Managing Technological Competition with China: Challenges for Japan and the United States[1]

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Economic and technological interdependence with China has been "securitized" over the years as the relationship between the United States and China have become fraught with mistrust and came to be characterized as one of strategic competition. China's strategy to buy, learn and steal foreign technology, reduce dependence on them, and exploit those technologies for military, industrial and information dominance purposes has been met with US pushback beginning in the years of the Obama administration[2]. Subsequently, US efforts to counter Chinese technology transfer dramatically expanded during the Trump administration. Policymakers now see interdependence as a source of vulnerability rather than benefits. The flow of goods, technology and data between China and the United States have been subjected to various kinds of national regulations, and both governments are ramping up domestic investment in research and development to reduce dependence on the other. Consequently, terms such as selective "tech decoupling" have become common.

The United States and Japan both hold strong security concerns against China while also engaging in significant economic transactions with it, raising risks that the JFIR Proposed Basic Principles have pointed out. Intensifying security competition in a world of globalized networks and a structure of interdependence has made China a particularly challenging actor to manage since it pursues military-civil fusion and leverages economic means to coerce other states for political purposes. In the face of this challenge, the United States and Japan will need to undertake a two-pronged approach: 1) enable deeper R&D cooperation by, among other measures, increasing the connectivity of their respective S&T ecosystems, and 2) coordinate on regulating their interfaces with the Chinese S&T ecosystem.

1. Advancing Deeper R&D Cooperation

The United States and Japan are collaborating on a multitude of initiatives to enhance competitiveness and promote innovation. Recent initiatives include the US-Japan Competitiveness and Resilience (CoRe) Partnership announced in April 2021. According to the fact sheet, initiatives involving 5G Open-RAN and 6G, Global Digital Connectivity Partnership, global ICT standards development, supply chain cooperation, biotech, and quantum information science and technology have been launched.[3] The joint statement of the U.S.-Japan Security Consultative

Committee issued on January 6, 2022 announced that the Ministers "committed to pursue joint investments that accelerate innovation and ensure the Alliance maintains its technological edge in critical and emerging fields, including artificial intelligence, machine learning, directed energy, and quantum computing."[4] They also agreed to conduct a joint analysis focused on future cooperation in counter-hypersonic technology.

In order to further facilitate R&D collaboration, several efforts could be undertaken. First, the two governments should map the private sector tech innovation ecosystem to illuminate potential cross-border R&D. As Japan is now moving to bolstering public-private partnerships for R&D of certain critical technologies – those related to AI, quantum, space, maritime, among others – as a part of its economic security initiative[5], the two governments should begin by sharing information about their respective R&D public-private partnership programs and identify areas where they can leverage synergy and complementarity. Technology standard-setting efforts should take a multi-partnership approach to include other US allies as well as newly launched cooperative initiatives under the Quad framework.

2. Dealing with China's Military-Civil Fusion (MCF)

China's MCF Development Strategy has become a major source of concern for the US government.[6] MCF has raised the question of what not to sell and to whom not to sell in China, and US authorities seem to have found it increasingly difficult to identify military/civil end user and end use as MCF is gradually expanding its scope of involved entities.[7] MCF has been cited by US authorities as a reason to add Chinese companies and academic institutions to the "Entities List" and the "Unverified List," and declare a US presidential proclamation regarding denial and revocation of visas of Chinese students and researchers having proximate ties to Chinese entities involved in MCF.[8] More importantly, US export regulations have been covering re-export from third countries based on application of rules such as the de minimis rule and the direct product rule. As a result, in the area of export control, US policy in recent years have expanded the scope of military end user and military end use regulations. China has reacted by enacting its own export control act in October 2020.

Thus, the more challenging endeavor would be coordinating on how to control export of dual use emerging technologies in a situation where both the United States and Japan maintain substantial economic exchange with China. While US-China competition over advanced technologies is likely to persist and intensify, a complete technological severance is unlikely. Indeed, most American,

European and Japanese companies operating in China appear to maintain their businesses in China even in the midst of intensifying bilateral friction.[9] Academic talent flow between the Chinese and American S&T systems remain[10] (though Chinese students and scholars studying in the United States maybe decreasing in number as a result of Covid, visa restrictions and other measures). As Segal and Kania have pointed out, "[t]he balance between cooperation and competition will vary over time in response to political and geopolitical vicissitudes and will differ across various fields and domains of S&T."[11]

Given this reality, completely shutting down economic and academic exchange with China based solely on security considerations will likely undermine the American and Japanese bases of economic prosperity and innovation, and thus, policy experts, companies, and academics have called for tailored and calibrated responses adequate for maintaining and bolstering technological and economic competitiveness.[12] This fundamental question of how various national policies should balance security interests derived from strategic considerations and economic interests accruing from free and open commerce and transnational exchange needs to be addressed in various ways depending on the nature of particular challenges.

3. Implications for Japan

The above trends have generated a sense of uncertainty among the Japanese business community. According to a survey conducted against 100 Japanese firms in November/December 2021 by a Japanese thinktank, 75% of all respondents answered that the biggest issue they face is the "uncertainty of US-China relations" and 60.8% (59 of 97 respondents) replied that their business operations have been affected by the confrontation between China and the United States.[13] 59.5% (44 out of 74 respondents) replied that they have been affected by increased cost resulting from strengthened US regulations (including tariffs), while 33.8% replied that they have been affected by increased cost resulting from strengthened Chinese regulations.[14] 12.5% (12 of 96 respondents) answered that in the past they had faced a situation where they had to choose between the United States and China (no mention of specifics).[15] When asked what concerns they have when operating in China and the United States respectively, they replied as follows:[16]

Concerns for business operations in China (88 respondents)		**Concerns for business operations in the US** (88 respondents)	
Risks from changes in Chinese authorities' guidelines	76.1%	Disruptions in supply chains	47.7%

Information leaks including technology information	65.9%	Intensified movement in the US to remove Chinese companies	46.6%
Geopolitical risks	63.6%	Uncertainty of US China policy in the mid to long term	45.5%
Growth of rival Chinese companies	62.5%	Geopolitical risks	38.6%
Consequences of Chinese authorities' tightened regulations on foreign capital	52.3%	Cost increase resulting from realignment of supply chains and relocation of production sites	28.4%
Cyberattacks	52.3%	Reorganization of production systems	9.1%
Disruption in supply chains	52.3%		
Improvement of China's technology power	47.1%		
Human resource drain	39.8%		
Suspension or delay in visa issuance by China	28.4%		

Source: Asia Pacific Initiative Survey on 100 Japanese Companies, pp, 10, 13.

These concerns appear to have driven 47.4% of the respondents (largest cluster) to desire a clear indication of the direction of Japanese policy to deal with American and Chinese regulations, and 18.6% want the Japanese government to take into account corporate interests when making policy decisions.[17]

Under these circumstances, the main task here is to establish a US-Japan consultation mechanism on joint decisions to apply various export regulations so as to minimize the risk of excessive restriction including those that have extra-territorial implications. The United States would be in a better position if it obtained concurrence from US allies including Japan, and Japan would benefit from such consultation that would allow it explore ways to optimally protect its commercial interests. A future goal would be to form a minilateral regulatory framework for the United States and its technologically advanced allies so that export control is multilateralized effectively through consensual consultative processes.[18] Joint decisions and agreed guidelines should generate predictability for businesses and academia for all the member states.

But in order for Japan to be able to meaningfully engage US authorities, it would need to (i)

establish a mechanism to search and survey domestically developed dual-use emerging technologies, and (ii) devise a National Technology Strategy (NTS) to, among other things, identify and define what technologies it wants to protect and achieve some level of self-sufficiency and dependence on trusted partners and what technologies it wants to put into competition in foreign markets as leading (indispensable) technologies. The NTS should also contain human talent acquisition strategy as China is expected to double down on its talent acquisition efforts on a global scale to counter US policies.[19] Without a backbone strategy, Japan will be merely reacting to Chinese and American regulations and policies on an ad hoc basis. Thus, the true challenge for Japan is to devise the NTS based on security and industrial considerations to effectively manage technological competition with China over the long haul.[20]

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[2] The Obama administration blocked the sale of German chip equipment maker Aixtron to China's Fujian Grand Chip Investment Fund through a Presidential Order issued on December 2, 2016. The White House, "Presidential Order -- Regarding the Proposed Acquisition of a Controlling Interest in Aixtron SE by Grand Chip Investment GMBH," December 2, 2016.

[3] Ministry of Foreign Affairs of Japan, "U.S.-Japan Competitiveness and Resilience (CoRe) Partnership," available on the web.

[4] US Department of Defense, "Joint Statement of the U.S.-Japan Security Consultative Committee," January 6, 2022.

[5] Chapter 4 of the Economic Security Promotion legislation stipulates that a Council (*Kyogikai*) will be formed by the relevant ministers and heads of organizations that engage in R&D of certain critical technologies to gather information and examine effective ways to promote the development and exploitation of those technologies.

[6] See for example, Alex Stone and Peter Wood, *China's Military – Civil Fusion Strategy: A View from Chinese Strategists,* Montgomery, AL: China Aerospace Studies Institute, 2020.

[7] Alex Joske, *Picking Flowers, Making Honey: The Chinese Military's Collaboration with Foreign Universities,* Sydney, Australia: Australian Strategic Policy Institute, 2018; Emily de la Bruyere and Nathan Picarsic, *Defusing Military–Civil Fusion: The Need to Identify and Respond to Chinese Companies*, Washington, DC: Foundation for the Defense of Democracies, May 27, 2021; Alex Joske, *The Chinese Defense Universities Tracker: Exploring the Military and Security Links of China's Universities,* Sydney, Australia: Australian Strategic Policy Institute, 2019.

[8] Introductory comments in "How Should the U.S. Respond to China's Military-Civil Fusion Strategy?: A ChinaFile Conversation," May 22, 2021.

[9] In response to various surveys conducted in 2020, roughly 15% of American companies, 10% of European companies and Japanese companies operating in China answered that they had decided or were considering the relocation of business operations to third countries. Shingo Ito, "*Supplychain no Minaoshi to Chugoku no Shinkoso: Nihon ni hitsuyouna tamenteki doryoku* (Review of Supplychains and China's New Concept: Japan's Need for Multifaceted Efforts)," in Yuji Miyamoto and Ijyuin Atushi eds., *Beichu Bundan no Kyojitsu* (Myths and Realities of US-China Decoupling), Japan Center for Economic Research, 2021, pp.184-185.

[10] According to one research, in 2018, there were "an estimated 46,000 Chinese undergraduates, 41,000 master's students, 36,000 doctoral students, and at least 30,000 postdoctoral or visiting scholars currently studying or researching STEM in the United States." Also, "there were around 20,000 US students in China...

and the number of US researchers in China was likely in the hundreds or low thousands." Remco Zwetsloot, *US-China STEM Talent 'Decoupling': Background, Policy and Impact*, Johns Hopkins University Applied Physics Laboratory, 2020, p.3.

[11] Elsa B. Kania and Adam Segal, "Globalized Innovation and Great Power Competition: The US-China Tech Clash," in Jacques Delisle and Avery Goldstein eds., *After Engagement: Dilemmas in U.S.-China Security Relations*, Washington D.C.: Brookings Institution Press, 2021, p.319.

[12] Regarding AI talent, see Remco Zwetsloot, James Dunham, Zachary Arnold, Tina Huang, *Keeping Top AI Talent in the United States: Keeping Top AI Talent in the United States*, Washington D.C.: Georgetown University Center for Security and Emerging Technology, December 2019, pp.31-33.

[13] Asia Pacific Initiative, "*Keizai Anzenhosho ni kansuru 100 sha ankeito* (Questionnaire for 100 Firms Regarding Economic Security," December 24, 2021, pp.4-5.

[14] Ibid., p.5.

[15] Ibid., p.6.

[16] Ibid., pp.10, 13.

[17] Ibid., p.14.

[18] Advancing this effort will eventually raise the question of how to bring South Korea into the framework.

[19] Alex Stone and Peter W. Singer, "How China Is Planning For a Tech Decoupling," *Defense One*, October 12, 2021.

[20] Japan will need to examine what technologies China wants to acquire from Japan and devise policies designed to deal with China's technology acquisition efforts.