

QUESTION 13

4.6 Ngā pāpātanga pai ake – te whakawhiti mōhiohio me ngā pāpātanga rangahau

Knowledge exchange

How do we better support knowledge exchange and impact generation?

We need to ensure that both firms and research institutes are geared for knowledge exchange for impact generation. Anthony Arundel¹ notes that

“... effective knowledge transfer takes us back to the nexus between the capabilities of the university and the capabilities of the firms. Effective knowledge transfer hinges on capable firms and interested academics... Firms are a critically important part of the equation in all countries, but for middle-income countries, it's crucial that policy makers improve the innovation and knowledge capabilities of local firms”.

Legislative measures and/or Guidelines should be developed to strengthen knowledge exchange in New Zealand. The most notable policy intervention in support of knowledge transfer to industry was the US Federal Government's implementation of the Bayh-Dole Act in 1980. Following the implementation of the Bayh-Dole Act universities enjoyed high returns on research including the well-known Cohen-Boyer patent (1980 – 1997) for recombinant DNA, that earned Stanford University US \$254 million; the Axel patent for rDNA resulting in US \$790 million for Columbia University. Other countries followed suit, including South Africa² and European countries such as the United Kingdom and Germany, all loosely modelled on the U.S. Bayh-Dole Act.

However, the benefits that flowed from the enactment of the Bayh-Dole Act in the US were not readily apparent in other jurisdictions. Athreye and Rossi note that a mix of policy interventions are necessary to complement legislation on intellectual property ownership emanating from research and development.³ They note:

[I]n the US, Bayh-Dole did not happen in isolation, but was nested in a broader policy mix that aimed to transfer knowledge from the science base to industry. Block (2008) argues that the US has been engaged, since the 1970s, in the creation of a 'developmental network state' whose aim is to facilitate the translation of fundamental research into cutting edge technologies. It has done so through the deployment of a broad range of interventions supporting the transfer of knowledge between university and industry, both on the 'supply side' and also, very importantly, on the 'demand side' (see also Bozeman, 1994). Supply side policies encouraged federal laboratories to engage with state and local government, universities and private industry (Stevenson-Wydler Technology Innovation Act, 1980; Federal Technology Transfer Act, 1988), supported the formation of university research centres focused on translational research (Engineering Research Centers, 1985) as well as centres diffusing technologies developed by the Department of Defense to small firms (Defense Industrial and Technology Base Initiative, 1991). Demand side policies, on the other hand, provided matching grants to firms investing in the commercialization of new technologies (Advanced Technology Program, 1988), earmarked a share of the budget of federal laboratories to support the research efforts of small firms (Small Business Innovation Development Act, 1982), encouraged collaborations between small firms and universities (Small Business Research and Development Enhancement Act, 1982), and incentivised firms' adoption of advanced technologies (Manufacturing Extension Program, 1988). Nevertheless, these additional interventions have not figured prominently in the mainstream policy discourse (Block, 2008).⁴

A range of policy interventions are necessary that address issues well beyond intellectual property ownership and optimal measures for technology transfer. We can learn from the experiences of other jurisdictions.

¹ Catherine Jewell *Harnessing public research for innovation in the 21st Century* (Sept 2021) *WIPO Magazine* https://www.wipo.int/wipo_magazine/en/2021/03/article_0001.html.

² Intellectual Property Rights in Publicly Funded Research and Development Act 51 of 2008.

³ Suma Athreye and Federica Rossi "Policy Recommendations: Aiming for Effective Knowledge Transfer Policies in high- and middle- income countries" in *Harnessing public research for innovation in the 21st Century: An international assessment of knowledge transfer policies* (Cambridge University Press) (2021).

⁴ See fn 3 above.

Research impact is explored in-depth in the 2019 MBIE position paper.⁵ However, the incentives to drive impactful research is not addressed.

What should be the role of research institutions in transferring knowledge into operational environments and technologies?

Academic entrepreneurship should be encouraged. Academic entrepreneurship is the engagement of researchers in a broad spectrum of knowledge exchange activities including traditional market driven commercialisation activities (intellectual property exploitation), as well as formal and informal engagement activities (consulting, contract research, participation in networking events and think tanks, etc.). Academic entrepreneurship thus refers to the broader professional activities that researchers should participate in to enhance social and economic impact of research.

Research institutions should provide researchers with extrinsic and intrinsic incentives to encourage effective and sustained collaboration with firms.⁶

⁵ MBIE *The Impact of Research* www.mbie.govt.nz/dmsdocument/6983-the-impact-of-research-position-paper-october-2019-pdf.

⁶ See for example the Guide on Incentives being developed by the World Intellectual Property Organisation (*Incentives in Technology Transfer: How to Encourage, Recognize and Reward Faculty Researchers and Support Staff*) 2021.