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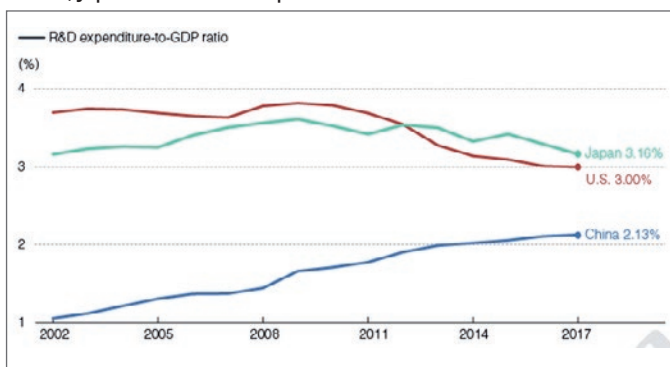
Australia's research collaboration with the PRC?

by **Jeremy Stevens**

Australia's relationship with the People's Republic of China (PRC) evokes fierce debate and greater scrutiny than ever before. Joint research collaboration between the two is no exception. There are legitimate concerns about distinct collaborative activities, namely those which could enable the People's Liberation Army (PLA) and security agencies to strengthen their capabilities. However, these concerns should not overshadow the enormous benefit of collaboration with the world's rising technological superpower across a broad range of fields. With appropriate changes in government policy and university practice, the risks can be mitigated to ensure Australia reaps the benefit.

The PRC is open about its ambition to become a world leader in advanced technologies. The 'Made in China 2025' initiative, launched in 2015, is a plan to move the PRC's relatively low technology manufacturing base up the value chain to become a global leader in 10 key high-tech industries. This commitment has led to a steady increase in spending on research and development (R&D) in the PRC, which hit 2.13 per cent of GDP in 2017. This compares with 3 per cent in the United States, where spending has been in decline since 2009.¹ In Australia the figure hovers around 1.9 per cent.

China, Japan and US R&D Expenditure-to-GDP ratio from 2002 to 2017



Source: National Bureau of Statistics of China

This rise in the PRC's expenditure has gone hand in hand with growth in collaboration between PRC researchers and organisations and their Australian counterparts. From 2013 to 2017, international collaboration schemes funded by the Australian Research Council (ARC) which include PRC researchers increased from 398 to 433. Although the PRC is still only the fourth highest on this measure, it is the only country in the top 10 to have increased over this period.

A number of high profile and big budget joint Australian-PRC research initiatives have been established or announced. Examples include the \$100 million Torch Innovation Precinct at the University of New South Wales, the first such precinct outside the PRC; the \$20 million Australia-China Research Innovation Centre in Information and Electronics Technologies at the University of Technology Sydney (UTS), set up in 2017; and this year the Queensland Government signed a Memorandum of Understanding with the PRC's Ministry of Science and Technology to set up the Queensland-Torch Health and Medical Precinct.

The expansion in research collaboration is taking place as the economic, political and military power of the PRC grows and the PRC asserts itself more than in the past. One consequence is heightened strategic tensions between the PRC and the United States. Another is that everything the PRC now does is scrutinised, with a tendency to question possible underlying motives, especially due to the hardened position toward Beijing by Australia's ally the United States. Numerous commentaries, reports and debates have focused on a legitimate question: Is technology research undertaken with PRC researchers in the national interest of Australia?



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For Australia, a country with a relatively small R&D budget, universities and research institutions have benefited enormously from international collaboration. Recent examples of successful joint Australia-PRC research include a University of Melbourne – Fudan University breakthrough in how the immune system responds to the influenza virus, and a discovery of the origin of the virus responsible for the 2002-2003 SARS epidemic by a joint team from CSIRO, Wuhan Institute of Virology and the Chinese Academy of Sciences.

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It is important that Australia's overall approach remains strongly supportive of collaborative research with the PRC. Joint research with top PRC scientists on such things as cancer cures, renewable energy technologies and agriculture, can benefit Australians and citizens of all countries.

What are the risks?

There is a risk that the beneficial nature of research collaboration with the PRC becomes obscured because of legitimate concerns about certain types of research projects having a dual-use (i.e. security and/or military applications). Contributing to the capabilities of the PRC's security agencies to increase surveillance and suppress dissent goes against Australian values of a free and open society.

The PRC is attracted to collaboration with Australia because it has excellent researchers and facilities – and is a world leader in fields such as quantum computing. Some of these technologies, while ostensibly having a primarily civilian application, may be used in the development of advanced military equipment or for cyber activities. This has widened the scope of what could be considered dual-use technologies and

has also made it much more difficult to define what constitutes “risky” technology collaboration. A further complication is Beijing's strategy to boost civil-military integration to “gain national strategic advantages”.² All state-owned and privately-owned enterprises must now be assessed as potential suppliers of technology to the PLA and domestic security agencies.

Risks to Australian interests can be approached in two ways. The first is to assess the technologies that are the focus of specific research collaboration. The Defence Trade Controls Act (DTC Act) attempts to accomplish this by regulating certain technologies through the Defence Strategic Goods List (DSGL). Part 2 of the list covers dual-use technologies. In its submission to the review of the DTC Act currently underway, the Department of Defence has asked for stronger powers to regulate sensitive technologies. This would include the ability to prevent the supply of technologies that are not on the DSGL to foreign partners if Defence judges that a particular research activity is not in Australia's security interest. Under these new powers, collaborative research with PRC organisations on sensitive technologies would require permission from the Department of Defence to go ahead even if these are not on the DSGL.

Any changes to the regulation of collaborative research in sensitive technologies must strike the right balance between protecting Australia's security and ensuring the benefits of innovation are not smothered by overly stringent controls. Having a published list such as the DSGL provides clarity and certainty for all stakeholders involved in technology research. Rather than allowing the Department of Defence control of technologies not on the list, the content of the DSGL should be maintained in a manner that ensures it is constantly up to date.

The second way to assess this risk is to look at research collaboration partners – both organisations and individuals. Collaborative research initiatives with PRC organisations that are directly involved in the development and supply of technologies to the PLA



and PRC domestic security agencies should not be permitted.

As an example of a joint initiative that requires further scrutiny, in 2017 UTS partnered with state-owned conglomerate China Electronics Technology Group Corporation (CETC) to set up the Australia-China Research Innovation Centre in Information and Electronics Technologies. CETC proudly claims on its website to be 'the most powerful national central corporation in the fields of defense electronics, security electronics and informatization.'³ It supplies radar, communications and acoustic equipment to the PRC military. It also owns 42 per cent of Hikvision, a key supplier of video surveillance cameras used to control the Uighur population in western China.

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It is not in the national interest for an Australian university to jointly develop big data technologies, quantum communication and simultaneous localisation and mapping with one of the largest suppliers to the PRC's military and domestic security agencies.

The professional or academic background of individual foreign citizens undertaking advanced research in sensitive technologies at Australian research institutes is a second area of potential risk. A recent Australian Strategic Policy Institute report estimates that over 2,500 PRC military scientists and engineers have been sent abroad to study since 2007, with roughly 300 in Australia.⁴ The same report

confirms that at least 17 of these researchers have attempted to obscure their connections to the PLA.

The DTC Act does not currently include the power to prevent the supply of dual-use technologies to foreign citizens within Australia. Amending the act to give the Department of Defence the power to regulate this as currently happens with military-use technologies on Part 1 of the DSGI is a sensible change. Any researchers found to have obscured their links to the military in their own countries should have their visas cancelled.

A different type of risk is the potential for PRC organisations funding joint research initiatives to use financial leverage to influence Australian universities' academic freedom. PRC partner organisations and companies could try to withhold funding from Australian universities at which academics are critical of Beijing's policies. Collaboration agreements, to be made public, should include a clause demanding that the independence of both parties be respected.

These potential risks show the need for deeper engagement between the research sector and Australia's security agencies on ways to ensure that collaborative research with foreign companies, institutions and researchers, including those from the PRC, does not harm Australia's security interests or support activities that contradict Australia's values. While universities may object, certain areas of research with foreign individuals and organisations, which are currently less stringently controlled, now need greater oversight.

In sum, collaborative research with the PRC in non-sensitive fields should be actively promoted and expanded where possible. At the same time, universities and the government need to acknowledge that research collaboration on dual-use and potential dual-use technology with partners from the PRC carries inherent risk. This risk can be mitigated through the strengthening and prudent use of government powers to prevent or curtail research activities which are judged to be counter to Australia's interest or values.

What does this mean for Australia?

Recommendations

- The Australian Minister for Industry, Science and Technology, the Minister for Education, and key university leaders should publicly affirm that Australia welcomes research collaboration with PRC organisations and individuals, which conforms with Australian principles of transparency and the Defence Trade Controls Act.
- Government and universities should increase public awareness of both the benefits of research collaboration between Australia and the PRC in non-controversial areas such as medicine and agriculture and the potential risks of joint initiatives in controversial areas such as Artificial Intelligence and other emerging technologies.
- The DTC Act should be amended to give the Department of Defence the ability to prevent the transfer of sensitive technologies on the DSGL to foreign citizens within Australia.
- The DSGL should not include a provision that allows the Department of Defence to control emerging technologies that are not on the DSGL. The DSGL should be kept up to date.
- The Australian Government should establish a formal consultation body, comprising Australian government and academic specialists in dual-use technology, to agree on the details of a transparent process to scrutinise research collaboration with foreign developers of military and security technology.
- Existing research partnerships with suppliers of technology to the PRC military and security agencies, such as the UTS-CETC initiative, should also be scrutinised according to the agreed-upon process. If the partnership is deemed to be against the national interest, parts of it should be amended or the partnership should be terminated.
- Universities should include clauses to protect their independence and academic freedom in agreements with foreign research partners, and make these agreements public.
- The government should re-establish the Education Investment Fund, closed in 2015, and commit to ensuring investment in R&D does not fall below the OECD average as a percentage of GDP, as has already happened.



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This policy brief is published in the interests of advancing a mature discussion of Australia's research and development collaboration with the PRC. Our goal is to influence government and relevant business, educational and non-governmental sectors on this and other critical policy issues.

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