Challenging Times for Sino–Foreign Sci–Tech Relations

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Abstract

US actions to restrict research collaboration with China in key high-tech science and technology fields is increasingly recognized as part of a tech war, if not an ideological war. Australia, Europe, and Japan, among others, are also instituting measures to limit collaboration in sensitive high-tech areas, citing security concerns and loss of intellectual property. If insufficiently nuanced, such measures pose risks and will potentially weaken well-established and important research networks with China.

The US decision to revoke 1,000 Chinese graduate students' and researchers' visas is a recent example of increased restrictions being placed on Sino-US science and technology research relations. Earlier actions include the arrest of several Chinese scientists who failed to acknowledge receiving Chinese research funds, including from one of China's major "foreign talent" schemes.

But such actions, including prosecuting Chinese researchers who failed to acknowledge military ties, have been criticized by some US researchers. They raised instances of Chinese medical researchers being placed under suspicion by default, simply because the major Chinese hospital where they worked had some affiliation with the military. Contested claims regarding industrial espionage, and concerns of research having military applications, followed earlier US actions to deny visas to Chinese researchers in STEM fields, particularly those related to China's Made in China 2025 policy, which prioritized key high-tech areas: IT, robotics, aerospace technology, new materials, and biotechnology. (The issues relating to social science and humanities research are rather different, including language, different epistemological and interpretive frames, as well as censorship and China's "Great Firewall"). In response to the visa cancellations, some Chinese students posted an online spreadsheet claiming to show only nominal links to the Chinese military.

Restrictions Spread

The US actions are part of the so-called US-China trade war, now increasingly recognized as a tech war, and perhaps even an ideological cold war. References to research in the White House's "Strategic Approach" document of 2020 list misappropriation of technology, intellectual property theft, breaches of confidentiality, and failure to disclose foreign interests. But moves to limit international research collaboration are spreading. The European Union's substantial and longstanding collaboration with Chinese researchers was recently challenged by the European Commission's director-general for research and innovation, Jean-Eric Pacquet, who warned that Beijing lacked transparency regarding its scientific data, and restricted collaboration in several of its strongest scientific areas. According to Pacquet, the European Union no longer believes that

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scientific links with China are reciprocal. He argues that, while access to Europe is free and open, access to China is "cumbersome and sometimes formally limited." Such concerns, including about forced technology transfer, presage a forthcoming framework to more clearly define European universities' and research organizations' partnerships with China, including issues such as national security and intellectual property rights. As with the United States, the changed stance on research collaboration is part of a wider transformation by the European Union: from viewing China as a strategic partner, to naming it a systemic rival in March 2019.

Japan, too, is mulling tighter control over Chinese researchers and scientists, in an effort to stem leakage of high-tech research in areas such as quantum computing, artificial intelligence, and semiconductor manufacturing. Proposed guidelines would tighten vetting of visas and require Japanese universities and research establishments to declare all foreign research income. But, while in 2017, 6,313 international researchers were Chinese (of a total 39,473), it is unclear how many of them specialized in sensitive, high-tech areas. In addition, some Japanese scientists voiced concerns that measures to protect sensitive research and strengthen research integrity should not restrict open science and innovation, or Japan's national research effort.

Amid claims about rising foreign interference, Australia proposed a parliamentary inquiry into foreign influence. It specifically included its universities and listed concerns about research collaboration. While no country was mentioned specifically, China was clearly the target. The fact that two eminent Chinese researchers credited with expanding Australian studies in China were initial targets and had their visas cancelled, did not inspire confidence that a sophisticated strategy was being applied. With funding from the US State Department's Global Engagement Centre, the Australian Strategic Policy Institute developed a Defence Universities Tracker in 2019: a database of Chinese institutions engaged in military or security-related science and technology research. The website includes individual entries on almost 100 civilian universities, 50 People's Liberation Army institutions, three ministry of state security institutions, and 12 state-owned defence industry conglomerates.

Different from the United States: The European Union and Asia

The United States is pressuring all its allies to follow its lead in containing China, including within research collaboration. Japan may well follow. But China remains keen to cooperate internationally and there is little evidence that either Europe or much of Asia wishes to limit their options so strictly. To take sides, for example, would be very much at odds with ASEAN's long standing desire to hedge, maximizing the room to maneuver between two increasingly rivalrous, rancorous superpowers. There are no signs among ASEAN member states of wanting to restrict research collaboration with China, which is in fact a major knowledge partner of many ASEAN research systems. Even Vietnam, for example, with a long and complex history of China relations, shows no sign of wanting to curtail research relations with its often-troublesome giant neighbor. In addition, several ASEAN systems are repositories of significant numbers of high-skilled members of the Chinese knowledge diaspora, working in universities and research establishments.

Risks

The examples above tend to show national security concerns dominating decisions about international research collaboration. But there are associated risks. The first is that the baby may get thrown out with the bathwater. What is clearly needed is greater sophistication in distinguishing sensitive high-tech projects from many others that pose no national security risk. As Denis Simon, a specialist on China's scientific rise and former senior executive at Duke Kunshan University in Suzhou, put it recently, "To assume a comprehensive conspiracy is too far from the reality."

The second risk of too blunt an approach is that many gifted Chinese researchers may decide not to travel to the United States or to other systems with similar restrictions. Or they may leave the United States: There is already troubling evidence that some researchers of Chinese descent are departing. Others are reorienting their research collaboration toward Japan, the United Kingdom (which, however, recently unveiled its Academic

Approval Technology Scheme of selective bans), or Europe. The effect may represent a win for China, but a net loss for US research, as a number of US researchers have warned.

The final risk is arguably the most troubling: the rise of nationalism and nativism in a number of systems around the world. The associated elevation of national security above diplomatic and academic concerns may undermine the well-established web of bilateral and international research networks, which increasingly sustain much global research output. When one in three of all publications worldwide now results from the collaboration of researchers from at least two countries, and when China and the United States are each other's largest collaborators in coauthored published papers, how sensible is it to exclude so many contributions from China, now one of the world's scientific superpowers? ◢

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