better cooperation between researchers and industry, and an enabling environment for entrepreneurship in both the research community and industry. AVCAL's submission outlines a set of recommendations focused on:

- Improving access to venture capital to drive the translation of research into commercial outcomes; and
- Strengthening the links between publicly-funded research and economic outcomes.

Improving access to venture capital

Why venture capital plays a critically important role

Research breakthroughs alone are not enough to create new cures for cancer or diseases such as Alzheimer's. To bring a product from the science lab to the end-user requires both translation activity (creating practical applications from basic research), and commercialisation (bringing the product to market).

Australian VC investors have historically been a key source of external equity capital for research-driven ventures. VC investment brings with it the technical knowledge, access to networks, commercial acumen and an alignment of interests that other sources of capital often lack.

As patient investors and expert mentors backing businesses aimed at bringing promising research to market, venture capitalists play an important role that is not replicable by other sources of capital such as banks, the public markets, or friends and family.

At present, new funding for the translation and commercialisation activities needed to link upstream research with downstream users is extremely scarce in Australia. Funding medical research commercialisation, for example, is currently undertaken only to a very limited extent under the auspices of agencies such as the National Health and Medical Research Council (NHMRC), which focuses primarily on research grant funding.

A healthy VC sector is important for jobs, economic growth, and innovation. The global evidence supports the vital role played by VC in boosting the commercial viability of a country's research output, as well boosting the quantum of research produced in a sustainable and cost-effective way. The findings of analysis carried out overseas confirms that each dollar of VC investment is, on average, three to four times more effective at increasing patenting activity than a dollar of traditional corporate research. Those findings also suggest that VC investment may account for up to 8% of the industrial innovations in the United States.¹

VC firms take on the risks inherent in investing into startups that have the potential to later become the drivers of economic and employment growth in Australia. This bridges a funding gap that most other private capital

¹ Kortum, S. and J. Lerner, 2000, "Assessing the impact of venture capital on innovation" *Rand Journal of Economics* 31, 4, 674-692.

providers are unable to fill. Many of Australia's most successful commercialisation stories, such as Cochlear, ResMed, SIRTeX, Finisar Australia, Pharmaxis and CogState, had their genesis in early stage investment from domestic VC funds. Some of those success stories are explained in more detail in our 2013 report on "The Economic Impact of VC in Australia" (**Attachment 1**).

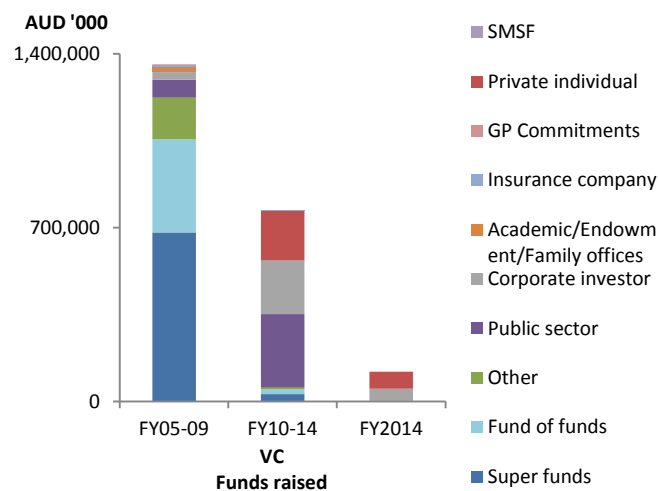
In AVCAL's view, the single most significant impediment to commercialising research in Australia today is the lack of patient risk capital to fund commercialisation efforts. Unless this gap is addressed, efforts to boost non-financial forms of collaboration between research and industry will continue to fall well below the standards we should expect for an economy like ours.

Without the involvement of the VC sector in the difficult task of translating and commercialising ideas into useful products and successful businesses, too much of our research output will likely remain dormant, which would be to the detriment of our communities and our economy.

Current funding sources and gaps

There are sizeable structural challenges confronting the current fundraising environment for Australia's VC sector. As shown in Figure 1, VC funding fell substantially in FY2010-FY2014 compared to the previous five years, almost halving in the total amounts raised.

Figure 1: VC funds raised FY05-09 vs FY10-14



Source: AVCAL

Figure 2: Number of companies funded by VC, by deal value, FY05-09

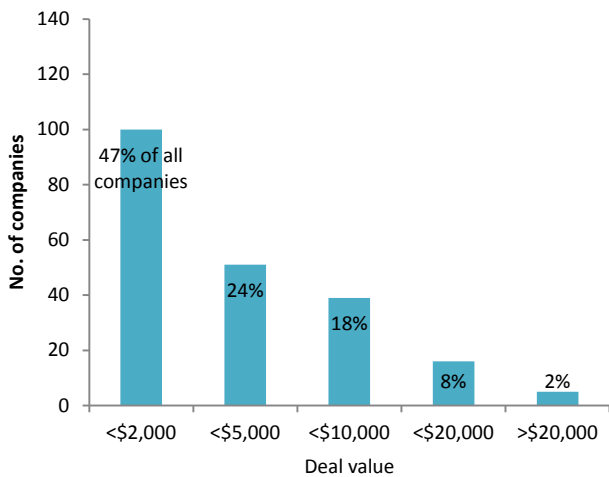
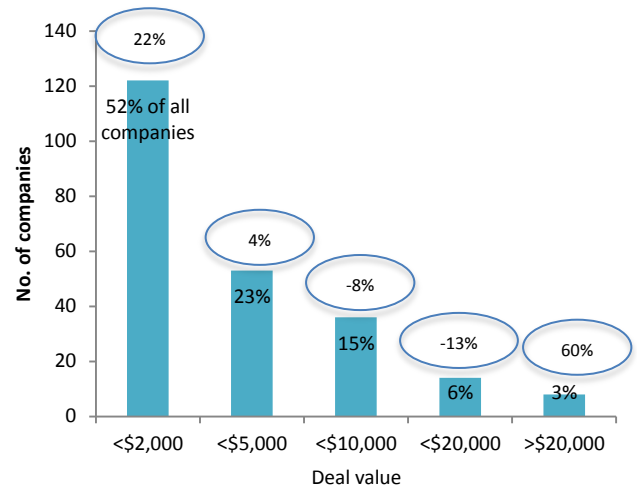


Figure 3: Number of companies funded by VC, by deal value, FY10-14



Source: AVCAL

The decline in VC funding has led to a structural shift in the pattern of VC investment available for many innovative startups in Australia. Funding for new ventures based around research-driven ideas at the seed and early stage is generally more readily available than at the later stages. This funding is typically coming through micro-VCs, angel investor groups, incubators/accelerators and research-linked grants.

However, it is at the later stages that many startups with commercialisable concepts and products enter the so-called “Valley of Death”. This term describes a point where “a business, often a technology based business, has a working prototype for a product or service that has not yet been developed enough to earn money through commercial sales.”²

Figures 2 and 3 illustrate the decline in early stage funding at the "Valley of Death" between the seed and startup stages (generally those attracting under \$5m in funding) and more mature businesses at the final stages of commercialisation (attracting over \$20m).

Despite a 22% increase in the number of seed and startup ventures attracting funding rounds of under \$2m in the five years to June 2014 compared to the five years before that, there has been a decline in the number of companies getting funded in the subsequent stages of the commercialisation pathway. This signals an impending market failure to provide adequate follow-on support – at least domestically – to the larger number of startups now being funded as they grow and mature.

In addition, while the total dollar amount invested by later-stage VC funds (in investment rounds of \$20m or higher) has increased in recent years, the majority of that funding now comes from overseas VC funds. These recent investments have been predominantly focused on the ICT sector, and concentrated in a small number of target companies.

² Bridging the valley of death: improving the commercialisation of research, House of Commons, March 2013.

The relatively significant amount of foreign VC money invested in Australian ventures in recent years emphasises the fact that Australia is able to produce world-class innovations and build companies with global potential. But we need to create an environment that offers every opportunity for the benefits from these innovations to remain in Australia by boosting our ability to fund research at all stages of the commercialisation process. A key element of realising this outcome will be to identify ways to bridge the "Valley of Death", such that companies transitioning from the startup phase into more mature and viable businesses have the opportunity to continue building their businesses within Australia rather than having no option but to look to relocate to overseas markets.

Recommendations for action

Around the world, traditional institutional investors have been gradually but inexorably pulling back from supplying the high-risk capital needed to back new ventures. Although corporate venture funds, high net worth individuals and successful entrepreneurs have stepped in to take their place to some extent, this has largely not been sufficient to address the overall funding gap.

Few Australian startups have made the transition to medium or large companies domestically. It has been observed that Australia is a good place for startups, but not so much for growth.³ For every success story that is reported in the media, there are many more promising companies that are not realising their full potential due to lack of access to risk capital.

Such risk capital is the lifeblood of a successful commercialisation pipeline. And the gold standard so far in addressing this issue – with the wider benefits seen to be greatly outweighing their shortcomings – has been the formation of Government co-investment programmes to back local new ventures.

The Discussion Paper has analysed various policies introduced by other jurisdictions to strengthen the translation of research into commercial outcomes: for example, the US, UK, Germany, New Zealand, Netherlands, Sweden, Canada and Denmark have been looked at closely.

It should be noted that all of these countries have, as an integral part of their ongoing innovation policy system, something that is currently largely absent in Australia: a publicly-funded venture co-investment programme. Despite our relatively high levels (by international standards) of public-funded research investment, Australia ranks behind most of these jurisdictions on commercialisation measures.

Programmes such as the Innovation Investment Fund (IIF) were originally introduced to address this need to bridge the gap between the science lab and the market. Third party evidence shows that the public benefits from support through the IIF are clear. The programme has played a key role in providing early stage capital to market leading companies such as SEEK, which is today the largest online jobs-listings business in the world.

Government co-investment is typically very important at this stage of financing, as a lever and incentive for private investors to share the risk of investing in early, untested high-risk ventures. In addition, as the Financial System Inquiry's interim report noted, "Australia's venture capital and private equity markets are small, and there are barriers to generating significant investor interest".

This market failure can be ascribed to a combination of factors including the onset of the global financial crisis, the withdrawal of superannuation funds from investing in VC, and the intermittent and insufficient distribution of the funds in subsequent rounds of the IIF programme over recent years. These factors have led to a "stop-start"

³ [When start-ups become grown-ups, where do they go for money?](#) Sydney Morning Herald, Sam Chandler.

approach to financing Australian startups over the years, and the inability of local VCs to scale up to meaningfully participate in later-stage investment rounds in tandem with their investees' rapid growth.

With the abolishment of the IIF and Commercialisation Australia programmes announced in the 2014-15 Federal Budget (replaced with a smaller, more generalist Entrepreneur Infrastructure Programme), this already-small proportion of Government support for commercialisation has gone steadily backwards since 2007, at a time when other countries are boosting public funding for innovation support. Given this small scale of support, the capacity to build a competitive innovation economy in Australia now seems more difficult.

Fundamentally, Australia needs a stable and consistent approach in building up its commercialisation ecosystem to capitalise on the wealth of research it generates in areas such as medical science, information technology, clean technology and other advanced technologies.

AVCAL therefore recommends the introduction of a dedicated translational innovation funding programme as a key measure that would be most likely to deliver the most meaningful long-term impact on improving the commercial returns from research.

More specifically, we recommend that the Government considers:

- Ensuring that the proposed Medical Research Future Fund's (MRFF) mandate includes a specific and meaningful amount to be invested through a translational medical innovation fund;
- Creating a new translational innovation fund to co-invest in innovative sectors and technologies; and
- Include VC as a complying investment under the Significant Investor Visa programme.

In terms of budget impact, the administered capital provided through the translational innovation funds should have little to no impact on the Government's fiscal balance. The Government receives an equity share in these investments and has the opportunity to participate in any returns from the funds invested.

This investment, from a Federal perspective, is small when juxtaposed against the vital role it would play in stimulating private investment in commercialising Australian research, and the long-term benefits of jumpstarting the creation of a vibrant local innovation system.

Ensure the MRFF's mandate includes a translational medical innovation fund

AVCAL recommends that the MRFF's mandate should include a specific and meaningful amount to be invested through a translational medical innovation fund that should:

- Start immediately;
- Be funded from the initial \$1b endowment of the MRFF, rather than the dividend stream;
- Comprise 10% of the total endowment proposed in the Budget;
- Incorporate a 'matching' of government funds by the private sector;
- Only involve the calling of government funds after private funds have been fully drawn down;
- Focus on all stages of translation and commercialisation of medical research; and
- Be invested and managed by professional venture managers, with manager selection based on merit.

In making the announcements relating to the proposed MRFF, the Government has reinforced the central role that the fund could play in helping to identify cures and treatments for ailments and conditions that have a significant social and economic impact across our community.

It should be noted that research breakthroughs alone are not enough to create new cures for cancer or diseases such as Alzheimer's. To bring a product from the science lab to the end-user requires both translation activity (creating practical applications from basic research) and commercialisation (bringing the product to market).

These valuable activities are currently undertaken only to a very limited extent under the auspices of agencies such as the National Health and Medical Research Council (NHMRC), which focuses primarily on research grant funding. And at present, new funding for the translation and commercialisation activities needed to link *upstream* research with *downstream* users is (almost) non-existent.

Australia has the resources and capability to effectively convert research into high-quality products through the translation and commercialisation process. It is for this reason that we must ensure that the economic benefits which can arise from investing in the whole spectrum of medical research activity are realised in Australia, rather than in other jurisdictions. A massive opportunity exists to take advantage of the research infrastructure that was built in in the past, and realise the *development* aspect of R&D.

Australia's capacity to compete for the 'best and brightest' talent from around the world, and our future economic prosperity, will very much depend on our ability to take deliberate and decisive steps in relation to key areas of policy such as this.

There are some standout examples from around the world that are instructive in considering how Australia can best meet the commercialisation challenge. These include:

- The Wellcome Trust, a UK-based charitable foundation that funds biomedical research, has total assets of £17.3b (A\$31.2b) and is extensively invested in the translation and commercialisation of medical research by:
 - Investing 7.8% of total assets into VC, including £200m in its dedicated healthcare-focused fund, Syncona Partners, as well as allocations to external healthcare fund managers.
 - Funding for basic research and translation/commercialisation, the latter being done through a number of schemes, including a targeted Translation Fund, and the Health Innovation Challenge Fund (parallel funding provided by the UK Department of Health).

- The Howard Hughes Medical Institute, the largest private supporter of academic biomedical research in the US, has a US\$16.9b (A\$18.3b) endowment which also invests in life sciences and biotech VC funds.
- The US-based Mayo Clinic, a medical research and practice group with investments valued at over US\$5b, has a dedicated VC fund that seeks to bridge the gap between research discoveries and the marketplace.

In our view, the translational medical innovation fund should start immediately with an initial amount of at least 10% of the MRFF starting balance (estimated to be at \$1b), with a view to reviewing this quantum as the fund grows and federal budgetary conditions improve. This amounts to only \$100m p.a., which is likely to be offset to some extent by the annual earnings from the original \$1b endowment balance.

The formation of the fund without further delay would help to minimise the gap in translational funding arising from the abolishment of the Commercialisation Australia and IIF programmes.

Government funds would be matched by the private sector, and should be invested and managed by independent professional venture managers with expertise in translation and commercialisation, rather than by a specific Government agency.

The fund should allow investment in all stages of the research and translation cycle, including subsequent (later) rounds. This would especially help mitigate the current gap seen in later stage venture funding, and reduce the likelihood of promising research failing to succeed or achieve its full potential due to lack of funding later on. Allocating funds to both basic research and translation/commercialisation would allow the MRFF to realise its full potential in alleviating the rising level of healthcare and related costs for future governments in Australia over coming decades.

It is important to note that capital provided by government would only be called three to four years after the call on private investor capital, as recommended by the McKeon Review in the design of its proposed Translational Biotech Fund. It is our understanding that there would be no impact on the underlying fiscal balance of the federal budget because the capital outlay would be treated as a financial asset rather than an expense. As recommended by the McKeon Review, the fund should be governed by an investment advisory board, with board members to be appointed by the investors and to include government representatives. The investment advisory board would be able to run a tender process to select the best manager(s) for the fund.

Create a new translational innovation fund to co-invest in innovative sectors and technologies

AVCAL recommends that the Government should create a new generalist translational innovation fund with an initial Government commitment of \$500 million to be drawn down over five years, commencing as soon as possible. It should operate in a similar structure to the proposed translational medical innovation fund described above, i.e.:

- Incorporate a 'matching' of government funds by the private sector;
- Only involve the calling of government funds after private funds have been fully drawn down;
- Be open to all stages of commercialisation from startups to later-stage companies; and
- Be invested and managed by professional venture managers, with manager selection based on merit.

The manager's ability to attract matching capital from private sources should be the test of whether the manager is suitably qualified to apply for a license. In addition, the fund manager selection process should be completed in a transparent manner, and within a specified limited timeframe, to minimise uncertainty for private investors

while awaiting the outcome of the selection process. The longer the selection process, the higher the opportunity cost incurred by private investors when they could be opting to deploy their capital elsewhere.

In addition:

- All profit, capital and interest returned to the Government from the fund's investments should be recycled into an ongoing and self-sustaining programme of targeted investment into innovative Australian businesses.
- The funding allocation to the programme should be reviewed with a view to being expanded over time to allow the programme objectives to be fulfilled. Even though proceeds are recycled through the Revolving Fund, these returns will take many years to crystallise and it is important that the cycle of supporting innovation remains unbroken so that Australia does not lose the momentum gained by building up the early stage investment sector only to have it falter at later-stage VC investment.

Include VC as a complying investment under the Significant Investor Visa (SIV) programme

We welcome and support the Government's recently announced initiatives to reform the SIV programme to facilitate more targeted capital allocations to areas of long-term gain to Australia, such as in VC investments. This will give greater flexibility to fund managers to tailor SIV-compliant funds to meet investors' risk-reward appetites, while at the same time boosting unlisted Australian startups' access to capital.

At the time of writing, there is a consultation process that is being carried out by Austrade to examine the implementation details for the proposed reforms. AVCAL will be putting forward a submission as part of that consultation process setting out the industry's views and suggestions on the implementation aspects of this policy.⁴

Strengthening the links between publicly-funded research and economic outcomes

In order to boost commercial returns from research, it is important to establish linkages between the research community and industry as a way of ensuring that new research efforts are attuned to the commercial aspects of developing products and technologies. Three recommendations are proposed and discussed below.

Better alignment of publicly-funded research with Government initiatives supporting commercialisation

The Government currently spends around \$9 billion each year in supporting science, research and innovation, of which \$2.8 billion (an amount which exceeds the size of the entire domestic VC industry in Australia) is spent on

⁴ www.avcal.com.au/policyadvocacy/2014/avcal-submission-significant-investor-visa-review

university research funding.⁵ However, total Government support for commercialisation amounted to only \$0.2 billion (or 2% of the federal budget allocation for research and innovation) in 2012.⁶

To this end, the Government should consider how it can better align the national research and commercialisation agendas to ensure that they provide the correct balance between the pipeline of R&D and the capacity of investment to commercialise that research. In particular, the Government ought to examine the optimal size of commercialisation programmes such as the one recommended above, and how supporting investment vehicle structures can be improved to facilitate this alignment on a more effective basis going forward.

Looking to overseas models of government support for commercialisation may also be instructive. For example, the German Federation of Industrial Research Associations (the AiF) promotes applied R&D among SMEs, and has built a unique infrastructure through an industry-based innovation network including over 100 industrial research associations, 50,000 enterprises and some 700 research institutes. The AiF not only provides practical advice on innovation and R&D to SMEs but also acts as an interface between business, research and government. In 2012, the AiF administered an annual budget of €485m of public funds for SME-focused research projects.

Similarly, the Small Business Innovation Research programme in the US aims to help small businesses engage in R&D that has the potential for commercialisation through a competitive awards-based process. Over US\$2.2b was committed to the programme in 2011.

Improve incentives for researcher-industry collaboration

Often, working in academia and embarking on the commercialisation journey are treated as mutually exclusive options for researchers in Australia. There are often few economic (or career) incentives for researchers to invest their time and resources in working on high-risk, early stage start-ups with long-dated payoffs. Likewise, it is often difficult for researchers who have moved to industry to return to academia and be able to contribute the knowledge that they've gained working in a commercial setting.

Commercialisation also typically occupies only a very small place on the list of priorities for many Australian universities. Widely-followed university rankings and key performance indicators typically focus on research citations, teaching quality and research grants obtained, as key drivers of what constitutes a 'top ranking' university.

In addition, the competitive research grants programme tends to focus on publications as a key performance indicator of research outputs, with no clear distinction between the value of publications and conference presentations vis-à-vis more capital-intensive commercialisation outcomes.

To address these structural impediments to taking publicly-funded innovation to the market, it would be helpful in our view for the Government to consider incorporating into the national research agenda a stronger emphasis on a project's potential commercial impact under its selection criteria and reporting process.

For example, it may wish to examine fine-tuning the selection criteria, reporting template and funding envelope of existing research grant programmes to better align funding with desired outcomes. The Government may, for

⁵ [Australian Government, Science, Research and Innovation Budget Tables: 2013-14](#)

⁶ Australian Government, 2012 National Research Investment Plan.

example, consider setting aside a predetermined proportion of existing competitive research funding to high potential, game-changing technologies with a clear commercialisation pathway.

Greater business sector input in the strategic allocation of university research funding

Currently there are several bodies that oversee the strategic priorities and allocation of higher education research funding in Australia, but the business sector has relatively little direct representation in this process.

For example, the Australian Research Council (ARC) is a statutory agency that advises the Government on research matters, and its mission is to deliver policy and programmes that advance Australian research and innovation globally and benefit the community. The ARC's current Advisory Council comprises seven academic representatives and only two representatives from the non-academic community.

That notwithstanding, there appears to be a notable lack of business representation in the composition of the ARC College of Experts, which assesses and ranks ARC grant applications.

This is anomalous given that an improved level of collaboration between business and academia is widely considered to be an important objective of publicly funded research. There are no business representatives among the 159 members of the ARC College of Experts. For example, the ARC College of Experts in Engineering, Mathematics and Informatics has 41 members, of which 40 are university academics and one from the Defence Science and Technology Organisation. By contrast, the United Kingdom's ARC-equivalent body, the Engineering and Physical Sciences Research Council, comprises 18 members including an independent entrepreneur, and representatives from businesses such as Microsoft, Procter & Gamble, IBM and Arup, to name a few.

While it is recognised that there will always be a number of important areas of research that do not carry a clear commercial motivation, such as areas of work that enrich Australia and its community in a wide variety of other ways, it should be recognised that the current lack of alignment between business and academia will continue to diverge unless we take the opportunity to arrest the decline as a matter of priority.

The Government should look to consider modernising the composition of the various committees that oversee research funding in order to ensure that appropriate private sector input is taken into account to facilitate the effective and productive allocation of what is a very significant overall amount of public funding to the academic research sector. Industry-specific innovation councils can also be formed to guide and provide advice on funding and collaboration between industry and the public sector.