



International Collaboration with Russia and China: Researchers Face Difficult Choices

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Today's global research networks evolved from a more "national" system. The research world of 1980 was dominated by the G7 and the USSR, changed relatively slowly, and maintained a broad balance from year to year. That was changed by better communications, cheaper travel, and the internet. Growing awareness of the central role of R&D in stimulating economic competitiveness and technological capacity led to greater research investment in many countries. New research powers appeared in Asia and the phenomenal growth of China's research base disrupted the hierarchies of research excellence.

Improved communications had another profound effect. In the 1980s, countries collaborated internationally on barely 5 percent of the articles that they published in journals indexed by the then Science Citation Index. By 2010, that figure passed 50 percent of articles indexed in the Web of Science and was still climbing steadily. The cutting edge of research had shifted from an academic occupation, via a national priority, to become an international effort. The most highly cited research is now an activity shared between leading universities across many countries.

The Challenge

It is excellent news that countries share the burden of responding to severe, global crises such as climate change, pandemic disease, an aging population, food and water security, and energy supply. It is a foundation of traditional research culture that knowledge is openly shared, with data made available through publications that are clear, complete, and truthful. Such conventions form the bedrock that "goes without saying" in research training.

It is therefore a significant challenge to traditional ways of thinking and of working when global connections are stressed by abrasive regimes in collaborating countries. Our new report "[Stumbling bear, soaring dragon](#)," the fourth in a series by King's Policy Institute and affiliates of the Mossavar-Rahmani Center for Business and Government at the Harvard Kennedy School, focuses on this question. Our discussion is applied particularly to Russia and China, but the scope is a wider global challenge.

Leading research institutions in Europe and North America, along with their historical partners in other regions, have sustained an open, collaborative network. Those that do not invest in international partnerships, or are thrown out of them, lose access to leading research and related opportunities for knowledge transfer. The cutting edge of innovation relies not only upon tangible resources (because such research is unaffordable for any one group), but on a synergistic concentration of ideas and competence.

As that global research network expands and diversifies, drawing in new partners with a shorter research history, it also engages with regimes that do not share the same political perspectives and, in some cases, foster a very different approach to the traditionally collegial research culture. How should we maintain and promote international collaboration when these approaches clash?

Russia and China

It is simplistic to focus on Russia and its war in Ukraine. Compared to the heyday of the Soviet research machine, the contemporary Russian science system is weak, deteriorating, and increasingly marginalized. In the 1980s, the USSR was the world's fifth most prolific research publisher, even without accounting for its Russian language journals. Russia today is 16th for research output among 30 leading nations, with barely 3 percent

Abstract

The global research network has evolved enormously over the past four decades, but the increasingly open and collaborative system could be threatened by recent political changes. The contrasting examples of Russia and China illustrate a dilemma that must be negotiated and to which researchers in higher education cannot be blind. Higher education institutions must acknowledge and negotiate their course with care if the fruits of shared knowledge and innovation are to continue to be harvested.

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of papers indexed in the Web of Science publication database. It invests barely 1 percent of GDP on R&D, compared to an OECD 2020 average of 2.7 percent; its researcher workforce has fallen by 20 percent since 2000; half of its international collaboration is concentrated in the highly multinational programs of astronomy and nuclear/particle physics.

This means that, except perhaps in these disciplines, the West can shut Russia out without weakening its own science. Even in Central and Eastern Europe, Russia is the most frequent collaborator only with Belarus and ranks among the top 10 research partners with only four others. In Central Asia, it has been displaced by Turkey in Kyrgyzstan and China in Uzbekistan.

Russia is only China's 19th most significant partner, however, a position in which it has remained for the past 10 years. Put simply, China has over the past 20 years become much more important to Russia and will likely now overtake the United States and Germany to become its single most important partner, but Russia remains no more important to Chinese science than many other Belt and Road Initiative countries.

With China, the simplistic reactions that might be adopted in the context of Russia break down. Marginalizing Chinese science would have dramatic negative outcomes, as those who have proposed this have then realized. It has become the world's biggest spender on R&D; its indexed research output in Anglophone journals exceeds that of the United States; it is now the first or second most frequent research partner with most of the G7; and it is a leading collaborator as far afield as the Scandinavian and Baltic states, Australia, Singapore, and South Korea.

China's research has not emerged from bare ground, but from a transformation out of a demand economy with specialized institutions targeting research in specific industrial and military sectors. Institutions have consolidated into multifaculty universities, and research training on a Western model has hugely expanded. The transformation has been disruptively fast for the global research landscape (journal publications have grown 25-fold since 2000) and, while impressive research structures are now in place, research culture cannot transform overnight.

For example, unlike most countries, China is far less collaborative and highly bilateral in the collaborations that it does have. About three-quarters of its Anglophone journal papers are purely domestic, with no international coauthor, and only 7 percent are multilateral compared to around 30 percent for most of the G7. There is a pattern of selectivity, both in partnerships and in the economically vital technologies in which collaboration is concentrated, which poses problems for research managers and constrains the flow of emerging knowledge.

In acknowledging this as an issue, we need to be clear that the United States and the United Kingdom have been dilatory not only in overseeing these relationships but also in promoting their own engagement with Chinese research. How many Western scientists can speak or read a word of Mandarin? Many more need to be able to do so. The flow of information requires a two-way channel, and the costs of isolating China would be orders of magnitude greater than those of banishing Russia.

The Wider Global Network

Harsher geopolitics could disrupt the expansion of scientific internationalization. Recent events will have lessons for Western collaboration, not only with China, but also with other authoritarian regimes that pursue policies at odds with mutual knowledge exchange and an open, inclusive society.

Russia and China are not alone in posing such questions. Egypt, Israel, and Turkey have all recently raised, for different reasons, questions of the ethics of research and cultural engagement. Responses have been confused and inconsistent. The Middle East is a network of expanding scientific investment, and this is often in collaboration with China and Russia, driven by authoritarian regimes. All may raise challenges to equitable collaboration.

We cannot circle the wagons and adopt needlessly risk-averse policies that cripple science. Globalized networks would wither if nations fell back on domestic priorities. Nor can we sleepwalk into providing know-how, legitimacy, and support for the technological capabilities of countries with interests fundamentally inimical to our own. No one size fits all; with the right safeguards, some collaboration may be pursued; but whatever we do must be properly informed, considered, and specific to each situation. ▲