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The SAIS China Studies Review is a publication of SAIS China and the China Studies Program at the Johns Hopkins Paul H. Nitze School of Advanced International Studies.

The Review publishes interdisciplinary work by graduate students conducting research on China, including history, political science, economics, policy, security, and area studies.

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Editorial Board

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Letter from the Editor

We are truly happy to present to you, our fellow SAIS affiliates and the broader China Studies community, the fifth edition of the Johns Hopkins SAIS *China Studies Review* (CSR). The following pages explore recent economic, technological, and political developments in China—and what they mean for the United States and for international governance at large.

Our edition begins with Shangsi Zhou's exploration of the unconventional growth of market capitalism in China's state-governed economy. Her essay is followed by Sam Boone's timely review of China's relationship with the International Criminal Police Organization (Interpol), reflecting on the ways in which China uses international organizations to fulfill domestic goals. The next article is Dominic Chiu's review of the inefficiency of China's state sector and the inherent difficulties that exist in reforming state-owned enterprises. The fourth entry is Anna Woods' examination of China's growing food insecurity and the ways in which China leverages international organizations and multilateral relationships in attempts to mitigate future shortages. Her work is followed by Brian Hart's research regarding technological innovation in China in terms of strategic military development, and how this impacts U.S.-China technological competition. Next, Kevin Garrahan examines China's path to becoming a world leader of innovation, and the challenges presented by China's current economic structure to this transition. Finally, Michael Sutherland concludes this edition with his review of China's transition from a "standards taker" to an international "standards maker," and what this means for international governance organizations.

I believe that I speak for all of us, student authors and editors alike, in saying that not only did we gain in knowledge and professionalism throughout this process, but we also contributed to—and became a more intimately connected part of—the broader China Studies and SAIS network. We deeply appreciate your readership, your support, and your continued involvement in the *China Studies Review*.

The research contained within this edition was conducted by students during their time at SAIS. Submissions were selected by our talented team of student editors via a double-blind review of anonymized manuscripts. Each paper was given an overall score of "strong reject," "weak reject," "weak accept," or "strong accept." The minimum requirement for publication was two double-blind strong accept results; all papers meeting this requirement were accepted. In scoring these papers, our team of editors adhered to a specific set of guidelines designed for CSR. For your perusal, this guide is located on the SAIS CSR website at saiscsr.org, under the tab "reviewer guidelines."

We would love to hear from you. Please don't hesitate to reach out to both our authors and editors, whose respective emails are included in their short biographies. In addition, we are proud to announce that the 2018–2019 CSR team will now be accepting alumni publications for the website; we welcome you to submit your China-related research to *saischinastudiesreview@gmail.com* for review. Enjoy this edition, the fifth volume of the *China Studies Review!*

Naomi Garcia

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Commentary

Sino-Capitalism: Demystifying the Paradox of China's Hybrid Political Economy

Shangsi Zhou

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Is authoritarianism inherently incompatible with, or does it only provide barren soil for, the seeding of a capitalist market economy? Political economists have long debated the feasibility of symbiosis between two seemingly contradictory forces, i.e., market and state, in facilitating economic development. Conventional analysis supports the view that democracy, rather than authoritarianism, provides more fertile ground for fostering a capitalist economy and growth.[1] However, the rise of China, an authoritarian party-state embracing the ideas of marketization and globalization, seems to empirically challenge the conventional wisdom, which claims capitalism can only flourish in liberal democracies.

Despite the ongoing controversy about the sustainability of the Chinese authoritarian capitalism model, there is no doubt that the realization of China's phenomenal catch-up success should be credited to its idiosyncratic innovation of a dual-functioning political-economic structure.[2] The unique "Sino-capitalist" model,[3] or as others have termed it, the model of "directed improvisation,"[4] "structured uncertainty,"[5] or "experimentation under hierarchy,"[6] creates a middle ground between central planning and a laissez-faire approach. It enables China to harness both state capacity and market forces by combining top-down bureaucratic leadership with bottom-up experimentation with local agents and markets.[7] Therefore, based on the existing literature on Chinese political economy, this commentary argues that the institutional innovation of an adaptive dual-track political-economic system, which safeguards both the state and the market, is the key to understanding how China can overcome the contradictions and develop synergies between political guidance and market competition.[8] This essay will draw upon the examples of institutional innovations in business sector development (consisting of both state-owned and private enterprises), foreign investment and trade liberalization, and domestic industrial upgrading in the global production system. As each case shows, Chinese institutional innovation has been a careful compromise between the pre-existing institutional legacies, i.e., China's socialist authoritarian system, and the subsequent modification or creation of novel institutions to promote a market economy.

The development of China's business sector has been marked by a series of policy innovations for the advancement of state-market coevolution. A peculiar feature of the business sector in China has been the vacillations between power centralization and further relaxation of the party-state's control over the economy. As stated by Heilman,[9] Naughton and Tsai,[10] and Chen,[11] the reform of state-owned enterprises in

China remains one of the most challenging tasks because of the vested political interests in this reform and its stake in regime stability. Nevertheless, this top-down gradualist reform approach does not preclude policy experimentations that work for the realization of both useful central guidance and marketization. The policy of "grasping the large and letting go of the small" (抓大放小, *zhuada fang xiao*) in the mid-1990s and the creation of the State-owned Assets Supervision and Administration Commission (SASAC) in the early 2000s are cases in point. Compared with China's past under the central planning system and with its Asian democratic counterparts, these two reform initiatives improved the competitiveness of large SOEs with the purpose of creating industrial champions as a means of defending national interests; they also increased market competitiveness by relinquishing the state's direct control over smaller SOEs.

The economic rent generated from the significant enhancement of China's global competitiveness through guided liberalization, in turn, sustains the resilience of authoritarianism in China.

However, relaxation of the state's direct control over privatized SOEs and the booming private sector in China does not equate with weakened party-state guidance over the increasingly complex economy. Instead, China's government has been able to adapt to this relative decentralization by embedding itself in the changing socio-economic structures during business sector reforms.[12] In China's private business sector, co-optation in the form of the recruitment of private entrepreneurs into the party system—"wearing red hats"—can be viewed as an institutional innovation that helps construct a mutually beneficial relationship between the Chinese Communist Party (CCP) and private entrepreneurs. For the CCP rulers, recruiting entrepreneurs into the CCP enables them to appease political dissidents and to consolidate state-business connections in China. These connections help maintain, albeit indirectly, the dominance of the CCP over the regime and enable the rulers to share the material rent generated by the private sector.[13] On the other hand, private entrepreneurs are also motivated to join the CCP since it helps establish good political connections (关系, *guanxi*) that are important when doing business in China; it also helps business elites advance their political careers, knowing Party membership acts as a political career entry ticket in China.[14] In the end, corporate governance over both the state-owned enterprises and private enterprises in China has been driven by institutional innovation that takes into account the duality of the state and the market that is specific to the Chinese context.

Regarding foreign economic relations, China has successfully integrated into the global economy through foreign investment and international trade by formulating an innovative dual-track system, harnessing both the forces of the state as well as the market. The key enabling factor for China's transformation into the world's workshop and source of outward investment relies on policy experimentation under the overarching guidance of the central government, which stimulates the reception and internalization of international capital while maintaining the smooth channeling of policy information from the top. The development of Special Economic Zones (SEZs), beginning in the 1980s, could

be viewed as another case of China's adaptive institutional experimentation. As indicated by the name, SEZs refer to a limited number of designated pilot regions that adopt more favorable and liberalized economic policies than found in other parts of the country. A critical objective of SEZs is to expand foreign trade and investment, and more implicitly to introduce and internalize foreign capital, resources, and technical know-how from abroad without overthrowing the overarching state supervision.[15] The unique policy cycle in the governance of investment and trade enables the state to conjoin its guidance from above and secure competitive market forces from below, and the economic rent generated from the significant enhancement of China's global competitiveness through guided liberalization, in turn, sustains the resilience of authoritarianism in China.[16]

Accordingly, the final point concerns the creative way in which China manages to deal with the competing forces of the state and market in domestic technological development, which enables it to move up the global value chain from low-end labor-intensive industries to high-end capital-intensive industries through manufacturing-centered upgrading.[17]According to Breznitz and Murphree[18] and Chen,[19] economic growth and industrial innovation in China rely on the invention of a hybrid institutional network that, on the one hand, creates enough space and leeway for local innovation. On the other hand, it preserves a significant amount of steering and overseeing capacities from above so as to mitigate the cost of market failure during the innovation process. In other words, domestic industrial upgrading in China is another result of the experimentation with a hybrid institutional framework, driven by a combination of trial and error by local agents and final guidance in decision-making at the top.

This commentary reviews the development trajectories of China's business sector, its investment and trade liberalization, and its industrial upgrading that faces external competition from the global market. As each case shows, the reason China can reconcile the competing forces of the state and market is attributed to its institutional innovation of an adaptive dual-track political-economic system preserving the interactions between the state and the market. This idiosyncratic institutional innovation is established to balance between the country's socialist institutional legacies and its need for economic development, by incorporating entrepreneurial forces at the local level.[20] The sustainability of this "Sino-capitalism" model remains hard to predict considering the incompleteness of China's market transition, but the invention of this innovative political-economic model provides an institutional explanation for the Chinese economic miracle through the past forty years of reform and opening-up.

1 For example, see: Seymour Martin Lipset, "Some Social Requisites of Democracy: Economic Development and Political Legitimacy," *American Political Science Review* 53, no.1 (1959): 69-105; Adam Smith and Edwin Cannan, The Wealth of Nations (New York, N.Y: Bantam Classic, 2003); William J. Baumol, Robert E. Litan, and Carl J. Schramm, *Good Capitalism, Bad Capitalism, and the Economics of Growth and Prosperity* (New Haven: Yale University Press, 2007); Joseph A. Schumpeter, *Capitalism, Socialism and Democracy* (Oxon: Routledge, 2010).

2 Sebastian Heilmann, "Policy Experimentation in China's Economic Rise," *Studies in Comparative International Development* 43, no. 1 (December 27, 2007): 1–26; Kellee Tsai, *Capitalism without Democracy: The Private Sector in Contemporary China* (Ithaca, N.Y: Cornell University Press, 2007); Dan Breznitz and Michael Murphree, *Run of the Red Queen: Government, Innovation, Globalization, and Economic Growth in China* (New Haven: Yale University Press, 2011); Yuen Yuen Ang, *How China Escaped the Poverty Trap* (Ithaca, N.Y.: Cornell University Press, 2016); Christopher McNally, "Sino-Capitalism: China's Reemergence and the International Political Economy," *World Politics* 64, no. 4 (2012): 741-776.

3 McNally, "Sino-Capitalism: China's Reemergence and the International Political Economy," 741-776.
4 Ang, *How China Escaped the Poverty Trap*.
5 Breznitz and Murphree, *Run of the Red Queen: Government, Innovation, Globalization, and Economic Growth in China*.
6 Sebastian Heilmann, "Policy Experimentation in China's Economic Rise."
7 McNally, "Sino-Capitalism: China's Reemergence and the International Political Economy," 741-776.
8 Barry Naughton and Kellee S. Tsai, "Introduction," in *State Capitalism, Institutional Adaptation, and the Chinese Miracle,* eds. Barry Naughton and Kellee S. Tsai (New York, NY: Cambridge University Press, 2015), 1-24.
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10 Naughton and Tsai, *State Capitalism, Institutional Adaptation, and the Chinese Miracle*.
11 Ling Chen, "Playing the Market Reform Card: The Changing Patterns of Political Struggle in China's Electric Power Sector," *The China Journal*, no. 64 (July 1, 2010): 69–95.
12 Naughton and Tsai, *State Capitalism, Institutional Adaptation, and the Chinese Miracle;* Ang, *How China Escaped the Poverty Trap;* McNally, "Sino-Capitalism: China's Reemergence and the International Political Economy."
13 Tsai, *Capitalism without Democracy: The Private Sector in Contemporary China;* Bruce J. Dickson, *Wealth into Power: The Communist Party's Embrace of China's Private Sector* (Cambridge, New York: Cambridge University Press, 2008); Nicholas R. Lardy, *Markets over Mao: The Rise of Private Business in China* (New York: Columbia University Press, 2014).
14 Bruce J. Dickson, *Wealth into Power: The Communist Party's Embrace of China's Private Sector*.
15 Heilmann, "Policy Experimentation in China's Economic Rise."
16 Mary Gallagher, "Reform and Openness: Why China's Economic Reforms have Delayed Democracy," *World Politics* 54, no. 3 (April 2002): 338-372.
17 Edward Steinfeld, *Playing Our Game: Why China's Rise Doesn't Threaten the West* (New York; Oxford: Oxford University Press, 2012).
18 Breznitz and Murphree, *Run of the Red Queen: Government, Innovation, Globalization, and Economic Growth in China*.
19 Ling Chen, "The Microfoundation of State Intervention and Policy Effectiveness," in *Manipulating Globalization: The Influence of Bureaucrats on Business in China,* (Stanford: Stanford University Press, 2018), 93-130.
20 Naughton and Tsai, *State Capitalism, Institutional Adaptation, and the Chinese Miracle*.

China's Influence on Interpol: Progress and Pushback

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Introduction

As China continues down its road of modernization, China's leaders hope to increase not only their country's economic strength but also its international political influence. Since the People's Republic of China joined the United Nations in 1971, China has been gradually increasing its role in international organizations and becoming more intertwined in the network of international structures largely constructed by the United States and its allies following the end of World War II.

This paper focuses on China's influence on the International Criminal Police Organization (Interpol)[1] as well as the organization's effects on China. It aims to add to the existing literature on how China engages with, and may be transforming, international institutions. China has recently become a more active member in Interpol as the country seeks to bring home Chinese citizens, accused of corruption and terrorism, who have fled abroad. The election of Chinese Vice Minister of Public Security Meng Hongwei to be president of Interpol in 2016 signaled that China had become a leading country in the organization. However, China's October 2018 arrest and subsequent March 2019 expulsion of Meng from the Communist Party on the pretext of bribery charges creates uncertainty about China's future relationship with Interpol. A number of human rights activists have accused China of abusing Interpol's Red Notice System (RNS), designed to locate and provisionally arrest individuals pending an extradition agreement. In an effort to repatriate Chinese nationals wanted by Chinese authorities for violating Chinese restrictions on political or religious activism, China has abused the guidelines laid out in the Interpol Constitution. This paper addresses what China gains from increased participation in Interpol and how effective it has been in influencing the organization for its own benefit.

The idea of an authoritarian country that does not practice the rule of law heading the International Criminal Police Organization had caused some people to question the purpose of the organization. However, a closer look at recent developments paints a more complicated picture. Focusing on China's use of Interpol's RNS, this paper finds that, while China does attempt to manipulate the RNS for political purposes, it has not succeeded so far in changing the rules or norms of the organization. The history of Interpol's relations with human rights and the top-down structure of the organization creates a difficult environment for China to alter the organization's rules and norms. Nonetheless, China still exerts a large influence in the organization through its ability to shape the agenda on topics ranging from the Belt and Road Initiative, to Taiwan's exclusion from the organization, to technological changes that affect international policing. For the most part, the relationship between Interpol and China has been symbiotic, since the organization

has assisted China in pursuing fugitives abroad, but human rights watchdogs and countries that adhere to the rule of law still play the dominant role in maintaining the core values of the organization.

Theoretical Approach and Scope

This paper takes a fundamentally realist approach to understanding how China attempts to influence international organizations and how international organizations affect China in return. According to realists, international organizations are a reflection of state power formulated to further the security of powerful states. States engage in these organizations to project power and accomplish unilateral goals. Mearsheimer's realist description of international organizations as a "set of rules that stipulate the ways in which states should cooperate and compete with each other, and which are embodied in their personnel and budget" serves as a useful framework for how China interacts with Interpol.[2] China, like other countries, joined Interpol to increase its own security and to combat criminals harmful to their state's well-being. However, states also find some of Interpol's limitations counterproductive to their goals and seek to either bypass the rules or, when possible, exert their influence to change the rules and norms of the organization. Overall, China approves of the overarching framework of Interpol's respect for state sovereignty, but this does not preclude China from attempting to shape the rules to help achieve its domestic goals.

This analysis is divided into six sections. The first part will examine the history, evolution, and structure of Interpol, focusing on how other nations have affected the organization, to provide context for the analysis of China's role in the organization. The second section will examine what China aspires to gain through influencing Interpol, as well as how Interpol can benefit from increased Chinese participation. The third section will highlight the strengths and weaknesses of the RNS. The fourth section will compare Chinese "Red Notices" with Article 3 of the Interpol Constitution, which ensures Interpol's non-intervention in cases of a political, religious, military, or racial character, to determine if China is abusing the system. The fifth section will demonstrate how Interpol is responding to authoritarian abuse of the RNS. The concluding section considers other ways in which China can increase its influence in Interpol in the future, which also suggests areas for future research.

The History and Structure of Interpol

When China[3] assumed Taiwan's position in Interpol in 1984, it joined an international organization with a long and contentious history. Interpol was originally established in 1923 as the International Criminal Police Commission (ICPC) in Vienna to address the rising threat of cross-border crime following World War I.[4] The founding 20 countries, mostly located in Europe, created the ICPC to direct police-to-police communication links on an international scale, with a central headquarters relaying information and news to member countries.[5] One of the key tenets of the ICPC was its respect for national sovereignty, meaning that it could not force countries to accept requests by other parties. Despite the limited scope of operations, the organization faced an existential crisis with the onset of World War II.

Following the Nazi invasion of Austria in 1939, Nazi Germany took over the ICPC by replacing the head of the ICPC with a Nazi Austrian and later moving the headquarters to Berlin.[6] Soon after, the Nazis altered search warrants to include an entry for race alongside one for religion and utilized the ICPC network in their hunt to arrest Jewish refugees.[7] Following the atrocities of World War II, police forces gathered in 1946 to re-establish the international organization as the International Criminal Police

Organization (ICPO).[8] Other than moving the headquarters to France, the organization remained very similar to the ICPC. Under the politically charged environment of the Cold War, Czechoslovakia used the RNS to track down and capture political dissidents who had received political asylum in West Germany.[9] Considering this a violation of national sovereignty, the director of the FBI decided to withdraw the U.S. as a member of the ICPO in protest. Losing the U.S. constituted a disaster and eventually forced the organization to adopt a new constitution in 1956.[10] The new constitution included Article 2, which embedded the principles and rules of the organization with the Universal Declaration of Human Rights, and Article 3, which forbade the organization's involvement in cases considered political, military, religious, or racial in nature.[11] Along with the constitution, the organization officially rebranded itself as Interpol and the United States fully rejoined the organization, but this would not be the last major change.

Overall, China approves of the overarching framework of Interpol's respect for state sovereignty, but this does not preclude China from attempting to shape the rules to help achieve its domestic goals.

In 1971, Interpol signed a treaty with the UN to formally designate itself an intergovernmental organization.[12] Soon after, countries became ever more frustrated with Interpol as it refused to act on terrorism cases due to their inherently political nature. Interpol risked obsolescence when it refused to act after the Palestinian terrorist attack at the 1972 Munich Olympics and when countries sought help in tracking down Nazi War criminals.[13] Following pressure from the developed countries, Interpol finally passed two resolutions in 1984 to directly address counter-terrorism. The first allowed "violent crime known as terrorism" to be pursued within the organization's constitutional mandate by linking it to ordinary crime.[14] The second resolution modified Article 3 to state that a violent political act outside a "conflict area" does not count as political, which allowed Interpol to address "foreign terrorism" in Europe or the United States.[15] Following the 9/11 attacks of 2001 in New York City, the United States successfully filed Red Notices for crimes against humanity. [16] Interpol streamlined itself to focus on a select number of crimes, such as terrorism and public safety, international fugitives, drug and criminal organizations, human trafficking, and financial and high-tech crimes.[17] The most important change in recent years has been the implementation of the I-24/7, an internet-based encrypted communication system that allows immediate access and communication between Interpol and member countries.[18]

Interpol is composed of 190 member nations and is led by a secretary general who acts as its chief executive officer. There is also an executive committee of 13 members, including the president. The president's role is largely ceremonial, as the president does not have the power to issue alerts.[19] The Executive Committee sets the agenda for the General Assembly, where the organization's final authority lies. Interpol is similar to the UN in that every country has one vote in the General Assembly, which has led the balance of power to shift to developing countries.[20] Every member country has a National Central Bureau (NCB) that links the country's national police to Interpol's network.[21] The

members of the Executive Committee have the most power because they meet three times a year and decide the organization's policy and direction, but it is impossible for them to pass resolutions without the support of the General Assembly, which meets only once a year.[22] The members of the Executive Committee change every three years[23] on a geographic rotation.[24] Throughout its history, Interpol has traditionally been led by secretary generals from France, Britain, or the United States, and developed countries have held a majority of the executive positions.[25] The number of executive seats that the Europeans hold certainly gives them more decision-making ability relative to the size of their population. This makes it difficult for countries such as Russia, Turkey, or China to dictate the policy agenda of Interpol without compromising with the Europeans and Americans.

There are no significant political or economic requirements for Interpol membership, with nations only required to pay the minimal annual membership fee which in 2017 amounted to $16,310.[26] This is the minimal basic rate, but countries can contribute more if they desire—in 2017, the United States willingly paid the highest member dues at a total of about $12,694,580; meanwhile, China represented the sixth-highest total, paying around 1/5th of the U.S. contribution.[27] Interpol does not have a body that would be analogous to the UN Security Council and, in voting, countries that pay more get no more power than those who make the minimum payment. Historically, there has generally been a strong correlation between membership dues and the likelihood of a seat on the Executive Committee.[28] This might explain why European countries, who are consistently among the biggest contributors, continue to dominate positions on the Executive Committee.

To pass a resolution, a country first must either have a seat on the Executive Committee or have another nation pass its message through the committee to put its proposal on the agenda. Second, the country must rally support in the General Assembly. A change in popular sentiment from a large enough contingency of member states can lead to resolutions that change Interpol's laws. The United States and Europe took advantage of a global shift in attitudes towards terrorism to push for changes inside the organization. However, if the organization becomes fractured by ideological politics, such as during the Cold War, the organization can lose its effectiveness. Although it remains unlikely, the lack of a binding agreement does leave open the possibility that countries could leave in protest if they feel the organization has become a political tool for authoritarian countries. Previous experiences with Communist satellite states and Nazi Germany have made the organization very aware of the dangers when authoritarian regimes attempt to use Interpol for political gains. China would be smart to strive for change from within the framework of the constitution, while convincing other countries that change is necessary to create an Interpol that functions well in the modern world.

China's Goals in Interpol

In many aspects, Interpol is a perfect match for China's goals—not only in terms of domestic politics, but also for how China imagines itself in the world. Xi Jinping used his common phrase "mutual benefit and win-win outcomes" (坚持互利共赢, *jianchi huli gongying*) in his speech to the Interpol General Assembly in 2017.[29] China has been ramping up its support for the organization and the 2016 election of Meng Hongwei as president, while largely ceremonial, seemed to be a stamp of approval for China's hard work and dedication to promoting Interpol. Tim Morris, Interpol's Executive Director of Security Policy, said that "China has been a very important member of Interpol and contributed in all different ways," while Ursula Martinez, head of Interpol's Command and Coordination Center, claimed, "China is really important for operations located in Asian

countries."[30] In 2016, China gathered and reported two million pieces of information regarding stolen and lost Chinese identification documents.[31] That same year, the Chinese Ministry of Public Security also claimed that they cooperated with foreign authorities on 4,460 different cases.[32] This information is helpful not only for bringing Chinese criminals home, but also for keeping other countries safe. During his speech, Xi promised China that he would devote resources to training 5,000 law enforcement agents, assisting in upgrading Interpol's communication network, and increasing Interpol's global influence.[33]

China can also gain substantially from its membership in Interpol. Since 2012, Xi Jinping has engaged in a sweeping campaign to repatriate Chinese citizens suspected of corruption and terrorism.[34] During that same period, China has issued approximately 200 Red Notices a year.[35] In 2015, China issued 100 Red Notices against economic fugitives as part of Operation Skynet, which seeks to repatriate corrupt Chinese officials and businessmen.[36] High-level corruption is a sensitive topic in China and addressing it is something that Xi feels is vital to long-term security, as well as to the success of the Communist Party.[37] China wants to show its citizens that the state can extend its reach anywhere in the world. *The Global Times* states that "corrupt officials who might have thought about escaping will not dare do it now, after such tight measures and cooperation with a wide range of countries."[38] Other state-run media even suggested that Meng's election itself would be a boon to the international expansion of Chinese efforts to repatriate corrupt citizens.[39] Apart from corruption, China also hopes to use the Interpol network to work with other countries in the fight against Islamist militants in Xinjiang.[40] China hopes to crack down on Uighurs who have fled the country and have ties to extremist groups within its own borders. In Meng Hongwei's speech to the General Assembly in 2017, he emphasized the threat of terrorism and stressed the importance of unity.[41] Interpol has been focused on terrorism for several decades now, but where China seems to be making the largest push is in regard to corruption. Li Shulei, who leads the Chinese repatriation efforts for the Central Commission for Discipline Inspection, claimed that China must "build a new order to fight international corruption… and cut off escape routes for corrupt elements."[42] China believes that Interpol can help the country accomplish its goals of counter-terrorism and fighting corruption. Worryingly, many Western countries would say there is also a third area under attack—political dissidents. Trying to separate political dissidents from the first two categories can be a tricky task but it is vital in order to assess China's present and future impact on the organization.

In addition to its fight against corruption and terrorism, China also places importance on being seen as a responsible power. China not only wants to use Interpol as a tool to accomplish its goals, but also to give its actions more legitimacy. Shortly following Meng's 2016 election to the leadership of Interpol, *Beijing Youth Daily* published an article proclaiming Interpol to be the most effective platform for combating international crime, while also signaling that the election demonstrated that international society is recognizing and accepting China's version of the rule of law.[43] While this newspaper is certainly exaggerating, the election of Meng did seem to indicate a certain approval within Interpol of China's actions. In Xi's speech, he stresses the "rule of law" both in his introduction as well as in his proposals for what Interpol should focus on in the years to come.[44] China is most likely more interested in appearing to be a rule of law country than in actually becoming one. The sudden arrest of Meng in China in October 2018 demonstrates that China views its own version of justice as superseding the integrity of an international organization. It is crucial to acknowledge two factors at play against each other. On one hand, China is using the RNS to assist in its anti-graft and counter-terrorism repatriation campaigns,

which leads to complications with Article 3 of Interpol's Constitution when political dissent is involved; on the other hand, China wants to conform to the standards of Interpol's review process to be seen as a responsible member of the organization. If China is seen as cheating the system, Chinese officials will be less likely to obtain Executive Committee positions in the future, thereby decreasing their ability to drive change from within the organization.

How Do Red Notices Function?

While Interpol operates 17 databases to assist in solving crimes, the only one explored in this paper is the oldest and most famous database, the criminal database. The criminal database, now synonymous with the RNS, is a collection of names of all the wanted criminals from around the world with outstanding Red Notices. A Red Notice is a request to locate and provisionally arrest an individual pending extradition, and is issued by the General Secretariat.[45] While Interpol makes it very clear that this is not the same as an international arrest warrant, this is the closest instrument to an arrest warrant that exists within Interpol. Unlike international arrest warrants, Red Notices are issued by a country but can be ignored by other member countries and are largely dependent on extradition treaties between the parties involved.[46] Red Notices are processed through the Commission for the Control of Interpol Files (CCF); however, it is not the CCF's job to decide guilt or innocence, but rather to streamline the process and to ensure that the request comports with the constitution.[47]

One of the major RNS foundations is the inherent assumption that a country's request is in accord with Interpol policy.[48] Interpol functions as though there is a common understanding for the designation of criminals, despite the fact that political asylum, differing definitions of terrorist groups, and espionage all provide clear examples that this is not true.[49] The system is based on trust that all requests are legitimate, because there are limits to what Interpol can do to make sure countries abide by the constitution. In 2011, Interpol issued around 21 Red Notices a day and admitted that 97 percent of requests were not reviewed in depth due to limited personnel.[50] During the same period, an Interpol investigation showed that 28 percent of Red Notices came from countries that had Freedom House scores of "no civil liberties," while 50 percent of Red Notices came from countries with a "high level of corruption" based on Freedom House's transparency index.[51] Interpol is an opaque organization out of necessity, so it is difficult for the public to find data to prove or disprove this assumption.

While frozen bank accounts, travel restrictions, and fear of arrest could be factors, it is most probable that these targets returned home because of harassment of their families and loved ones.

Red Notices constitute an important part of China's repatriation strategy, but other methods have accompanied the use of the RNS. The RNS itself is a capable tool because it freezes all international bank accounts and increases travel restrictions for designated individuals.[52] Of the

100 criminals placed on the RNS through Operation Skynet, 51 have already been repatriated.[53] However, this overemphasizes the power of the RNS because 35 of the 51 criminals "voluntarily" returned to China.[54] While frozen bank accounts, travel restrictions, and fear of arrest could be factors, it is most probable that these targets returned home because of harassment of their families and loved ones.

Interviews with five Red Notice individuals, who wished to remain anonymous, indicated that Chinese authorities subjected their families to threats, and in some situations, arbitrary detention.[55] China has shown they are not afraid to use extralegal methods, and they have even used Red Notices to justify the systematic harassing of families. While it is in the nature of Interpol to not comment on the political actions of member countries, it must be noted that, even in cases in which China is within its rights to issue a Red Notice, it increases the effectiveness of these notices through methods that fall outside of limits on how rule of law countries should operate.

Case Studies

This section seeks to place Chinese Red Notice cases in the context of Interpol's Article 3 Repository of Practice, a guidebook published by Interpol that provides examples and explanations for what constitutes a violation of the constitution. These case studies reflect a significant bias owing to the fact that these represent what might be seen as the most egregious notices instead of the average notice. One issue is that quantitative research is difficult, as the public Interpol database in 2018[56] only contains 82 Chinese criminals with outstanding Red Notices.[57] As each country can select which Red Notices can be made public, the published cases on the Interpol website contain inherent biases. However, studying the prominent cases does have its advantages. These are the cases that receive the most media attention and are most likely to inform key officials, policy makers, and public opinion. Even if these cases only represent a small number of notices on China's behalf, the damage they can do to the credibility of both Interpol and China is substantial.

Case Study I: Dolkun Isa

The first case study focuses on Dolkun Isa and the Chinese Red Notice seeking his arrest for terrorism that dates back to 1999. Political activism in Xinjiang has long been a thorn in China's side, and this autonomous region holds a large number of ethnic and religious minorities. Most of China's focus on terrorism concerns this province and, in the eyes of the government, there is little difference between political activism and terrorism.[58] China blames the instability and unrest in Xinjiang on separatist Islamist militants. As of December 2018, it is estimated that as many as 1 million Uighurs are currently being held in "re-education camps."[59] Dolkun Isa fled China in the early 1990s in a move he describes as escaping persecution for his political views.[60] China issued a Red Notice against Isa in 1997 and later put him on the country's most-wanted terrorist list in 2003.[61] After receiving political refugee status in Germany, Isa became the secretary general of the Munich-based World Uighur Congress, which advocates for political and religious rights for Uighurs.[62] International travel became more difficult for Isa following his Red Notice warrant—he was briefly detained in South Korea in 2009, arrested in Italy in 2017, and denied a visa from India.[63] Despite the case being relatively high profile and the weak evidence on the part of China, the Red Notice remained in place from 1997 until its reversal in March 2018.

China's evidence for Isa's crime primarily rested on his purported relationship to terrorist groups in Xinjiang. While at Xinjiang University in the 1980s, Isa participated in several pro-democracy movements and was expelled from school for distributing books about Uighur history and culture.[64]

China is not necessarily accusing Isa himself of violent crime, but rather of association with terrorist groups. The Interpol Article 3 Repository states that, while freedom of expression is not an absolute right, "insulting authorities are among those rights that by very nature fall within the scope of Article 3."[65] According to current practice, speaking out against the nature of the government apparatus in Xinjiang inherently places the case in a political category. The repository states that, in the context of political unrest, "the predominance test will have to be applied where there are elements of both a political nature and an ordinary-law crime nature."[66] Even if passing out illicit materials constituted an ordinary crime in Xinjiang, under these circumstances, the predominance test should identify the nature of this crime to be overwhelmingly political. China's final argument is guilt through association with terrorist groups. Even though Interpol has a special provision in the rules to deny freedom of association with terrorist groups, the current practice lays down specific guidelines for what constitutes membership in a terrorist organization. Section 3.6 of the repository outlines that the terrorist nature of the organization must be recognized by international entities such as the United Nations, and that the individual practices active and meaningful involvement in said organization beyond mere general support of its political goals.[67] Dolkun Isa's case would certainly not apply as there is no evidence of active membership in any Islamist militant group, and Isa actively denounces the use of terrorist tactics no matter the circumstance. The lack of evidence for any active membership in a terrorist group makes it impossible for his case to fall outside of Article 3 on the merits of guilt by association, and Isa's right to free speech is protected by the Interpol Constitution. The Red Notice harassing Isa for 21 years seems to clearly represent an abuse of the system that took too long to correct.

Case Study II: Guo Wengui

The next case study focuses on the Red Notice for Guo Wengui and the charges against him on the grounds of corruption. Guo is a Chinese billionaire who fled to the U.S. in 2014 in anticipation of corruption charges following the arrest of former business partners.[68] In 2015, Chinese media ran several stories about Guo's corruption, which he claimed were fabrications made by political and business opponents with vendettas against him.[69] In 2017, Guo started giving interviews to U.S. media and spilling Chinese Communist Party secrets, personally calling out former Politburo member He Guoqing for his hidden wealth and corruption.[70] These interviews brought negative attention to the possible hypocrisy of Xi's anti-graft campaign; three days following the interviews, China submitted a Red Notice calling for Guo's arrest and extradition on the grounds of corruption, bribery, and rape.[71]

As previously mentioned, it is not up to Interpol to decide the innocence of Guo or even to investigate serious charges such as rape. The important consideration is whether this is a case of pure corruption or whether Guo should be treated as a political dissident. According to Interpol, corruption is an ordinary level crime, but considering the timing of the events, it is easy to see this case in terms of disclosure of government secrets instead of pure corruption. In section 3.4 of the repository, titled Offenses Against the Security of the State, it states that "a case-by-case basis is required to ascertain that the facts of the case are purely political in nature… and the facts of a political case may include aspects of ordinary-law crime which may lead to the conclusion that the case is of a predominantly ordinary-law nature."[72]

In instances that involve whistle-blowing, such as the leaks by Edward Snowden, the cases are unquestionably political in nature, and therefore no Red Notices are issued. However, in the case of Guo,

it can be argued that the nature of corruption and bribery charges supersede the political nature of this case. Despite that argument, the timing of the Red Notice and the interviews that fingered members of the Communist Party supply ample evidence that the Red Notice was politically motivated. When cases such as Guo's became highly political and the line becomes blurred, it would be in Interpol's best interest to deny China's request for a Red Notice.

Overall, the cases related to Xinjiang and terrorism seem to present a larger predicament for Interpol than the cases of corruption. The case of Guo Wengui had an overarching political component that many of the other corruption cases such as Operation Skynet lacked. For example, the previous number one fugitive on the RNS for China was the former vice-mayor of Wenzhou, Yang Xiuzhou, who embezzled approximately 19 million RMB in funds along with 7 million RMB in bribes.[73] Helping China repatriate criminals such as Yang through legal methods is the purpose of Interpol and member countries should play their part. Despite the fact that many corruption cases do not fall under Article 3, the accusations of politically motivated Red Notices against Interpol forced the organization to issue a response in 2016 that strengthened their commitment to Article 3.[74]

Interpol's Response

Interpol is well aware of the criticisms from Western countries regarding abuse of the RNS. As mentioned earlier, it is important for Interpol to maintain its core values and the trust of its member nations, especially the countries that are its largest contributors. In response to complaints about the failures of the RNS, Interpol passed a new regulation in 2016 to strengthen the system's review process.[75] While the new resolution did not match the complete overhaul proposed by many human rights groups, many aspects of a 2015 proposal submitted by Fair Trials International were incorporated.[76]

The new resolution explains that Interpol recognizes the importance of ensuring that data processing in the information system complies with Interpol's rules, particularly Article 2 and 3 of the constitution.[77] The Commission for the Control of Interpol's Files (CCF) was restructured into two chambers. The Supervisory and Advisory Chamber will ensure that the processing of personal data is in compliance with Interpol's rules and will provide advice on projects.[78] On the other hand, the Requests Chamber will examine and decide requests for access to data and corrections or deletions of the processed data.[79] The resolution also established a clear timetable for a review process and procedures to provide an effective remedy for individuals with regards to data.[80] This resolution improves upon the previous structure by separating the processing and review phase into two chambers, and by speeding up a possible review process. Reviewing all of the cases in depth will still be impossible, but it is now significantly easier for each country's National Central Bureau (NCB) to report possible violations and have them reviewed. This new system helped facilitate the review of Dolkan Isa's case, which was overturned in 2018.

It is worth mentioning that this resolution took effect the same year as the election of Meng Hongwei to the presidency of Interpol. Interpol is playing a strategic game to give China more power in the organization, while also adding provisions to prevent a large backlash by Western countries. Interpol is pushing back against the possibility of abuse of the RNS and safeguarding the ideology of the organization that allows it to connect police forces across the globe.

Further Considerations: China's Influence on Interpol

Due to the history and structure of Interpol, as well as the pushback against abuse of the RNS, it is difficult for China to shape the rules and norms of the organization. However, not only does the system already suit China well, but there are three other areas in which China notably possesses the ability to affect Interpol.

The first factor is the potential of Interpol's partnership with the Belt and Road Initiative (BRI). In May 2017, Interpol and China passed the Declaration of Intent on Strategic Cooperation between Interpol and the Government of the People's Republic of China which listed 13 points of cooperation.[81] The document specifically mentions BRI and the fact that China needs to partner with international organizations to develop a multilateral cooperation platform in all aspects of the initiative.[82] Interpol pledges their policing capabilities and operational support to ensure that increased trade does not lead to increased opportunities for criminals.[83] Furthermore, the declaration addresses goals such as enhancing worldwide border security for trade and travel, protecting vulnerable communities from exploitation, promoting integrity and reducing corruption, combating illicit markets, and adhering to the spirit of the Universal Declaration of Human Rights.[84] It is unclear to what extent Interpol will play a role in ensuring the safety of BRI, but China will appreciate having multilateral support in its efforts to promote global trade and infrastructure. One of the most prominent influences China exerts on Interpol is the continued isolation of Taiwan from membership in the organization.

Interpol encompasses almost every country, but has refused to admit or even grant observer status to Taiwan. In 2017, Interpol even granted membership to Palestine despite resistance from Israel. The exclusion of Taiwan means the world is missing a critical link in an otherwise integrated fight against threats such as terrorism and cyberattacks, and the entire Taiwanese population is theoretically more vulnerable than the populations of other countries.[85] In 2017, Taiwan hosted the Summer Universiade Olympics with over 9,000 athletes competing from over 170 countries.[86] While everything played out smoothly, Interpol did not assist in the safety of the event and Taiwan was refused access to the I-24/7 database that provides countries with up-to-date information regarding criminals and crucial information.[87] Taiwan overcomes these challenges through the help of its partners such as the United States, but the continued exclusion of Taiwan constitutes a blind spot in the realm of global policing. While Interpol is unlikely to grant membership to Taiwan amid the "One China" policy, if Taiwan is struck by a high-profile attack that Interpol could have prevented, this could become a more contentious issue.

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The final point of consideration is the role of Chinese-created technology and how improved policing equipment could

affect Interpol. China has invested large amounts of R&D funds to ensure that its policing technology is the most cutting-edge in the world. The use of facial recognition and artificial intelligence to analyze video evidence, track suspects, coordinate responses to emergencies, and even prevent crime has the potential to alter the way in which global policing is conducted.[88] China is increasingly storing data on each of its citizens and compiling data of medical records, travel bookings, online purchases, and social media comments.[89] China has begun exporting these technologies to several other countries, including the Citizen Security System project known as BOL-110 in Bolivia. As these new technologies advance, the approach to stopping international crime will have to adapt. Interpol could prove to be the best forum for China to play a role in establishing rules regarding the use of new technology on a global level.

Conclusion

This paper finds that China's increased participation in Interpol has produced both progress in its pursuit of domestic goals and pushback from other countries and human rights groups when it is perceived as gaming the system. While countries such as China, Russia, and Turkey do use the RNS to track down political dissidents, the fear of China taking over Interpol is unfounded. The European-led top-down structure of Interpol and the history of authoritarian abuse have led to a system of safeguards following the values of the Universal Declaration of Human Rights. The passage of a resolution that increases the scrutiny of the review process and the overturn of Dolkun Isa's Red Notice serve as testaments that the core values of the organization remain intact. However, despite complications with political dissidents, China's anti-graft and counter-terrorism efforts receive a huge boost from multilateral engagement with Interpol. Red Notices, while not a perfect system, are an effective tool to fight crime. However, China's use of extralegal methods to enhance Red Notices give further evidence that the country is not becoming a rule of law nation. Overall, China and Interpol have a symbiotic relationship kept in check through rule of law countries and human rights groups that place pressure on Interpol. Interpol's involvement with BRI, its relationship with Taiwan, and its adjustment to new technologies are all factors in the China-Interpol relationship that will benefit from further research. The fallout from China's arrest of Meng Hongwei and the long-term effect on the relationship between China and Interpol is another area that merits attention.

Insights on China's evolving relationship with international institutions can be extrapolated from this analysis. China acknowledges that, as the world becomes more connected through globalization, one of the best ways to project its power and maintain its security is to increase its participation in multilateral institutions. China wishes to be seen not only as a great power, but also as a responsible one. Even though China has the ability to influence these organizations in some capacities, many international institutions have established rules and norms that are difficult to change. Multilateral institutions remain a battleground where China will attempt to assert its might, but these organizations are not as malleable as pessimists might believe.

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Challenges to SOE Mixed Ownership Reform in China: A Case Study

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Introduction

The reform of state-owned enterprises (SOEs) in China is crucial for sustaining the country's economic growth through increased productivity and innovation. In 2013, China's state sector owned assets equivalent to 145 percent of China's GDP, the highest ratio in the world, and almost double that of the runner-up, India.[1] State sector profitability has been consistently lower than that of the private sector and of foreign funded businesses. Chart 1 on page 27 shows that the state sector has consistently had the lowest rate of return on assets in the industrial sector for the past 15 years. Chart 2 on page 27 shows that SOEs have the highest number of loss-makers as a share of the total number of enterprises in its ownership category.[2] This mismatch between the state sector's significant share of assets and consistently low profitability demonstrates one of the most challenging problems that China's economy faces today: an inefficient state sector. This paper aims to highlight three problems in the Chinese government's ongoing efforts to reform SOEs through a mixed ownership scheme. First, private investors' influence in SOEs will be limited by their minority stake; second, a more eclectic board composition makes it harder to reach consensus on corporate decisions; and third, ownership is becoming less important due to party and government influence from outside the corporate board. This paper examines these three problems through a case study of the government's decision to welcome private actors to invest in China Unicom, one of the country's largest telecommunications companies.

An Inefficient State Sector

The state sector is inefficient primarily because of a lack of incentive to compete. One reason for this lack of competition is that state-owned enterprises can access financial resources much more easily than private enterprises, and thus SOE funding comes at the cost of fewer funding opportunities for the private sector. SOEs have an advantage in obtaining funding in two ways. First, they take up an abnormally large share of China's bank loans, because banks expect the government to implicitly guarantee those loans.[3] Although SOEs only provided 16 percent of China's employment and less than a third of national GDP in 2016, they received 70 percent of all corporate loans in the same year.[4] For the same reason, SOEs have more favorable borrowing rates. According to *The Economist,* SOEs' average annual borrowing rates in the Hong Kong bond market fall from 3.5 percent to 2 percent, if rating agencies take into account the government support and guarantees that they receive.[5]

A second reason for the state sector's inefficiency is that the structure of corporate

governance in SOEs is not conducive to generating competitive behavior. This is primarily due to several reasons, all related to conflicts of interest between management and ownership. First, since promotion of the top SOE positions is retained by the Communist Party under the nomenklatura system, the promotional criteria for SOE managers, which frequently involve political projects or developmental objectives,[6] do not always coincide with economically rational incentives to increase profit or productivity.[7] Second, a relative lack of external supervision and shareholder scrutiny over SOEs means that managers have substantial discretion over investment decisions and compensation policies.[8] This encourages rent-seeking behavior and corruption. These problems in China's corporate environment run counter to the guidelines recommended by the Organization for Economic Cooperation and Development (OECD), which call for the state to grant SOEs "full operational autonomy" and respect the independence and the autonomy of the boards.[9] The Chinese government acknowledges the obstacles that inefficient SOEs pose to the need to drive up productivity and growth in the economy and has proposed a host of policies in response: it has strengthened managerial discipline through the anti-corruption campaign,[10] and it placed the first major SOE into involuntary liquidation in September 2016.[11] One of the solutions proposed to address the problem of corporate governance currently in progress is mixed ownership reform.[12]

The Chinese government acknowledges the obstacles that inefficient SOEs pose to the need to drive up productivity and growth in the economy.

Policy and Procedure on Reform

The State Council and the Central Committee of the Chinese Communist Party (CCP) issued three documents pertaining to mixed ownership reform between 2013 and 2015.[13] No substantial progress on the reform had been implemented until after all three documents were issued. The first is the Decision on Major Issues Concerning Comprehensively Deepening Reforms (中共中央关于全面深化改革若干重大问题的决定, *zhonggong zhongyang guanyu quanmian shenhua gaige ruogan zhongda wenti de jueding*), which was issued at the Third Plenum of the 18th Central Committee in November 2013. Among the plethora of plans for other types of SOE reform, the document promises to allow SOEs "to develop into mixed enterprises."[14]

The second and third documents were issued by the State Council within two weeks of one another in September 2015: Guiding Opinions on Deepening SOE Reform (中共中央国务院关于深化国有企业改革的指导意见, *zhonggong zhongyang guowuyuan guanyu shenhua guoyou qiye gaige de zhidao yijian*) and Guiding Opinions on Mixed Ownership Reform (国务院关于国有企业发展混合所有制经济的意见, *guowuyuan guanyu guoyou qiye fazhan hunhe suoyou zhi jingji de yijian*). The former document focuses not only on mixed ownership but also on a whole variety of other SOE-related reforms. It highlights the importance of mixed ownership reform by stating that it is "the most significant means to improve the efficiency

of SOEs."[15] It also specifies the means by which non-state firms could participate in SOE ownership, including the purchase of stakes and convertible bonds. The third document is even more specific as it lists several SOE-dominated sectors that would be able to participate in the mixed ownership reform, including telecommunications, natural resources, oil and gas, and nuclear energy. It also lists the types of non-state capital, including foreign capital, eligible for investment in the SOEs.[16] However, as with most guiding opinions issued by the central government, the documents were still vague, with details on the procedures left to be elaborated in future policies issued by ministries and local authorities.

The procedure for implementing mixed ownership reform—abbreviated in Chinese as 混改 (*hun gai*)—can be condensed into two steps. The first step, 混 (*hun*), is to invite a selected group of private investors to purchase shares from an SOE. The State-owned Assets Supervision and Administration Commission (SASAC) and the National Development and Reform Commission (NDRC) first select the SOEs that will be subject to reform. The selected companies then create plans detailing which stakes or business units they will put up for sale. SOEs will typically sell 30 to 45 percent of units such as subsidiaries to private sector partners. The capital raised by the share sales typically raise more than $1 billion, which are reinvested in new projects jointly managed by the SOE and its new private partners.[17]

The second step, 改(*gai*), is the implementation of corporate governance reform and increased external supervision as a result of the presence and participation of the new private investors on the SOE board. Unlike retail investors who trade SOE shares through public listing for speculative purposes, private investors under the mixed ownership schemes are considered to be strategic partners who will have an active say in how the SOEs are managed and in how future projects will be carried out.[18] This reform therefore aims to not only increase funding for SOEs from private sources, but also to improve their operation and efficiency through allowing private investors to play an active role in setting company policy.

The first batch of SOEs to be reformed according to the mixed ownership reform pilot scheme was approved by NDRC in September 2016, a year after the authoritative documents were issued by the State Council. Nine central SOEs[19] including China Unicom, China Eastern Airlines, China Southern Power Grid, Harbin Electric Corporation, China Nuclear Engineering and Construction Corporation, and China Shipbuilding Industry Corporation were greenlighted to open up their businesses units for sale to private investors.[20] A second batch of 10 central SOEs was approved in April 2017, covering similar sectors and including defense and railway.[21]

In July 2017, the government also started allowing local SOEs to experiment with mixed ownership reform.[22] This was further confirmed in November when a third list, involving 31 more local and central SOEs, was issued by NDRC.[23] Although the majority of private investors hitherto revealed has mainly consisted of large technology corporations, other sources of private capital have also appeared. Chinese private equity firm Wealth Capital announced that they formed a 5 billion RMB ($756 million) investment fund in August 2017 that specifically targets SOEs undergoing mixed ownership reform.[24] The NDRC plans to "basically complete" SOE mixed ownership reform by the year 2020.[25]

Challenges to Reform

The rationale behind the mixed ownership reforms is that, by increasing the stakes of strategic private investors in SOEs, corporate governance could be improved by giving these private investors a voice on the board and allowing them to scrutinize managerial performance. However, there are three theoretical challenges to this rationale.

The first challenge is that private investors actually do not, and most likely will not, have a majority stake in any SOE under the mixed ownership reform scheme. This is for two reasons: the first reason is political. It is has been made clear by the authorities that the objective of introducing mixed capital into SOEs is to strengthen the state sector. [26] Allowing private investors to hold a majority stake in SOEs would constitute privatization, and there is no impetus from any government or party policy to systematically privatize SOEs.[27] A State Council directive in November 2017 requiring SOEs to transfer 10 percent of their shares into pension funds is also an indication that strong SOEs are integral to the government's long-term plans.[28] This solidifies SOEs' importance in the Chinese economy, making systematic privatization even more unlikely. The second reason why privatization will not occur is commercial: SOEs are actually quite profitable when one is not putting their figures side by side with the even more successful private sector. The Ministry of Finance (MOF) reported that in the first ten months of 2017, profits for SOEs (central and local combined) grew by 24.6 percent year on year.[29] It is also important to remember that the main impetus for the "grasping the large and letting go the small" (抓大放小, *zhuada fangxiao*) era of mass corporatization in the late-1990s was because they were making enormous losses. By contrast, the relatively profitable position of SOEs today makes it even less urgent for the government to grant private investors majority stakes in state sector firms. It is therefore questionable whether private investors with only minority stakes are capable of bringing about corporate governance reform, some of which will no doubt clash with the entrenched interests of incumbent SOE managers, many of whom are also the major shareholders.

The second challenge is that the introduction of private investors into Chinese SOEs might actually make it more difficult for an SOE board to reach a consensus regarding future projects and reform. This is because inviting private actors into SOEs' ownership and managerial systems further complicates the already byzantine structure of China's state sector leadership. There are already a host of players and interest groups vying for influence in SOEs, including the CCP Organization Department's nomenklatura system, whereby the CCP controls the appointment of SOE heads, SASAC's nominal ownership of all central SOEs, and the MOF, for which SOE profits are a substantial source of revenue. SASAC and the CCP have strong developmental objectives for SOEs, for example to provide macroeconomic stability through increasing investments when China's growth slows.[30] This clashes with MOF's objective for SOEs to become financially sound by being more profit-oriented, which sometimes would mean making investments that conflict with developmental objectives.

Experts warn that mixed ownership reform in fact sucks resources from the private sector, depriving the latter of much-needed capital.

It is also difficult to determine whether private actors who invest in these companies through the mixed ownership schemes do so because they see profitable opportunities or simply because they want to influence these SOEs for the benefit of their own primary businesses. As is true

in the Unicom case study, many private investors are also peer competitors from the same oligopolistic sectors. Experts warn that mixed ownership reform in fact sucks resources from the private sector, depriving the latter of much-needed capital when the state sector already has a disproportionately large allocation of resources.[31]

For example, it is estimated that 10 trillion RMB ($1.5 trillion) is required for private investors to have a controlling interest in (i.e. own 51 percent of shares) 40 percent of all SOEs; this is more money than Chinese public companies have ever raised on domestic stock markets (7 trillion RMB).[32]

The third and perhaps most enduring challenge that the mixed ownership reform fails to address is that the ownership of SOEs is becoming increasingly less important in China's current institutional environment. This is because the lines between SOEs and the private sector are becoming increasingly blurred, with the state exercising more influence over companies regardless of the nature of their ownership.[33] For example, although the Third Plenum promised to give market forces a decisive role in the economy, the CCP's control over major private sector players in the form of party committees established above the boards of directors implies that the supposedly private market forces are ultimately under the control of the state. As a result, ownership of a company no longer necessarily implies having control or a decisive say over its operational and managerial decisions.

In fact, the state may actually increase control over SOEs that have undergone mixed ownership reform. This is because, although inviting strategic private investors may diversify the board, strong party committees in the investors' own respective primary businesses will help the government set a more political agenda for the SOE's reform in the name of the party. This might be done in lieu of purely private or commercial considerations. Mixed ownership reform therefore might not necessarily lead to a retreat in the state's involvement in the SOEs, opening up the possibility for continued misallocation of resources due to state interference.[34]

One might think that the increasing blur between the public and private sectors would pose less of a problem for foreign investors, especially wholly foreign-owned enterprises that are established without the need for joint venture with SOEs. However, based on open source information, as of late 2017 none in the 19 SOEs in the first two pilot batches have openly listed foreign investors as participants of their mixed ownership plans. The unsurprising reason for the apparent exclusion of foreign investors is that SOEs, especially inefficient SOEs, tend to dominate sectors pertaining to national security or pillar industries that are sensitive to foreign capital. This is despite the State Council's August 2017 release of the Notice on Measures to Increase Foreign Investment, which reiterated support for the role of foreign capital in the reorganization of SOEs.[35]

Case Study: China Unicom

One of the first examples of mixed ownership reform is China Unicom's announcement in August 2017 of its sale of 35.2 percent of its shares worth 78 billion RMB ($11.7 billion), to 14 private investors.[36] The investors include prominent technology companies such as Alibaba, Tencent, Baidu, JD.com, Life Insurance Company, CRRC Corp, and Didi Chuxing.[37] Unicom announced that its Shanghai-listed unit, China United Network Communications Ltd., would be used as the platform for these sales. After the deal is completed, that unit's board will have 15 people in total: six from the state sector (including two from Unicom group), four from the new strategic private investors, and five independent non-executive directors.[38] This deal is also estimated to be the largest capital-raising deal in the Asia-Pacific since 2010.[39] Unicom has also

announced that as one of the first acts of the post-deal reform, it will soon consolidate its 27 departments into 18 in order to remove overlapping functions and cut red tape.[40]

The first challenge mentioned above concerning the minority stake of private investors is apparent in Unicom's scheme: although Unicom's ownership of its own A-shares will drop from 62 percent to 36 percent, the state as a whole remains the majority stakeholder with 53 percent. The largest private investors participating in this sale—Tencent and Baidu—will only hold 5.18 and 3.3 percent of shares respectively.[41] The composition of the new board—with private investors only holding four out of 15 seats—also reflects the private investors' minority position. Perhaps most interestingly, China Life Insurance—which is 70 percent state-owned—is the largest of the new shareholders to participate in this mixed ownership scheme.[42] It will hold 10 percent of Unicom's Shanghai unit, almost a third of all the shares offered, further increasing the de facto stake held by the state.

The second challenge pertaining to conflicts of interests among the strategic private investors is also apparent, with all three of China's largest tech firms—Baidu, Alibaba, and Tencent (BAT)—involved in this deal. The fact that they are rivals in their own industry could pose serious problems to cooperating and standing up against the majority interest of the state.

Unicom's party secretary and chairman Wang Xiaochu gave a speech in December where he defended the decision to include peer competitors on the Unicom board. Wang argued, rather unconvincingly, that Unicom would be able to "utilize the comparative advantages of each private investor without generating unnecessary friction," without giving any substantial explanation as to how that could be achieved.[43]

Baidu, Alibaba, and Tencent… the fact that they are rivals in their own industry could pose serious problems to cooperating and standing up against the majority interest of the state.

Finally, the third challenge of further blurring the lines between public and private capital is also reflected in this deal. The party apparatus has a strong presence in both Tencent and Baidu, the two largest private investors in the deal. Tencent's party committee has more than 7,000 members, around 23 percent of all its employees. Its party secretary, Guo Kaitian, is a senior vice president of the company and has been in charge since the party committee was established in 2011. Tencent's deputy party secretaries also hold senior managerial posts in charge of cybersecurity, social media, and government relations.[44] Baidu has more than 3,600 party members,[45] and its party secretary Zhu Guang is also a senior vice president of the company in charge of brand building, internal communication, and marketing.[46] However, given that we as of yet do not know who will be on the board of Unicom's Shanghai business unit, it is difficult to definitively prove that the strength of these party committees will impede Tencent and Baidu's potential to improve Unicom's corporate governance as minority shareholders.

Chart 1: Total Profits / Total Assets of Industrial Enterprises
by Ownership Category, 2000 - 2015 [49]

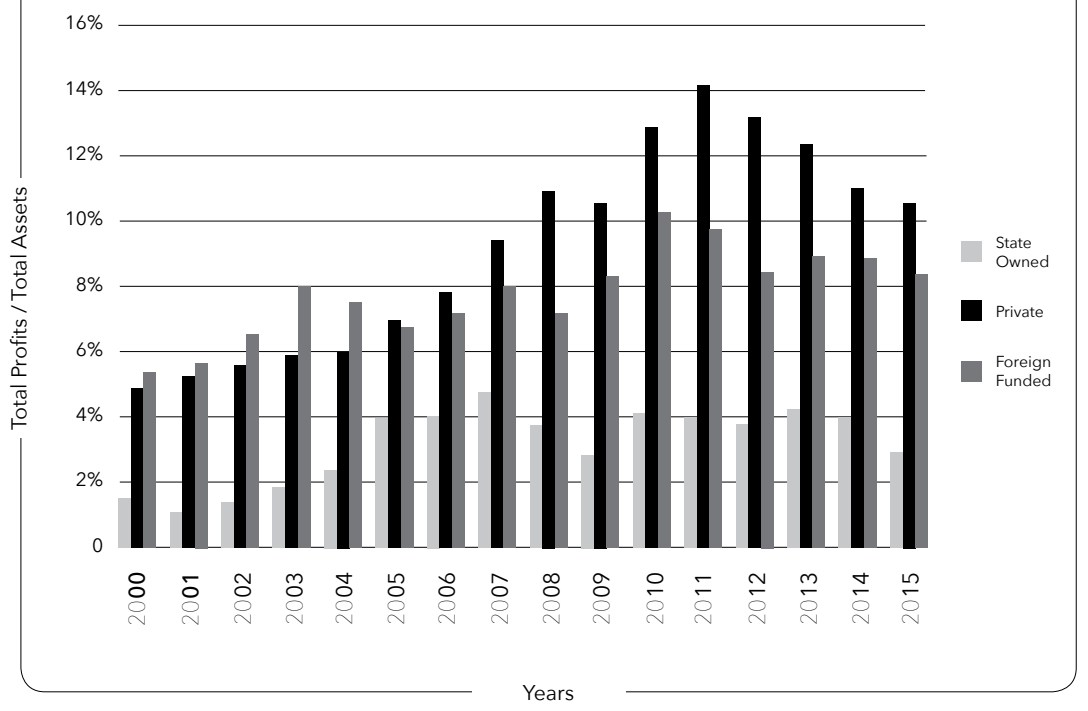
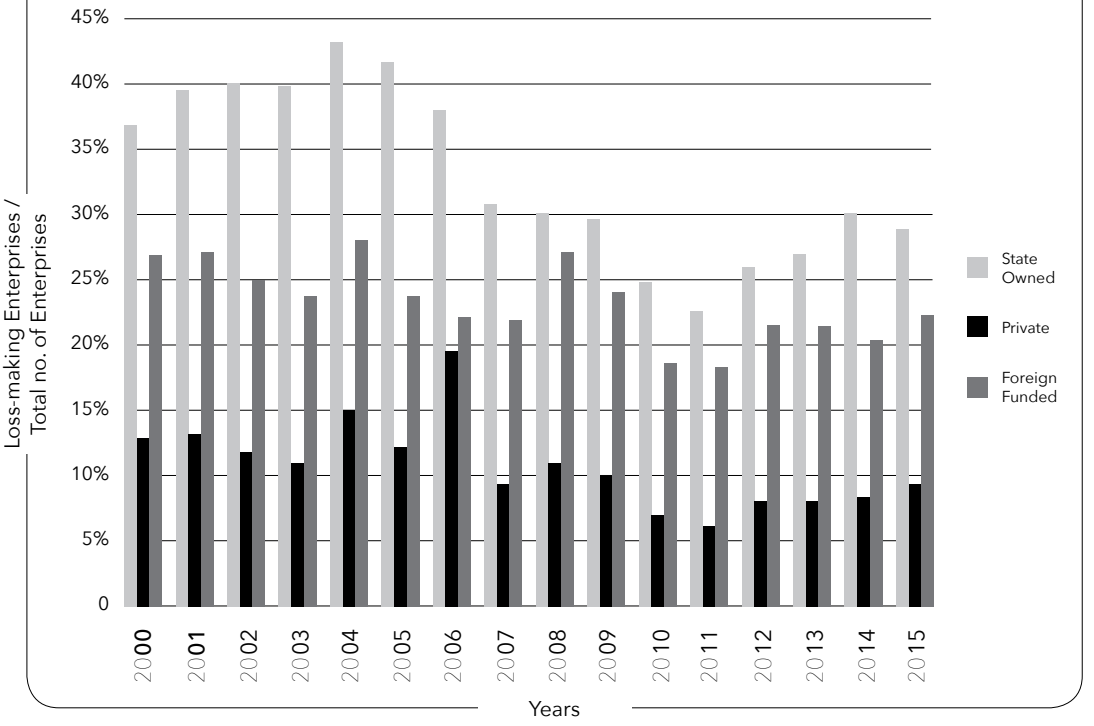


Chart 2: Percent of Loss-making Industrial Enterprises
by Ownership Category, 2000 - 2015 [50]



Conclusion

It is very difficult to empirically evaluate the results of mixed ownership reform for two reasons. The first is because this is only one of many policies that the government has issued for reforming SOEs; others include merging or consolidating existing SOEs as well as the creation of state sovereign wealth funds.[47] This makes it challenging to measure the benefits of mixed ownership reform while controlling for the effects of other reforms. The second reason is because non-transparent changes that occur behind closed doors due to the reform, such as new managerial input and improved corporate governance, are hard to assess without conducting relevant interviews or obtaining inside information by other means. It is hard to verify the claim that party committees in private companies exercise influence over their board decisions on SOEs unless we know at least who the board representatives are, for example.

In conclusion, it is too early to tell whether the mixed ownership reforms are succeeding. The two batches of greenlighted central SOEs mentioned above are merely pilot projects and only a fraction of those greenlighted companies have announced concrete plans for selling their stakes. The government announced that it aims to complete the reforms by 2020, and yet as of August 2018 only two-thirds of central SOEs have completed the first step of allowing private investors to hold shares.[48] The slow pace of implementation, the lack of good measures for verifying results, and the three conflicting challenges explained above mean that mixed ownership reforms alone are unlikely to solve the enduring challenges that SOEs face today.

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Hedging its Bets: China's Strategies in Pursuing Global Food Security

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Introduction

Access to food is one of humankind's most fundamental needs and rights. Population growth, natural disasters, climate change, and conflict all throw this access into question. If we proceed from the standpoint that international organizations and regimes have the potential to assist in governing and mitigating problems that apply globally, global governance of food security is one of the most obvious, primary, and pressing areas in which cooperation between states is needed.

From the 1870s onwards, we have become a globalized world in terms of international food flows. In this context, if a state cannot produce sufficient food for its population, it can acquire this from abroad through aid or trade. Food insecurity arises when a state cannot either produce enough domestically or access the world market. Global governance institutions seek to help moderate the volatility of markets so that abrupt price changes do not cause harm, incentivize states to remove policies which distort the availability of food in markets, provide freely available information, assist with development of agriculture in countries which struggle with reliable access to food, and provide emergency relief aid where necessary.

China presents a puzzle for global food security governance. It is not a typical less developed country (LDC) beneficiary of food security programs—it is in fact the third largest contributor to the Food and Agriculture Organization of the United Nations (FAO).[1] At the same time, it is the country with the largest population in the world, 1.386 billion, making up 18.4 percent of world population, yet it only possesses 9 percent of the world's arable land, which is a hard limitation on its capacity to produce enough food for its people.[2] As more and more of its population leave poverty and enter the middle class (in 2005, 70.7 percent of its population lived on less than $5.50 per day in purchasing power parity—the upper middle income poverty line; this dropped to 31.5 percent in 2014), demand for greater variety and greater animal protein will be a continuing force in lifting demand for different food products.[3] As of 2017, China was self-sufficient in grains, but a net importer of the staples of meat, dairy, soybeans, and oilseeds.[4]

Given China's unique food security situation, this paper seeks to understand how China approaches food security as an issue for global governance, so as to infer how this approach may impact the food security of the rest of the world. This paper concludes that, while China does engage in the main global food security governance regimes (barring one, the Group of Seven) and does so in an active way so as to advance its interests, it is not satisfied that engaging in multilateral fora alone can safeguard a resilient and reliable food

supply for its population. Therefore, it also pursues strategies outside of these fora, with separate food security governance arrangements in Asia, Latin America, and BRICS, as well as acquiring investments overseas of arable land and food production facilities (often described as "land grabs"). The diversification of strategies has the ultimate goal of an extremely resilient food supply for the Chinese population.

Food Regimes and Global Food Security Governance

Food regime scholars aim to conceptualize how food flows around the world. One of the leading scholars, Harriet Friedmann, defines the food regime as the "rule-governed structure of production and consumption of food on a world scale."[5] This definition of governance does not require formal rules or international agreements. Instead, "implicit rules evolved through practical experiences and negotiations."[6] Such negotiations and evolving practices eventually bring about "a stable pattern of production and power."[7] In food regime analysis, a powerful state or non-state actor must act as the driver of this pattern.

The first food regime was the colonial-diasporic food regime, lasting from 1870 to the 1930s.[8] At the time, Britain and other European countries held relative power in the world system as colonizers. Industrial production was expanding in Europe relative to agricultural production. This first food regime was hence a set of relationships between the European colonizers and their colonies, where tropical, livestock, and grain products flowed from the colonies to the colonizers.[9]

The end of the Second World War brought about the mercantile-industrial food regime.[10] As colonial relationships broke down, the second food regime centered around the United States, which played a new role in international food flows. The United States exported its agricultural surpluses to an "informal empire" of post-colonial states on the "strategic perimeters" of the Cold War.[11] Through these flows, the United States shored up support against Communism and the Soviet Union, dealt with surplus production, and ensured that food shortages in Europe and other countries were remediated.

The third global food regime is yet to be defined.[12] Powers like China, Brazil, and India now have a significant impact on the flows of food. At the same time, global production chains and private corporations have begun to play an exceedingly large part in the dynamic of the food regime. Food production is being increasingly disaggregated in such a way that production is only coherent from the point of view of supply chain managers, in the form of transnational commodity complexes. What we can surmise is that these global supply chains are being managed by both Western and Southern (including Chinese) multinational corporations.

China cannot fully embrace complete trade liberalization because of its commitment to a certain level of self-sufficiency, which is only possible through food reserves. Hence, China cannot get all that it wants out of these governance arrangements and it has to resort to other strategies.

Global food security governance also fits the concept of a regime complex. Regime

complexes are defined by Karl Raustiala and David G. Victor as "an array of partially overlapping institutions governing a particular issue-area, among which there is no agreed upon hierarchy."[13] In such a regime, states may have trouble achieving their particular aims "because it is difficult—even for powerful states—to exert leverage in many diverse fora simultaneously and consistently."[14]

It is clear that global food security governance fits with the definition of a regime complex. In a literature review of global food security governance, Candel notes that the main scholarly critique of current food governance is that there is no truly authoritative institution.[15] Candel states that "we observe a regime complex for food security, in which food security is affected by a wide array of governance regimes that are all constituted by distinct sets of actors, forums, discourses, interests, and so forth."[16] This issue is compounded because food security governance touches upon diverse issues like agriculture, trade, climate change, crisis management, and poverty reduction.

Jennifer Clapp has noted that institutions in the economic sphere have more clout than others, due to their greater legal weight, such as in the World Trade Organization (WTO).[17] States neither want to give sole global food security governance responsibility to the WTO, where trade issues may come into conflict with resolving food security issues, nor give it all to the United Nations (UN) system, which is seen as being toothless in comparison.[18]

In terms of the different norms being contested within these regimes, global food security governance has been associated with free trade since the world began trade liberalization in the twentieth century.[19] However, an imbalance persists in which developing countries must lower protections to the point where the cheapest option is to purchase foodstuffs imported from developed countries, which are supported by home government subsidies.[20] Countries like China and India have pushed back against trade liberalization as it relates to food security in institutions like the WTO. In the view of the Chinese government, trade liberalization is important in that it will create a more efficient international food market that can better meet China's growing demand.[21] However, China cannot fully embrace complete trade liberalization because of its commitment to a certain level of self-sufficiency, which is only possible through food reserves.[22] Hence, China cannot get all that it wants out of these governance arrangements and it has to resort to other strategies. This comes back to the essential fact that China's food security is incompatible with a purely multilateral approach, in that with multilateralism, everyone is treated the same. For China, its own food security will be most resilient if other countries largely liberalize trade in food stuffs while China is able to maintain supports on its own food products to safeguard a degree of self-sufficiency.

China's Role in Global Food Security Governance Regimes

China plays various roles in the complex of institutions involved in global food security governance. The Food and Agriculture Organization (FAO) of the UN was the first effort to globally govern food security when it was established in 1944. It was given a set of ambitious tasks, including raising world nutrition levels, improving food production and distribution, and ensuring humanity's freedom from hunger.[23] However, the UN's Ministry of Agriculture lost a lot of power in the mid-1970s following the world food crisis occurring at the time, and has declined in relative importance and power since.[24]

In the aftermath, the international financial institutions of the World Bank and the International Monetary Fund (IMF) initially took over the duties of global food security

governance. These institutions advised in favor of market opening measures and cuts to state support of agriculture in developing countries.[25] The world food crisis from 2007-2008 marked another transition, acting as a wake-up call for the world that other institutions needed to take over global food security governance, which had only been a peripheral issue for the World Bank and the IMF. This led to the G7, G20, WTO, and Committee on World Food Security (CFS) being more important for those following ten years.

Although the FAO is no longer such a key global governance institution, China has been increasingly active in it, primarily in the form of encouraging South-South development cooperation in agriculture, presumably to bolster its credentials in the South so as to strengthen access to food supplies—this will be discussed later on.[26]

At the World Food Summit in 2009, Vice Premier Hui Liangyu concluded his address by promising that "China is ready to work with the international community to safeguard world food security and build a harmonious world of enduring peace and common prosperity."[27] Despite this, because the CFS involves a wide range of stakeholders through its civil society mechanism (CSM), the lack of plurality in Chinese delegates (all quite state dominated) represents a weakness in China's ability to influence proceedings. Elkin notes that countries in which independent civil society organizations (CSOs) have positive working relationships with their governments have greater influence because they arrive with common positions and are able to exert influence in multiple aspects: through CSMs as well as state-only meetings.[28]

The WTO as an institution of global governance has become both less effective in determining global trading norms and also a less-effective body within global food security governance.[29] This is fundamentally due to the deadlock that has plagued the Doha round—because countries cannot move forward in negotiations and finalize agreements, it has not been able to fulfill its mandate of disciplining trade-distortive policies such as agricultural subsidies. Chinese engagement in the WTO as pertaining to global food security governance plays out in a number of ways. China has subtly supported developing countries in their fights to retain the right to food reserves. China does not lead such efforts because to do so would harm its image as a supporter of trade liberalization. However, in 2013 at the Ninth Ministerial Conference in Bali, the G-33 (a coalition of 46 developing countries that included China) tried to remove food reserves from being considered in the aggregate measure of support, meaning that a food reserve policy would not be considered part of a country's subsidy policy. China has been especially concerned about the effect of speculation on the price of food. In 2009, Vice Premier Hui Liangyu stated that "it is imperative to enhance financial regulation over agricultural markets and effectively curb speculative activities."[30]

China is not part of the G7, which means it does not engage in its food security initiatives, such as the L'Aquila Food Security Initiative (to which $3 billion was pledged by the U.S. for a total of $22 billion by donor countries),[31] the Feed the Future Initiative (the U.S. whole-of-government poverty and hunger alleviation program), and the Global Agriculture and Food Security Program (GAFSP). However, the G20 seems to have taken over the G7's role lately in global food security governance issues. Within the G20, China has tried to put food security on the agenda, holding the Meeting of the G20 Agricultural Chief Scientists and the G20 Agricultural Entrepreneurs Forum in Xi'an in 2016. This involvement has increased as China has realized that the WTO is becoming less and less effective (particularly since the failure of the Bali Conference) and so has attempted to increase its power in the G20.[32] It should be noted that the G20 clearly excludes the other 100 countries which make up the

other 15 percent of world GDP, and rather more pertinently for food security purposes, a third of the world's population and half of the world's land area.[33] This group includes every African country aside from South Africa. The G20 also does not include non-state actors in its deliberations, such as civil society organizations and private sector participants. Both groups have a great deal to say about and contribute to the issue of food security governance, since they are directly affected and implicated in food security issues. Finally, the G20 lacks the expertise and capacity to implement its recommendations, since it lacks a formal ability to enforce rules.

China's Food Security Mindset

Food security is a peculiarly pressing issue for China for historical and political reasons. Historians have estimated that in almost every year from 108 BC to 1911 AD, one or more province in China suffered a famine due to drought or flooding.[34] This has generated a "continuous tradition of thinking about famine" and a "cultural mindset" obsessed by the threat of hunger. [35] This historical setting has engendered some key ideas that continue to inform the narrative: the paramount importance of self-sufficiency in food, and the responsibility of the ruler to ensure that there is enough food for the people.[36] In imperial times, the emperor risked losing the "Mandate of Heaven" should he shirk his duty to ensure adequate food production throughout the empire.[37]

This concept has carried through to the Chinese Communist Party (CCP), which prioritizes grain self-sufficiency not only as a matter of national pride, but also as a key aspect of political legitimacy.[38] Until recently, "red lines" for the CCP included keeping the stock of arable land at or above 120 million hectares, as well as achieving a 95 percent grain self-sufficiency rate.[39] This did, however, change in 2014 with the No. 1 Document which kept the same spirit of food security protection, but updated it slightly to reflect a more flexible production base. The 95 percent rate was replaced by a reserve to consumption ratio which includes both domestic production and net imports, with wording such as "moderate imports" showing acceptance of the real situation China faces currently.[40]

Additional aspects that characterize the Chinese outlook on food security are distrust of external actors, skepticism regarding the West's approach to food security, and the wish for diversification. China also still has a third of its population as of 2013 in the rural labor force. Policies that support domestic food production hence also support this large pool of workers, which is desirable.[41]

Distrust of overseas actors stems from the 1959 famine, in which China was unable to purchase enough grain to feed its people due to the U.S. embargo at the time.[42] It fears being locked out of world markets. This is also due to the fact that China consumes such a large amount of grain that it cannot help but act in a large-country fashion on the world market, driving prices up and potentially still not being able to meet its needs. In 2016, the FAO released a projection of China's expected net soybean imports in 2025 of 106.1 million tons. The average total volume of soybean exports from 2015-2017 according to the Agricultural Market Information System is 143.12 million tons, so without a significant increase in world production, clearly Chinese demand would dominate the world market.[43] Without expansion, China would theoretically stand to import 74 percent of world soybean exports. Noting China's immense demand, Duggan and Naarajärvi state that the international market "cannot meet China's shortfall in food production and, therefore, cannot ensure China's food security."[44]

The Chinese government is also aware of the China threat narrative that Lester Brown first promulgated in his book *Who Will Feed China?* and in the past China has boosted

domestic grain production as a direct result of such accusations, most recently in response to the 2008 food crisis.[45] The structure of world markets and the multilateral institutions is also viewed by the Chinese authorities as unfairly biased towards grain exporters like the United States. China feels that the international food regime is "tightly controlled" by these states and their multinational corporations, and that as a result, reforms always seem to target import tariffs rather than export subsidies.[46] These concerns have mobilized a desire for diversification in food supply sources in terms of regions, channels, and approaches to reduce the risk of overdependence.

The Chinese government consistently mentions food security in discourse, which is unsurprising given its importance to the Chinese people. The general message is positive and indicates the idea that China is helping the rest of the world in their food security as well. For example, Vice Minister of Agriculture Gao Hongbin claimed at a global summit for food security in 2009 that China's food security has actually enhanced global food security.[47] Chinese state newspapers publish articles with headlines like "China's food security fully guaranteed" and "Self-sufficient food policy benefits world."[48] Not only does China depict things as going smoothly, but shows this as predicated upon being able to acquire land abroad as well as at home. Mindi Schneider notes that these discussions begin by citing the "well-worn" statistic that China is feeding 21 percent of the world's population on 9 percent of its arable land, so as to "communicate impending crisis while proposing solutions."[49] China has deemed rice, wheat, and maize to be the three "strategic crops" for food security, selectively liberalizing other crops such as soybeans, but retaining tight controls on production, pricing, and imports on those staple grains.[50]

Given China's unique situation, it is clear that Chinese engagement in the institutions of global food security governance is aimed at increasing access to international food markets while maintaining a high level of domestic self-sufficiency in food production."[51] Duggan and Naarajärvi state that, as China moves from the role of "standby player" to "active rule maker," it will reshape the agenda of global governance bodies, which historically were not designed by, and hence not targeted towards, the concerns of the developing world.[52]

Regional Actions

China has taken a leading role in certain regional initiatives where it is more capable of shaping the regime to its preference. These include regional grain reserves, new food security governance regimes, and cooperation forums with the Association of Southeast Asian Nations (ASEAN), BRICS countries (Brazil, Russia, India, China and South Africa), and the Latin American and Caribbean countries respectively.[53]

China's affinity for grain reserves is part of its resilience strategy. The ASEAN Plus Three Rice Reserve is a permanent mechanism developed by member countries' agricultural ministers. The reserve is designed to deal with the threat of extreme price volatility or natural disasters wiping out capacity in Asia. The reserve holds 787,000 tons of rice stockpiled under this arrangement with a $4 million endowment fund, mostly from the "plus three" who contributed $1 million each. This aligns very well with China's domestic policy of strategic reserves. China holds the world's largest grain reserves located at the central, local, and provincial levels, estimated at over 200 million tons.[54]

BRICS countries have started to tackle the issue of food security governance as a group. At leadership summits, commitments have included the signing of a joint declaration on food security, the creation of the Basic Agricultural Information Exchange System of BRICS countries, and statements against developed countries' subsidies; in New Delhi in 2012 the group stated that "subsidies in agriculture by

some developed countries continue to distort trade and undermine the food security and development prospects of developing countries."[55] They are working to show the world that BRICS countries are determined to "play an important role in global initiatives on food security."[56]

China has formalized engagement with the Community of Latin American and Caribbean States (CELAC) through the general China CELAC Forum. Engagement on food security occurs at the China-LAC Agricultural Ministers Forum, which has a focus on agricultural development and food security. In this forum, China's actions have included establishing a joint 500,000 ton food reserve and a $50 million fund for eight research and development centers in the LAC region.[57] China is trying to take the initiative in this regional governance so as to ensure continued ability to influence the important agricultural production countries in the region.

Beyond Multilateral Venues

Outside of the regimes covered so far, China also deals with food security in a unilateral manner. It provides capital to foreign countries, particularly in Africa, but also Latin America, Asia, and the Pacific, which in return allow them access to food production. Provision of capital is defined through setting up production bases, agricultural development centers, agricultural research and development (R&D) exchanges, and economic cooperation arrangements. Daojiong Zha and Hongzhou Zhang estimated that by 2013, China had set up 60 bilateral agricultural or fishery cooperation working groups with over 50 countries and regions.[58] Also by 2013, China had undertaken fishing in the exclusive economic zones (EEZs) of more than 30 countries, and in fact the number of "distant water fishing vessels," totaling 1,991, was the most of any country in the world.[59] In 2010, China pledged to establish 30 demonstration centers for agricultural technologies in other developing countries at the UN High-level meeting on the Millennium Development Goals, as well as to send agricultural technicians to those countries.[60]

Through this, we can see that China tends to engage with countries bilaterally when it comes to securing food chain cooperation deals, rather than through multilateral mechanisms. These bilateral deals that help other countries increase their food production are a win-win situation for everyone: for China, because it can feel more confident in the greater availability of food to import from overseas, and for the recipient countries, who are increasing their volumes of production.

"Land Grabs"

Land grabs involve the aquisition of land and food production facilities by one country in another. Some scholars view them as a form of neo-colonialism, while others frame them as a natural consequence of the integration of food production into the global economy.[61] The Chinese government has been active in encouraging Chinese companies in the "go out" strategy to acquire investments in grain and meat production abroad, including in official speeches. Abdenur states that "Chinese state and non-state actors have come together to boost their presence in production, processing, and logistics of agricultural commodities in other countries."[62]

Chongqing Grain Group (CGG) is a prominent example of a Chinese corporation with a vigorous overseas investment policy, spending millions or even billions to secure projects in Canada, Brazil, and Argentina in soybeans and oilseeds.[63] In Latin America and the Caribbean, China does a lot of investing in building infrastructure for transporting food, including improving transport, logistics, and port infrastructure to facilitate exports to China.[64] Zhang and Cheng agree, stating, "the main task for China's overseas agricultural investment lies in establishing a global system for production, marketing, transportation, storage,

processing and manufacturing."[65] Duggan and Naarajärvi, writing in 2015, found that China acquired an estimated eleven million hectares of land in land grabs in the global South.[66] Other Chinese agribusiness firms with global acquisitions are Beidahuang, the China National Cereals, Oils and Feedstuffs Corporation (COFCO), and the China National Agricultural Development Group.[67] While the concept of land grabs is problematic in that it removes agency on the side of the host country and implies that China is taking land as opposed to engaging in a mutually agreed upon investment, what is indisputable is that these transactions are occurring. What's more, they are inextricably linked to the Chinese government's efforts to increase world food production, because this is inherently beneficial for China's food security.

China in the Soybean Complex: A Case Study

Soy is a very interesting case study of the intersection of global agricultural trade, Chinese culture, and Chinese food policy. Soybeans originated in northeast China (there are 6,000 domestic varieties) and various soy products, such as tofu, soy sauce, and fermented soy products are a dominant dietary and culinary staple throughout China.[68] Nowadays, the majority of soy consumed actually appears in the form of industrial meat that is raised with soymeal feed.[69] Soybeans have hence become China's most important agricultural import.[70] This fits with the worldwide trend in soy usage, with only six percent consumed in the form of whole beans, tofu, or other soy-based foods.[71]

Soy production has been characterized as a global complex. Soy production has expanded massively over the last 50 years, with world production increasing from 26.8 million metric tons in 1961 to 285 million in 2013.[72] This enormous increase in production has occurred through the creation of soy monocultures in North and South America which are being grown for export purposes. This was initially controlled by Western corporations who managed the entire complex from farming to sales of the end product.[73]

In the 2000s, China started to engage more with the soy complex. This occurred because the Chinese government liberalized trade in soybeans in the late 1990s and began a strategy of importing whole beans to then be crushed domestically, which included fiscal incentives for foreign direct investment in soybean crushing.[74] By 1996, China became a net soy importer and, by 2003, became the world's largest importer of soybeans.[75] In 2013 China imported 64 percent of the total global soy trade.[76]

During the 2004 soybean crisis, the price of soybeans plunged, but Chinese purchasers who had contracts with U.S. corporations were required to fulfill them at the agreed upon price, leading to widespread bankruptcy of Chinese crushers and refineries. This allowed a massive entry of foreign firms into the Chinese refining market to take a market share of 80 percent for crushing and 60 percent for refining.[77] Gustavo Oliveira and Mindi Schneider note that "this meant that the same firms controlling soybean exports to China from production centers in the U.S. and South America were also the major importers controlling the flow of soy and soy products through the Chinese food system."[78] This situation was problematic in that these firms clearly did not have the Chinese consumers' best interests at heart (rather they were concerned with profits for their shareholders and with gaining market power in the world). It also wounded the Chinese national pride to have such a sensitive national industry become dominated by U.S. corporations. The Chinese government felt compelled to recover the soy industry from this foreign domination and hence gave state assistance to Chinese state-owned enterprises to build processing infrastructure.[79] This decision in turn helped Chinese firms become powerful actors in the global soy complex, and they

now capture the profits of crushing and processing soybeans domestically.

Finally, Chinese demand encouraged Latin American countries to engage in export-driven monoculture at the expense of more diversified agricultural production.[80] This situation compromises the food security of the supplying regions. Gustavo and Schneider note that monocultures are a "contradictory process, whereby a multiplication of uses of a single monoculture also reduces the diversity of agro-ecosystems, diets, and even cultural practices, ultimately increases our collective vulnerability to catastrophic pest outbreaks, price shocks and market volatility, and food crises."[81]

The case study of soy provides a valuable analogy to China's overall approach to food procurement and security. A victim in the past of dependence on Western firms and the international institutions through which they operate, China has chosen a strategy of empowering domestic firms, particularly SOEs, to ensure the ability to be self-sufficient—if not in producing soy, then in processing it. At the same time, Chinese bilateral cooperation with LAC countries, as well as in the regional China-LAC Agriculture Ministers' Forum, has helped it ensure good access to the soybean producers, including through financial contributions to the food reserve and fund for R&D in the LAC region. The final illustrative aspect of this engagement is the fact that China's copious demand in the soybean trade remains problematic in terms of global food security. We know that a single monoculture in a geographical region brings with it risks and costs to the local population and increases food insecurity. China's search for food security endangers the food security of the populations from which it sources.

Future Prospects

We can expect the Chinese government to continue pursuing diverse strategies to achieve a secure food supply. The G20 seems to be the favored venue for China, and it will continue to engage actively to keep food security on the G2O agenda. Should breakthroughs in the WTO deadlock occur, China will work with like-minded developing countries such as India. While China will continue to put on an active and positive front in the CFS, it is unlikely that China will view it as the primary venue for pushing their objectives given the plurality of stakeholders which they will judge unlikely to accommodate their interests. Given the authoritarian turn of the country under Xi Jinping, it is also unlikely that Chinese CSOs and private companies will be empowered to freely engage in the CFS (or just as likely, that other countries will view any such engagement as speaking on behalf of anyone barring the Chinese government).

China's search for food security endangers the food security of the populations from which it sources.

In terms of regional cooperation, Chinese leadership will remain strong. Their partnerships in ASEAN, BRICs, and LAC will be actively maintained as China believes that active cooperation with the global South is important in safeguarding food supply. This leadership will be backed by economic and technical support for agricultural

development.[82] Connectivity in the form of investment in infrastructure will also be a component of China's strategy. Zhang and Cheng posit that through this cooperation, "China can reduce poverty, support local food security and build a fair and effective global food regime."[83]

China will continue to be a massive presence in the soy complex and, should trade tensions with the United States continue, will actively work with other countries to set up soy and other grain production to ensure that the supply is protected. This is already occurring as Canadian farmers respond to trade war threats and alter production for an expected increase in demand for Canadian crops from China, as well as countries including Brazil and Russia.[84]

China's main reason for engagement in the global food regime complex—a deep and persistent concern about safeguarding domestic food security.

Conclusion

The regime complex that governs global food security is complicated. No one body can discipline nation states to tackle all aspects of the drivers of global food insecurity. China views itself as a leader of the global South, and has tried to engage in different venues as its representative, like in the WTO. However, acting on behalf of developing countries is only a side effect of China's main reason for engagement in the global food regime complex—a deep and persistent concern about safeguarding domestic food security. Aspects of China's engagement that bode poorly for a genuinely multilateral solution to global food security are its actions securing land and supply chains in other countries, which have been characterized as land grabs. A more cooperative multilateral approach to acquiring land would be unlikely to work, so to secure these supply chains, China must act bilaterally. China also has no genuinely free private sector or civil society groups to engage with on these issues, so it opts for state-state interactions. These will not provide all the answers, since the solution lies with a broad spectrum of stakeholders.

China's actions in global food security governance cannot be understood in isolation in terms of one regime or one foreign direct investment decision. China is pursuing a strategy of diversification across a range of approaches with the end goal of resilience. Due to historical distrust and innate ideological differences, China will not leave the paramount goal of a secure food supply to be resolved solely by free markets and the multilateral liberal order. Instead, while Chinese officials choose to engage with these regimes and institutions, they also engage directly with regions and countries that have the ability or the potential to grow the total global food supply and be of assistance to China. In this frame of understanding, China does not see land acquisitions or country-specific deals as running contrary to multilateral governance, but rather as a complementary and vital aspect of their main strategy.

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Organizational Reform as a Key Driver of Chinese Military Innovation

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Introduction

Since Xi Jinping rose to power in November 2012, he and the top leadership of the Chinese Communist Party (CCP) have initiated significant reforms to all three pillars of the Chinese polity: the party, military, and government. Some of the most sweeping reforms are taking place within the People's Liberation Army (PLA). At the Third Plenum of the 18th Central Committee in November 2013, the CCP announced a sweeping reform plan which made clear that reforms to the PLA were needed.[1] However, the full details of specific PLA reforms were not announced until January 1, 2016 with the release of the Central Military Commission Opinions on Deepening the Reform of National Defense and the Armed Forces document.[2] The most important of these reforms include the restructuring of offices under the Central Military Commission (CMC), the reorganization of seven military regions into five new theater commands, and service reforms including the elevation of the Second Artillery Force to a full-fledged service known as the PLA Rocket Force and the creation of an entirely new service—the Strategic Support Force. Through these organizational reforms and a number of other defense-related organizational reforms, Xi Jinping has instituted the most sweeping changes to PLA and national defense organizations since the founding of the People's Republic of China in 1949.[3]

These reforms have been a major focus of many recent studies of the PLA; however, most of the attention has been focused on their impacts on "jointness" between PLA services and tightening political control over the PLA—especially with respect to Xi Jinping's strengthened leadership over the command and control structure.[4] While these two impacts of the reforms are undoubtedly critical to the present and future of the PLA, there is a lack of focus on another critical impact of the reforms: their contribution to China's efforts to promote military innovation. As such, the purpose of this paper is to provide details on three newly created groups within the CCP and PLA, and to consider their respective roles in promoting Chinese military technology innovation. The three groups in question are the Central Commission for Integrated Military and Civilian Development, the CMC Science and Technology Commission, and the Military Science Research Steering Committee. In order to better understand these organizational reforms, this paper places them within the broader history and contemporary context of China's efforts to become a science and technology superpower, considers their potential impact on military innovation, and discusses their relevance to U.S. interests.

China's Innovation Drive in Context

Before discussing the specific details of the organizations in question, it is important to understand the context behind China's push for military innovation, as well as the need for organizational reform. Since the early years of the People's Republic of China, Chinese leaders have made the development of its "strategic innovation system" a priority. Tai Ming Cheung defines a strategic innovation system (SIS) as encompassing "a national network of organizations that interactively pursue science, technology, and innovation-related activities to further the development of a country's national security interests and capabilities, especially related to strategic, defense and dual-use civil-military activities."[5] Cheung says that since the 1950s, Chinese leaders have pursued a state-dominated "techno-nationalist" approach to developing China's SIS, with varying degrees of intensity and priority depending on the nature of China's external strategic environment.[6]

China's techno-nationalist roots date back to the 1950s and the early years of the People's Republic, when foreign threats led Chairman Mao Zedong to conclude that China could not depend on foreign technologies for its security.[7] But China's current drive to develop its SIS and promote dual-use science and technology (S&T) innovation can be traced back to the late 1990s. At that time, Chinese leaders perceived a marked shift in China's external security environment as a result of three major developments: a global revolution in military affairs demonstrated by U.S. technological dominance in the Gulf War, renewed cross-strait tensions with Taiwan during the Third Taiwan Strait Crisis, and the 1999 U.S. bombing of the Chinese embassy in Belgrade.[8] Following these developments, the incoming Hu Jintao administration initiated the drafting of the National Medium- and Long-Term Program (MLP) for Science and Technology Development (2006–2020), promulgated in 2006. The MLP emphasized the importance of improving China's capacity for "indigenous innovation" (自主创新, *zizhu chuangxin*).[9] A core feature of the MLP was its focus on developing strategically important dual-use technologies, which are technologies that have both civilian and military applications. The MLP marked a renewed emphasis on the techno-nationalist approach, but with a distinctly commercial nature that was markedly different from historically military-dominated techno-nationalist approaches.[10]

Xi Jinping has instituted the most sweeping changes to PLA and national defense organizations since the founding of the People's Republic of China in 1949.

Since the release of the MLP in 2006, China has also released a number of other plans that seek to promote S&T innovation, most notably the Made in China (MIC) 2025 Plan and the Next Generation Artificial Intelligence Development Plan. These documents detail China's plans to fund and support world-leading S&T innovations. Both documents also emphasize the importance of dual-use technologies and military-civil fusion (MCF, 军民融合, *junmin ronghe*), discussed below.[11] Taken together, the issuance of the MLP, Made in China 2025, and the Artificial Intelligence

Development Plan over the past several years signifies China's serious commitment to promoting military S&T innovation. And the data show that Beijing is backing these up with serious money. Government funding for Chinese research and development (R&D) has increased from just $3.1 billion in 1997 to an estimated $40 billion in 2013, with roughly $5 to $7 billion of that dedicated to defense-related R&D.[12] By 2016, the Chinese government was spending (in nominal terms) $70.8 billion on R&D, with much of this helping to produce dual-use technologies like the Tiangong-2 space station and the world's first quantum satellite, Micius.[13]

Thus, unlike decades ago, access to funding is no longer the primary weakness in developing China's strategic innovation system and industrial base. Instead, the major problem is weak institutional support and coordination. In 2014, Zhang Youxia, former head of the CMC General Armaments Department and current second-ranked vice chairman of the CMC, made clear that bottlenecking problems in weapons development are no longer due to lack of funding, but instead, "institutional systems and mechanisms have become the greatest hurdle."[14] These problems have historical roots. Following the establishment of the People's Republic in 1949, China imported the Soviet approach to defense industrialization, bringing with it all of the bureaucratic and institutional weaknesses of the Soviet top-down style. China's institutions tend to be overly segmented and stratified. The resulting compartmentalization requires coordinating committees and agencies that are often inefficient and prone to bargaining, which creates significant challenges to coordination and development.[15] And as China's military and national security interests have expanded, so too have its organizational challenges, heightening the need for reform.

New Key Organizational Drivers of Innovation

China's political and military leadership appear to be placing a high priority on military innovation. But policy guidance and heavy government funding can only do so much; without needed organizational reforms, inefficiencies and coordination problems will persist. A number of recent organizational reforms suggest that the CCP and PLA understand this. In recent years, they have made organizational reforms a key component of their efforts to strengthen China's strategic innovation system and promote military innovation. What follows is a discussion of the three most important relevant organizational reforms that have taken place over the past few years. Because these reforms are so recent—and to some extent ongoing—it is not yet possible to do any post facto analysis of their impact on improving efficiency. As such, the discussion below seeks only to trace recent reforms, place them in the larger context of China's military innovation efforts, and analyze what impacts they may have. In the future, further study will need to be undertaken in order to determine what actual impact they have on improving military innovation.

The Central Commission for Integrated Military and Civilian Development

The most important organization driving Chinese military S&T innovation is the Central Commission for Integrated Military and Civilian Development (中央军民融合发展委员会, *zhongyang junmin ronghe fazhan weiyuanhui*), which was established in January 2017. The Civil-Military Integration (CMI) Commission is the most important group analyzed here for a number of reasons. Unlike the other groups studied in this paper, the commission is set up under the CCP's Politburo and its Standing Committee—rather than under the PLA. Perhaps more importantly, the group is chaired by Xi Jinping himself, giving it the highest level of influence and authority.[16] Additionally,

Wang Huning and Han Zheng—both members of the party's Politburo Standing Committee—serve as vice chairs of the commission.[17] As will be shown, the importance and effectiveness of the CMI Commission is largely based on the rank and influence of its members.

The purpose of the CMI Commission is to serve as the central-level decision-making and deliberative coordinating body on major issues relating to the development of military-civil fusion, and to unify the CCP's leadership over MCF's in-depth development.[18] MCF is a process that seeks to combine defense and civilian industrial bases to support both military and commercial demands, and also to promote greater integration of civilian and military resources to support military operations.[19] Some analysts argue that CMI and MCF are distinct in that MCF is a Chinese-specific concept going beyond broader conceptions of CMI.[20] Because of this, this paper uses the term MCF, except when referring to the CMI Commission, which official English translations refer to as the Central Commission for Integrated Military and Civilian Development.

Shraberg, and Morgan Clemens provide a helpful explanation for why MCF is an increasing priority for China and Xi Jinping:

> *Modern information-based warfare has made the development and deployment of new, breakthrough technologies imperative to a country's ability to stay ahead, necessitating a long-term focus on the pursuit of technological superiority. In addition, the pace of modern technological change has dramatically increased, such that lagging development of advanced S&T capabilities can have progressively dire effects on a country's security. Cutting-edge technology, meanwhile, is increasingly compatible with both civilian and military applications, enabling civilian-use technologies to be adapted or directly transferred to military use.*[23]

Some Chinese analysts predict that as much as 85 percent of current technologies have civil-military dual use applications, providing a significant opportunity to successfully employ MCF as a driving force for national economic, industrial, and techno-

Some Chinese analysts predict that as much as 85 percent of current technologies have civil-military dual use applications.

Military-civil fusion has long been a goal for China. It was first raised as an official concept in 2009 by Hu Jintao and elevated to a national strategy by Xi Jinping at the Third Plenum in 2013.[21] In recent years, it has become an increasingly important effort cross-cutting the party, PLA, and government. The efforts towards MCF make sense given China's growing emphasis on the role of information in warfare in its most recent military strategy.[22] Brian Lafferty, Aaron

logical development. [24]

But in order to make MCF work, China's leaders have known for years that it will require organizational reforms. In 2010, the State Council and CMC jointly promulgated Document 37, which sought to create a strategic framework for MCF policy related to science and technology development. Document 37 lists six broad areas of MCF work needing improvement, two

of which relate to inadequate coordinating mechanisms and the need to deepen reform of institutional mechanisms.[25] These institutional and organizational weaknesses reflect the coordination problems within China's strategic innovation system discussed earlier.

They also reflect the broader coordination efforts that have long plagued Chinese policymakers in all areas of policy. Despite its authoritarian nature, the Chinese system is too large to be centrally run; thus, governance is significantly fragmented, with decision-makers at all levels fighting for influence over the policymaking process.[26] To mitigate the negative impacts of this fragmentation, Chinese leaders employ a number of institutional and organizational tools to increase coordination and increase efficiency. David M. Lampton refers to these as "cross-system integrators," and lists "leading small groups" and committees as examples.[27] These organizations allow leaders to settle disputes which are kicked up the hierarchy from lower levels, and they also provide leaders with permanent staff and resources to address related issues.[28]

The CMI Commission is a perfect example of a cross-system integrator. And as previously mentioned, the fact that it is a party—not government—commission, led by Xi Jinping and two other Politburo Standing Committee members, suggests that it will likely be successful in this role. Coordination committees can sometimes be weak and risk-averse, creating additional bottlenecks and policy paralysis.[29] But with the highest levels of authority leading this commission, it is unlikely to suffer from these problems. Instead, it seems poised to successfully drive military innovation and guide overall MCF coordination and development.

The CMC Science and Technology Commission

The second most important organization considered in this study is the Science and Technology Commission of the Central Military Commission (中央军委科学技术委员会, *zhongyang junwei kexue jishu weiyuanhui*), which has historically served as the PLA's nexus of civil-military cooperation on defense technological issues. The commission is a focus of this study because it was reformed and upgraded as part of the sweeping PLA organizational reforms announced in January 2016.[30] Previously, there were four departments directly set up under the CMC: The General Staff Department, General Political Department, General Logistics Department, and General Armaments Department. Under this setup, the CMC's S&T Commission was not directly under the CMC, but was set up at a lower level within the General Armaments Department (GAD, 总装备部, *zong zhuangbei bu*), which was the PLA's chief organ in charge of performing research, development, testing, and evaluation of armaments; overseeing procurement management; and overseeing information systems building for the PLA.[31]

The PLA acknowledges that the incorporation of AI into weapons and military technology is likely to radically transform the nature of combat and national defense.

Under the new CMC setup, the GAD was renamed the Equipment Development Department (EDD, 装备发展部, *zhuangbei fazhan*) and the S&T Commission was spun

off to become one of the 15 new organs directly under the CMC. This puts the S&T Commission on an equal administrative rank as the EDD and the other organs under the CMC. According to Wuthrow and Saunders, "The commission will continue to be responsible for guiding and advising PLA leadership on weapons development and serving as a nexus for collaboration between the armed forces and defense industry."[32] The specific details of the division of labor between the EDD and S&T Commission does not appear to be known yet, but their respective names suggest that the EDD will focus on maintenance and administration of China's procurement system, while the commission will be the PLA's internal driver of S&T innovation and military-civil fusion.

Based on the commission's leadership, it appears to be poised for success. The director of the commission is Liu Guozhi, who previously led the commission when it was set up within the GAD. Liu is a technical expert, not a career bureaucrat. He graduated from Tsinghua University, one of China's top schools, and led a career through the PLA's weapons development system. He was previously a physicist working on high-power microwave weapons at the Northwest Nuclear Technology Institute, a key lab in charge of Chinese nuclear weapons research and the development of other high-power technologies.[33] Liu's background indicates that the commission will be led by someone with technical knowledge and a deep understanding of China's strategic innovation system. Additionally, at the 19th Party Congress in 2017, Liu became a member of the CCP's central committee, making him one of the highest-ranking political leaders in China. Taken together, Liu's technical background and political status suggest the S&T Commission is poised to play an important role in strengthening military innovation.

Overall, the upgrading of the S&T Commission from an organ under the GAD to a commission directly responsible to the CMC reflects the high priority that the PLA leadership places on military S&T innovation.[34] And the selection of Liu Guozhi as head of the commission shows their commitment to providing the necessary organizational authority to—in theory—effectively drive innovation. In the same way that the party's CMI Commission was set up to overcome structural bureaucratic issues and facilitate better coordination, the upgraded CMC S&T Commission should provide the PLA with enhanced organizational capacity to innovate and develop its strategic innovation system.

The Military Science Research Steering Committee

The third and final organization considered in detail is the secretive Military Science Research Steering Committee (军事科学研究指导委员会, *junshi kexue yanjiu zhidao weiyuanhui*), a new agency that reports directly to the CMC. However, the details of this setup are unclear, as it is not one of the 15 administrative organs under the CMC. Instead, reports suggest that the committee will report directly to the CMC in a separate manner, providing a "consultative role," while the other 15 CMC organs handle the funding and implementation of projects.[35] This organization was secretly created in early 2017 and announced publicly in July 2017 in a CCTV documentary entitled "Carrying Reform Through to the End" (将改革进行到底, *jiang gaige jinxing daodi*).[36] Few details about the agency have been made public, but reports suggest that it is envisioned as a Chinese version of the U.S. Defense Advanced Research Projects Agency (DARPA), a U.S. defense agency set up in 1958 to drive technological innovation for the U.S. military.[37] DARPA is famous for producing some of the world's most important technological innovations, such as the internet, which have applications outside of traditional defense applications. If this agency is indeed similar to DARPA, it will likely focus on driving the development of advanced technologies

that have both military and commercial applications, further supporting China's efforts towards military-civil fusion.[38]

One technology that the agency may focus on is artificial intelligence (AI). The promulgation of China's previously mentioned Next Generation AI Development Plan demonstrates the high priority that Chinese political and military leaders place on the development of AI. The PLA acknowledges that the incorporation of AI into weapons and military technology is likely to radically transform the nature of combat and national defense. Military writing on AI makes it clear that the PLA is committed to the idea that incorporating AI into the military will allow the PLA to be smaller, more efficient, and more effective.[39] And, AI will, of course, also have huge non-military commercial applications. In fact, an expert at the Chinese Academy of Engineering has said that AI will be the most important dual-use technology of the next several decades.[40] If the Military Science Research Steering Committee does, in fact, serve a similar function to DARPA, it seems very likely that it will focus heavily on the development of AI technologies.In terms of organizational reforms, the Military Science Research Steering Committee seems to be markedly different from the two previously discussed groups, which were created in order to comprehensively oversee and coordinate defense innovation bureaucracies. As a party group, the CMI Commission is tasked with overseeing overall national MCF coordination, and the CMC's newly upgraded S&T Commission is set up to oversee high-level MCF coordination from within the PLA. This new agency, however, will likely focus less on bureaucratic coordination and more on strategic technology guidance. That is, it will likely be focused on designating key military technologies, identifying new technology innovators in the commercial sector, and connecting these nascent technologies to the PLA's defense innovation network.[41] In this way, the new agency will help to drive bottom-up technological innovation for the defense sector.

In short, these three organizations serve a variety of roles and represent significant advances in China's capacity to innovate. The party's new CMI Commission, with Xi Jinping as its leader, will have the power to more successfully coordinate overall national MCF efforts, removing key bureaucratic coordination weaknesses identified by China in 2010. The CMC's newly promoted S&T Commission will solve some of the same bureaucratic and coordination issues within the PLA. And the new Military Science Research Steering Committee will play a new role in identifying early-stage technologies for the PLA, driving bottom-up military innovation in a system that has historically been heavily top-down.

But much is still unknown about these groups, the latter two in particular. As new information becomes publicly available, future research should seek to find out more about their specific roles, how they interact with each other, and whether or not they appear to be successful at improving coordination and promoting military innovation. In particular, more information is needed regarding the specific role of the Military Science Research Steering Committee. Because of its likely bottom-up focus, this agency seems poised to play a unique role in military innovation.

Additional Groups for Future Consideration

These three organizations are not the only organizations playing a role in military S&T innovation within China's massive party-state-military apparatus. They were chosen for this study because they represent the three most significant developments in recent years. But other organizations are worth mentioning here as well, and warrant further study.

First, the CMC's newly reformed Equipment Development Department (briefly mentioned above) plays an important role in the PLA's weapons research, development,

and procurement. It was not included in the limited scope of this study because the functions of its predecessor, the General Armaments Department, were largely retained through the 2016 reforms. The spin-off and promotion of the CMC Science and Technology Commission thus represented a more significant development in overall organizational reform with regard to S&T innovation. However, as the PLA continues to implement the 2016 reforms, new developments relating to the EDD should be studied further.

Second, two other important organizations that play a role in China's military S&T innovation bear mentioning. The State Administration for Science, Technology and Industry for National Defense (SASTIND), situated within the Ministry of Industry and Information Technology, has played a role in developing and managing China's defense industrial base. However, since its creation as part of a State Council reorganization in 2008, the SASTIND has become less important as other organizations like the EDD have taken on a greater role.[42] Last, the National Science and Technology Leading Group plays a key role in coordinating numerous government ministries and agencies in devising national S&T strategies and policies.[43] The group, led by Premier Li Keqiang, recently removed "Education" from its name, reflecting an increased focus on S&T development. Given that Liu Guozhi, Chairman of the CMC Science and Technology Commission, is a member of this government leading group, it is likely that the group will play some role in promoting military S&T development.[44] However, it was not a focus of this study because military innovation will only be a part of its larger focus.

Conclusions and Broader Implications

China's capacity to innovate has long been an important priority for its leaders, and through heavy government funding and policy support, China appears to be making some progress in this area. A 2017 report by Scott Kennedy at the Center for Strategic and International Studies concludes that, "whether one looks at China in isolation or puts the country in comparative perspective, China's innovation performance has gradually improved over the last decade along a number of indicators."[45] While significant problems remain for China's innovation efforts, Xi Jinping's organizational reforms, which span party, military, and government, seem poised to aid China in pursuing its S&T development goals. Xi and the rest of the CCP leadership seem committed to embracing the techno-nationalist mold for developing China's civilian and military tech industries, and they are undertaking the necessary policy and organizational reforms to achieve their goals.

But China's S&T innovation efforts do not exist within a vacuum: they are already having an impact on U.S.-China relations. In the past several years—especially during the presidency of Donald Trump—strategic and economic competition between the United States and China has increased significantly, with science and technology competition emerging as one of the greatest sources of tension between the two countries. In the United States, leaders worry that China's innovation efforts are rapidly chipping away at America's existing technological edge, especially in defense-related areas. For example, a September 2018 report by the U.S. government called for the United States to take serious action to rebuild its defense industrial base. China's defense industrial base, and the challenges it poses to the United States, were major themes of the report.[46] Such discussions about long-term efforts to rebuild the U.S. defense industrial base come as the Trump administration is also taking aggressive action against China in the near-term to thwart Chinese technology innovation. In April 2018, the U.S. Commerce Department placed an export ban on Chinese telecom giant ZTE, temporarily

crippling the company and making clear China's serious vulnerabilities to its leaders.[47] Months later in October 2018, the U.S. Justice Department accused Chinese chipmaker Fujian Jinhua Integrated Circuit Co. of stealing U.S. technology, and the Commerce Department banned the company from purchasing chip components from U.S. firms.[48]

These episodes demonstrate how critical science and technology will be for both countries going forward. If U.S.-China competition continues to increase, both countries will likely double down on their efforts to innovate. China, over the past few years, seems to be already doing this. Xi Jinping's organizational reforms appear to have established stronger and more diverse organizational support for its strategic innovation system, which will likely provide future innovation dividends. But this approach is heavily state-driven. The U.S. system is markedly different: it owes its existing innovative edge to a market economy—albeit with some government support. But to compete with China in the realm of S&T innovation, the U.S. government will need to find ways to maximize its innovative strengths. President Trump's recent executive order on AI, along with the U.S. Defense Department's AI strategy, appear aimed at doing just this.[49] But U.S.-China technological competition is still in the early stages. In the twenty-first century, long-term competition between the United States and China may hinge on which country can successfully win the innovation race and lead in the technologies of the future. China clearly recognizes this fact, and is acting to shore up its strengths. If the United States wants to maintain its edge and compete successfully with China, it must do the same.

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An Innovation-Driven Economy with Chinese Characteristics

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Introduction

Over the past twenty-five years of China's economic rise and expanding influence, politicians, business leaders, and economists have questioned whether China is capable of innovation. In more recent years, this issue has taken on even greater significance. From the perspective of the United States and other advanced economies, China's progress in high-tech fields threatens their hold on innovation-based industries and economic power. This has been true for some time, but plays a larger role now in the context of the ever-escalating U.S.-China trade dispute. From China's perspective, new economic realities and a domestic growth model that is shifting towards consumption-driven growth mean that innovation, and the productivity increases it fuels, must now become the key driver of the economy. The country has swiftly entered middle-income status, with higher wages and slower growth rates, and is seeking to upgrade to, and ultimately converge with, high-income nations through innovation. Xi Jinping and the rest of the Chinese leadership have gone all-in on this strategy, but the underlying question remains—can China successfully transition into the ranks of the world's innovation leaders?

This paper's answer is a resounding yes, albeit with a few caveats. This assessment, far more bullish than most, is centered on China's impressive innovation track record to date, and the strengths and early results of its upgrading efforts. In 2018 alone, rather than rely on the loose, often culture-based predictions of the past, we can observe substantive empirical evidence of innovation successes and their broader economic impact in China. We are also able to analyze the economic policies that underlie this transition as well as their initial outputs in innovative, next-generation sectors like artificial intelligence (AI).

There will be barriers, as well as broader structural constraints, that will shape China's ultimate future economy. But these issues and considerations aside, the takeaway remains—China is well on its way to becoming a leader in innovation, and its plans for a full-scale transition are making headway. As the McKinsey Global Institute's (MGI) Jonathan Woetzel, an expert on the topic, succinctly states, "China's got what it takes."[1]

Progress on Innovation

"Anyone who says that China is not innovative or entrepreneurial is kidding themselves," an Amazon employee in China recently proclaimed.[2] The staid conventional wisdom that China simply cannot innovate must be rebutted for two reasons. One, it mistakenly conflates pure invention with innovation, missing its underlying importance; two, it relies on a 1990s-esque image of the Chinese economy that revolves around fake products and copycat businesses.

For China, as for all countries, innovation is critical because of its potential positive economic effects on productivity, value added, employment, and overall upgrading. It need not be "breakthrough" innovation to be successful in this regard. As *The Economist* explains, "the proof of successful innovation is the ability of companies to expand revenue and raise profits," and Chinese firms have certainly managed to do that, as will be seen below.[3] Introducing new technologies or processes, regardless of the source of their creation, also raises productivity and, ultimately, economic growth. This is the core tenet of the innovation-driven economy concept. In China's case, further advances (and their application) in computing, AI, and robotics will boost productivity. These advances could add an estimated $450-780 billion of value each year in manufacturing and $500 billion to $1.4 trillion in the services sector.[4] To make a simplified historical comparison, Japan was not the first to make cars or semiconductors, but it used new manufacturing processes, management practices, and supportive policies to become competitive with the original producers in the industries, propelling the country to the top tier of wealthy nations. From this perspective, China's goal of sustainable growth through innovation seems more within reach, whether they invent the world's next semiconductor or iPhone or not.

Regarding the second point—that China is only good at copying others—there is a growing consensus that China has developed its own core strengths in certain types of innovation, mostly within the last five to ten years and mostly focused on commercialization.

The oft-cited MGI report, The China Effect on Global Innovation, groups Chinese innovation in the two categories of "improving consumer products and the business models used to sell them,"[5] and "making manufacturing processes cheaper, quicker and better."[6] China's broader internet sector offers the best example of the first category. As MGI describes it, "nowhere have Chinese entrepreneurs shown a greater flair for innovation than in internet-based businesses."[7] China's tech powerhouses, Baidu, Alibaba, and Tencent (collectively known as BAT), have skyrocketed to the list of top companies in the world through real business model innovations, rather than just "copycat" models and government protection.

There is a growing consensus that China has developed its own core strengths in certain types of innovation, mostly within the last five to ten years and mostly focused on commercialization.

The first innovation relates to their customer-facing offerings; they have pioneered the idea of super-apps, or platforms, where "dozens of different services or sub-apps come together."[8] Second, China has developed related revenue-generating models. While most U.S. firms rely on advertising to monetize their users, BAT and others have successfully developed other revenue sources. Tencent's WeChat, the prime example of both, is a social media, messenger, and mobile payment app in one. It relies on game sales, e-commerce, and transaction fees.[9] It is hard to consider China's mobile payment commercialization a business model innovation. However, Chinese firms adapted the QR code, originally

developed in Japan for the automotive industry, to making payments via smartphones.[10] These transactions were worth just 1.2 trillion RMB in 2013 but are now expected to total 98.7 trillion RMB (roughly $15.5 trillion) for 2017, with estimates rising even more in the coming years. These figures dwarf the U.S. and all other major advanced markets combined; consumers in China now make mobile payments 50 times more often than Americans.[11]

China's tech market is still not on par with its U.S. counterpart, but it is rising quickly. According to analysis by *The Economist,* China's tech sector was 42 percent as powerful as the United States' as of early 2018, up significantly from just 15 percent in 2012.[12] Looking to the future, "China's unicorns, a proxy for the next generation of giants, are in total worth 69 percent of America's, and its level of venture capital (VC) activity is 85 percent as big as America's based on money spent since 2016."[13] Tencent and Alibaba play a large role in supporting these new firms, funding about a quarter of venture deals and growing the broader ecosystem. A recent Center for Strategic and International Studies (CSIS) report on the sector states that, "many innovative and vital internet companies have emerged, playing an important role in promoting stable growth and employment, and benefitting the people."[14]

In the second category of innovation that has developed in China—cheaper, faster, and better manufacturing—the wind and solar energy sectors stand out as good case studies. After years of "good enough" production in traditional industries, China's low-cost model is upgrading to rapidly speed up design and scale, and improve products for both Chinese and export markets at the same time.[15] "Chinese companies have shown that they can move from idea to commercial product or service in far less time than companies in other markets," including through much quicker prototyping, shorter product cycles, and a focus on customer feedback.[16] In the renewables sector specifically, Jonas Nahm and Edward Steinfeld describe a unique "innovative manufacturing" process that sits "at the intersection of upstream R&D and manufacturing." [17] Chinese firms innovate at this juncture on processes, inputs, and even the final product, to commercialize new-to-the-world technologies.[18] This is often done with global partners that are the original owners of the idea or concept, but the authors' on-the-ground interviews indicate that the Chinese role goes "well beyond traditional emulation and assembly, reaching deep into new product and process design."[19] This has translated into remarkable commercial performance, with China accounting for 60 percent of world solar production and playing a leading role in wind turbine manufacturing, as well. This is similar to the stories in other high-end manufacturing sectors. DJI dominates the global commercial drone market, now controlling 85 percent of production. Huawei has transformed into a major global player across information and communications technologies (ICT). It is set to play a decisive role in the coming 5G wave. [20] Economically important, these firms are operating throughout the value chain, including in the

China's tech powerhouses ... have skyrocketed to the list of top companies in the world through real business model innovations, rather than just "copycat" models and government protection.

high value-added early stages of design and development and later stage of sales and marketing.[21]

Finally, in assessing recent progress, it should also be acknowledged that China has shown increased indications of the more frontier-type of innovation. China has the two fastest supercomputers in the world and 202 of the world's top 500. The leader, TaihuLight, is more than five times faster than the U.S. top performer, and it uses Chinese processors, rather than Intel chips. [22]

China has also developed the world's first quantum satellite, Micius, which has scored a number of pioneering achievements, including the first quantum-encrypted satellite video call.[23] In biotech, another key breakthrough field, Chinese firms have excelled at genome sequencing.[24] These are a few cases and should not be taken to mean that China now competes head-to-head with the scientific power of the United States. But they may be harbingers of things to come. "At least parts of Chinese industry," Nahm and Steinfeld conclude, "have reached a new stage of competitiveness, one situated at the frontier of global technology development, and deep within global innovation networks."[25]

Realizing an Innovation Economy

Moving broader segments of the economy towards the technology frontier is now the linchpin of China's development strategy. The central government and provincial governments are utilizing forceful industrial policies and massive financial support "to speed up China's technological catch-up and to leapfrog stages of technological development." [26] These efforts are aided by a stronger position and role of private firms than in past periods in Chinese history, including BAT, countless start-ups, and venture capital (VC) investors. Their combined strengths and potential are already having an impact, propelling China away from its middle-income peers in next-generation sectors expected to drive the global economy in the coming decades. "A technology revolution is sweeping the world," Eurasia Group president Ian Bremmer proclaimed, "and the countries that most effectively seize the opportunities it creates will dominate the 21st century."[27] China seems to be seizing that opportunity.

The Chinese government has created a slew of economic and sector plans to achieve their goals. This includes Made in China 2025 (MC2025), its well-known blueprint for manufacturing modernization that became a sticking point in the trade conflict with the United States. Other key plans include the Guidelines to Promote National Integrated Circuit Industry Development and Internet Plus plans, and the 2017 Next Generation Artificial Intelligence Development Plan. These plans have specific production targets, as well as broader objectives in automation, supply chain localization, promotion of national champions, and productivity gains. Some notable production targets include producing 70 percent of "basic core components" for

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aerospace and electronics, 40 percent of mobile phone chips, 70 percent of industrial robots, and 80 percent of new energy vehicles (NEV) within China by 2025.[28] To realize these goals, governments will marshal billions of dollars of public financing through subsidies, specific funds, and bank lending; support foreign acquisitions for technology transfer and domestic mergers for consolidation; and use a range of competition and procurement policies to promote domestic players over foreign firms.[29] National-level funds include the Advanced Manufacturing Fund, the National Integrated Circuit Fund (also known as the Big Fund), and the Emerging Industries Fund. There is a plethora of provincial-level funds as well. At the end of 2015, there were 720 of these funds with assets of $328 billion, numbers that have likely gone up since.[30]

"China is pulling ahead because it has a strategy to build a high-tech economy and is willing to spend heavily and consistently over years," James Lewis from CSIS summarized.[31] The strategy is forward-looking, focusing especially on nascent industries not yet dominated by the OECD nations. It is supported by both theory and empirical successes.[32] Every country that converged with high-income nations in the post-war period, including but not limited to the East Asian Tigers, utilized some form of state policy for technological development.[33] As Chinese policymakers point out, even the United States employed significant government intervention for infant innovative fields, helping to give rise to Silicon Valley today.[34] China is undoubtedly using much more heavy-handed interventions than the United States ever did, causing some to decry the Chinese plans as neo-mercantilist.[35] It may not be the most efficient or equitable economic approach, but this is no less reason to take it seriously.

Moving from strong potential to real-world results, China's progress in next-generation sectors further supports the overall conclusion that China will transition into an innovation-driven economy. Prime among them is AI, which will drive further developments in both new and traditional industries. In AI, as opposed to most traditional industries, China has surpassed the rest of the world and is competing directly with the United States. This leapfrogging has been supported by government efforts, flourishing private sector activity, and China's clear advantage in the data needed to train AI algorithms. "The size of available datasets is the most important source of competitive advantage in AI," [36] and China's resulting advantage in that regard will be insurmountable for other countries. [37] The report also categorizes four types of AI and China's performance in each. In internet AI, focused on new-age operating systems and elsewhere, BAT are competing well with their U.S. counterparts, despite Google's current AI global dominance. In business AI, China notably lags due to slower implementation of earlier data and enterprise applications, but 4th Paradigm stands out as a global player providing AI for financial institutions. The third type the authors identify, perception AI, is where China really shines. They appear to be a global leader in cutting-edge face and voice recognition, with firms like Face++, iFlyTek, and SenseTime, recently named the most valuable AI firm in the world at $3 billion.[38] Lastly, in autonomous AI, China is catching up and could ultimately be on par with the United States, they posit, in areas like autonomous vehicles, robots, and connected things. Importantly, AI seems to be providing an opportunity for China's semiconductor industry to also make progress, after years of slower progress. Cambricon and Bitmain are examples of Chinese firms that could jump into competitive positions in niche chip markets.[39] With these developments, and its impressive performance in three out of four AI categories, the government's goal to catch up on AI technology and applications by 2020 and become the leading AI hub by 2030 must be considered within reach. Former Alphabet chairman Eric Schmidt notably expects China to overtake the United States in AI

as early as 2025, besting the government's target by five years.[40] China's AI progress indicates that it is well on its way to realizing the potential trillion-dollar productivity gains from future sectors.

China's performance in two other next-generation sectors is also worth mentioning. In vehicles, China is taking advantage of timing. Anand Shah, a senior advisor with the Albright Stonebridge Group, recently explained that two trends—electric vehicles and autonomous vehicles—are shaking up what was a stable, decades-old model for incumbent automakers. This change initially caught U.S. firms flat-footed, while the Chinese, driven by BAT and other firms, have acted swiftly in developing production and spurring demand.[41] China could skip the painstaking process of trying to gain ground in the crowded traditional industry and move right into a strong position in the next wave of vehicles. In robotics, China is still behind the global curve, but is rushing to catch up. They are by far the largest market in the world, spending $10 billion annually to install some 600,000 total robots to meet the MC2025 targets. Provincial governments have especially thrown their weight behind the industry. Both of these new-age sectors would be propelled by further AI advancement in the country, adding to the potential of a breakthrough, catching-up moment.

Barriers and Constraints

Despite all of its progress and future potential, there are both weaknesses in China's efforts and larger issues that will affect its transition to an innovation-driven economy. Many of the barriers are politically related. This includes the top-down nature of its upgrading plans, which do not necessarily meet firm-level needs or demand. Much of the spending flowing from these plans will be inefficient, leading Scott Kennedy of CSIS to claim that, "these are fat years for innovation in China."[42] There is also an argument to be made that a strong party hand in universities and state-owned enterprises (SOEs) will restrict further development beyond the current stage of innovation.[43] Private firms are leading the way on innovation, yet the state has propped up SOEs in recent years, backsliding on years of reform efforts. International politics, especially the U.S.-China relationship, have also created significant barriers to market access. The United States is cracking down on Chinese tech-related investments, prohibiting firms like Huawei from selling into its market and others, drying up investment with new investment approval reforms, and threatening to cut off the supply of key components for firms like ZTE.[44] These efforts by the Trump administration could be extremely detrimental to Chinese firms and could prohibit technological learning and upgrading. In the long term, closed or restricted access to the U.S. market makes it very difficult for companies to become truly globally competitive and amass needed profits.[45] An expanded, wealthier consumer base in China will help, but it is still nowhere near the prize of the U.S. market. Finally, China's pure innovation inputs—in human capital, the value of intellectual property, and applied research and development (R&D)—are still lagging. China has, to date, made up for these shortcomings with a focus on experimental R&D (80 percent of all R&D in China) and commercialization. Reports indicate that they have been improving on these metrics in recent years.[46] In order to push larger parts of the economy forward, China will have to continue this progress.

There are also two rather unique factors that will shape China's innovation push. The first one, structural in nature, stems from the size of China's economy. China's massive manufacturing base and employment is without compare.[47] It will be extremely difficult to fully propel all sectors and firms into a new model. The innovation-driven economies of the world are largely smaller, denser places, such as those in Europe and elsewhere in East Asia. The United States is the prime exception with its large,

innovation-based economy. But it too has grappled with its own issues of sector, firm, and employment shifts as a result of issues resulting from the transition away from manufacturing over the past decades (at least in part).[48] The second issue concerns the unique "China effect" on global innovation. China mobilizes overwhelming resources to support sector growth, as discussed, which can drive down margins and drive out the high-end firms that spend heavily on R&D to innovate. This was the case in the solar PV market, which suffered from Chinese-led overcapacity, and the worry is that it will happen again. "To put it plainly," Scott Kennedy says, "China could do to semiconductors, artificial intelligence, and pharmaceuticals what it has done to steel and aluminum. This could, in turn, result in a downturn in overall productivity, the most important source of growth for countries and the global economy."[49] On this China effect, the future is less certain, but a larger shift away from innovation-led growth seems unlikely at this point.

Conclusion

Innovation in China still suffers from some persistent shortcomings. That is true today and will likely be true in the foreseeable future. But, in returning to the original question, this doesn't mean that China won't ultimately succeed in its overall economic transition. Chinese-style innovation is now rightly recognized as a powerful global force, as exemplified by the internet and renewable sector examples. The government's policies to realize its objectives are largely the right ones; incomparable financing and support buoy these policies. Finally, an ascendant private sector is poised to potentially leapfrog its competitors in the United States and other advanced economies in a meaningful way. These trends are too powerful to slow, meaning the lasting challenges will only affect China's transition at the margins—creating an innovation-driven economy, with Chinese characteristics.

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Setting a New Standard: Implications of China's Emerging Standardization Strategy

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Introduction

On November 4, 2017, the Standing Committee of the 12th National People's Congress formally adopted the first major revision to China's Standardization Law, almost thirty years after China's original Standardization Law was adopted in 1989.[1] Standardization reform has been a major priority for the Chinese government since the 18th National Party Congress in 2012, and the 2017 revision to China's Standardization Law is the culmination of a five-year process that began when the State Council published the Deepening Standardization Reform Scheme in 2012. According to remarks made by Premier Li Keqiang, this campaign was a direct result of the Party recognizing that "standardization is a reflection of a country's core competitiveness and overall strength."[2]

Prior to the 2017 Standardization Law, the development of Chinese standards was largely centralized, with the majority of standards-setting power vested in the Standardization Administration of China (SAC). The Chinese government has recognized that its standardization regime had to change as China's economy became more globally integrated. The new law allows industries to band together and create voluntary enterprise standards which can then be transformed into national standards in cooperation with SAC, enhancing the role of the market in China's standardization process.[3] At the same time, leaders in the Chinese Communist Party (CCP) and Chinese industry groups see the opportunities inherent in China becoming a global standards leader and have an interest in controlling the broader direction of China's standards development.[4]

This paper seeks to evaluate China's recent efforts to promote Chinese standards globally and to assess the potential implications China's emerging standardization strategy may hold for the role of standards in international trade. Following a discussion of existing frameworks commonly applied to standards development in China, this paper builds a new framework designed to evaluate China's standards development strategy in the context of its broader economic objectives. This framework characterizes China's standards development strategy as a new type of comprehensive "standards push" involving three key elements: the integration of standards development and China's broader industrial policy goals, China's increased participation in the making of international standards, and China's efforts to link Chinese standards to the Belt and Road Initiative (BRI). This standards push framework is then used to assess the implications of China's standardization reform for standards enforcement in the

WTO and international standards development efforts in organizations such as the International Standards Organization (ISO).

Ultimately, this paper finds that framing China's standardization reform as part of a broader comprehensive standards push is a useful but limited approach for researching China's standardization reform and evaluating its potential implications for the role of standards in the global trading system. Using this framework, this paper assesses that as long as it remains an integral component of China's broader industrial policy, standardization reform in China is likely to pose a significant challenge to the norms governing the role of standards in international trade.

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Existing Frameworks for Explaining China's Standardization Strategy

Standardization is an often overlooked element of the global economic system that is nonetheless essential for its function. As countries make new breakthroughs in fields such as information and communications technology (ICT), pharmaceuticals, and manufacturing, widely adopted international standards can ensure that products and services resulting from these breakthroughs can be easily traded and used across borders. The most successful international standards are so widely adopted that they are taken as given by most consumers, such as the Universal Serial Bus (USB) in computing, or the YYYY–MM–DD standard for communicating dates and times.[5] The popular consensus in international economics literature is that companies able to set standards enjoy a first-mover advantage when developing any derivative technology that conforms to that standard. In addition to this first-mover advantage, standardization facilitates the production of new goods by more unskilled labor, granting yet another first-mover advantage to companies that develop technical standards.[6] Standards setters also typically receive rents (most commonly in the form of royalties) for the rights to adopt the standards they set. Even ISO, the leading international organization governing standards development, charges companies a nominal fee for the right to use standards developed by its technical committees, which are produced (at least nominally) "to be applied in the development of international regulation."[7]

This first-mover incentive to develop new standards is not just limited to companies operating in innovative industries; this framework applies at the country level as well. Earlier work by contemporary experts on China's standards development, such as that of Dieter Ernst or Scott Kennedy, focuses on how countries work to promote standards that are favorable to the major players in their domestic industries, a process that often favors more developed economies such as the United States and Germany.[8] Ernst in particular outlines the challenges faced by developing countries as they seek to catch up in the realm of standards development. Focusing primarily on Asian economies, Ernst argues that latecomers must deal with a series of trade-offs when deciding how to formulate future

industrial policy in the face of well-established technical standards.[9] Of particular significance to China's situation is the trade-off Ernst identifies between timely access to advanced technologies and the ability to develop those technologies indigenously—operating within the bounds of established foreign technical standards enables faster development at the expense of continued technological dependence and vulnerability to rents generated by de facto industry standards. China's approach to this dilemma has been to take what Ernst calls a "two-track approach"—incorporating Chinese technology into global standards in order to strengthen its bargaining power and reduce its payments of high royalty fees, while at the same time promoting its own new international standards in an effort to change the international standards system over time.[10] China's ultimate ambition is to transform its domestic industries into "standards makers" instead of "standards takers."

In China's case, the struggle for dominance in the realm of technical standards occurs among existing "standards coalitions" as Scott Kennedy calls them—various industry groups and government organizations that band together in order to promote the adoption of their own domestically conceived standards.[11] Writing in 2006, Kennedy argued that standards coalitions in China were too weak to compete with foreign companies in the ICT sector, and Chinese efforts to promote an alternative standard for wireless internet connections, known as WAPI, ultimately lost out to foreign coalitions advocating Chinese adoption of the more widely used Wi-Fi standard.[12] Kennedy's assessment of Chinese standards coalitions at the time was highly accurate: their slow and centralized nature combined with a lack of international "lobbying" experience left them at a disadvantage when facing the more experienced U.S. companies that constituted the opposing standards coalition. However, despite their relative inability to advance the WAPI standard, Chinese standards coalitions continued to pursue its adoption at the international level. Chinese representatives submitted WAPI to ISO for recognition as an international standard four years later in 2010, and while ISO ultimately rejected it, the case China made in 2010 was much more sophisticated and had broader international support than the case they made in 2006, indicating the progress Chinese standards coalitions were capable of making within four years.[13] Chinese standards coalitions have since become an even stronger force on the international stage as a result of two complementary strategies: increasing participation in international standards-setting bodies such as ISO and the International Electrotechnical Commission (IEC), and developing education initiatives and incentive programs designed to create a new generation of Chinese standardization experts.

At the international level, Chinese efforts to become more involved in standardization range from the mundane to the cutting edge. On one hand, it seems that Chinese experts are contributing to every international standardization technical committee in which they can be involved. Right after the new Standardization Law was passed, the China National Institute of Standardization (CNIS), one of several government bodies involved in standardization, ran a story on its web page featuring Chinese participation in an ISO meeting on safety signs. CNIS praised its experts who "submitted recommendations on safety signage including 'Caution: Falling into Water' and 'Beware: Jellyfish.'"[14] On the other hand, Chinese experts are also participating in standards development groups in highly technical industries at a much higher rate. In March 2018, Chinese lawmakers began a national standards-setting process for new energy vehicle charging apparatuses, and the Ministry of Industry and Information Technology (MIIT) published a white paper on the standardization of blockchain technology.[15] In 2013, CNIS began developing master's degree programs in technology standardization with the goal of increasing the ability of Chinese contributors to

promote China's interests in international standards-setting bodies like ISO.[16]

Both the China-as-latecomer framework and the standards coalition framework are useful for evaluating China's standards development today. When discussing China's standards development push, Chinese policymakers and academics frequently cite a desire to regain a measure of control over China's massive domestic technology market. In 2007, a leading official responsible for China's technology policy claimed that "China's market is one of the largest in the world, but the market is controlled by foreign companies, and the situation is extremely grave as we are further pressured by developed countries who use blockades and technology controls."[17] This sentiment is echoed across other national level economic planning documents, with a phrase translated as "first-mover advantage" (先发优势, *xianfa youshi*) appearing in several State Council directives dealing with standardization.[18] Regarding standards coalitions, the 2017 Standardization Law codifies a process of public-private cooperation that has long characterized the Chinese standards development process. The law calls upon the SAC to "encourage enterprises, social organizations, educational institutions, research institutes, and other organizations to participate in international standardization activities."[19] The law also focuses on developing an infrastructure to strengthen standards makers at every level of commerce and government, stating:

> *People's governments at or above the county level shall support pilot and demonstration projects and publicity work concerning standardization, disseminate standardization concepts, spread standardization experiences, promote the use of standardization methods throughout society for organizing production, business, management and services, and make the most of the supporting role of standards for encouraging industrial transformation and upgrading and driving innovation.*[20]

Taken together with programs like the CNIS master's program in technical standards, the law seems especially concerned with strengthening China's standards coalitions at every level by directing SAC to foster a culture of standards development within industry and enterprise associations. The push to strengthen standards coalitions in China is seeing strong results: In a 2013 research report for the U.S.-China Economic and Security Review Commission, Dan Breznitz and Michael Murphree claim that Chinese standards experts "now have a much better understanding of the specific wording of international agreements about standards, to include what practices are allowed, when, and how."[21] In their report, Breznitz and Murphree posit that China "may now have an advantage over the U.S. (and U.S. firms) in international and domestic standards bodies because of their understanding of the law and the system that governs it."[22] In most standardization disputes, the winning side is most often the one that understands the system in which they operate.[23]

Standards and Indigenous Innovation

Meanwhile, the domestic push for the development of new standards has been linked to China's push for indigenous innovation in advanced manufacturing and information technology, as exemplified by initiatives such as Made in China 2025. In concert with the 13th Five-Year Plan (2016–2020), Made in China 2025 seeks to transform China's economy into a "quality driven economy" that is less reliant on foreign technology imports and is able to export its own technically advanced products by 2025.[24] In order to achieve this goal, the State Council has begun providing financial support to priority industries, funding foreign technology acquisitions, and positioning state-owned enterprises (SOEs) to become "global champions" in each named industry sector.[25] Standards are an essential component of China's push

to create global champions; a saying that has become popular recently among Chinese scholars of innovation is "third-tier companies make products, second-tier companies make technology, and first-tier companies make standards (三流企业做产品, *sanliu qiye zuochanpin*; 二流企业做技术, *erliu qiye zuo jishu*; 一流企业做标准, *yiliu qiye zuo bioazhun*)."[26]

The standardization reform proposed so far in conjunction with the Made in China 2025 initiative has provoked concern in China's major Western trading partners. In its 2017 report to Congress on China's WTO compliance, the Office of the United States Trade Representative (USTR) says that China's "ongoing effort to develop unique national standards aims eventually to serve the interests of Chinese companies while simultaneously seeking to impede and disadvantage their foreign counterparts."[27] The American National Standards Institute (ANSI) and the United States Information Technology Office (USITO) submitted comments on China's 2017 Standardization Law during its drafting process, pointing out that the law emphasized the "development and promotion of Chinese standards with no indication of intent to give preference to international standards."[28] Concern about the potential market impacts of Chinese standardization reform has not been limited to the United States—the Deutsches Institut für Normung (DIN), which cooperated with SAC in 2011 to form the German-Chinese Standardization Cooperation Commission, raised similar concerns, particularly about China's perceived lack of deference to already established international standards during the drafting process of its 2017 Standardization Law.[29] In contrast to the adversarial approach that U.S. standards makers and the U.S. government have taken to China's push for standards development, DIN has a longstanding cooperative relationship with Chinese standards organizations; this lends significance to the similarity between their comments about China's Standardization Law and the comments made by ANSI, USITO, and the U.S. government.

Standards Push: Industrial Policy, ISO Participation, and the Belt and Road Initiative

An increased ability to compete in international standards bodies does not necessarily mean Chinese standards makers are going to promote unique Chinese standards solely for the sake of competing with U.S. and European standards makers. Kennedy, Suttmeier, and Su in 2008 made a convincing case for the majority of new Chinese standards being non-controversial. Kennedy et. al found that the only controversial standards initiatives undertaken by China at that time were all in the ICT sector, with other standards being seen largely as China's efforts to "catch up to the developed world."[30] However, much has changed in the ten years since this research was published. China has drastically increased its representation in international standards-setting bodies that lead in developing technical standards for developed countries. For example, in 2008, fewer than 100 Chinese experts

Indigenous innovation as outlined in the 15-Year Plan involves a dual-track strategy of encouraging Chinese firms to file more patents and propose more domestic and international standards.

participated in the standards-setting meetings of the International Electrotechnical Commission (IEC), the leading international standards-setting organization for all major ICT and electronics sectors.[31]

In order to determine how China's standardization strategy might evolve in the wake of these changes, this paper analyzes three elements of China's standardization strategy and discusses their implications: the role of standards development in China's industrial policy, the nature of China's increased participation in ISO standards-setting, and China's plans to integrate its standardization processes with the Belt and Road Initiative.

Industrial Policy

To clarify the role of standards development in China's broader industrial policy, this paper focuses on analyzing specific State Council directives and planning documents connected to the 13th Five-Year Plan, which outlines the party's economic priorities from 2016 to 2020. This approach was chosen due to the lack of case studies available about China's post-reform standardization processes, and because of the unique function of Five-Year Plans in China's economy. China's national standardization strategy is still emerging, and there are few viable ways of determining its role in specific sectors through case studies or other post facto methods of analysis. The 13th Five-Year Plan outlines incentives, funding schemes, and central government expectations of firms operating in priority sectors such as ICT, the automobile industry, and biopharmaceuticals. Furthermore, China's Five-Year Plans influence economic behavior by directing funding to certain firms, provinces, and cities that contribute to meeting goals outlined in the national Five-Year Plan. The dual pressures of meeting the State Council's expectations and acquiring access to central funding before their competitors drives most firms and local governments to adopt the State Council's priorities as their own, which results in most Five-Year Plans broadly meeting their stated objectives.[32]

The 13th Five-Year Plan was first announced in 2016, but the policy ideas that constitute its foundation can be traced back to a State Council document published in 2006, The National Medium- and Long-Term Science and Technology Development Plan, which was styled as a 15-Year Plan outlining priorities for national technological development from 2006 to 2020. This 15-Year Plan established a new principle, "indigenous innovation" (自主创新, *zizhu chuangxin*), which would become the guiding principle of standards development in the 13th Five-Year Plan, published ten years later.[33] Indigenous innovation as outlined in the 15-Year Plan involves a dual-track strategy of encouraging Chinese firms to file more patents and propose more domestic and international standards. On both counts, the push for indigenous innovation appears to have been wildly successful; China's State Intellectual Property Office (SIPO) is now the busiest in the world, with 928,177 applications received in 2014, 86.3 percent of which came from domestic applicants. In the U.S. Patent and Trademark Office, Chinese patent applications in ICT alone increased over 1,000 percent from 2008–2018.[34]

Priority sectors outlined in Made in China 2025 are at the forefront of this push to indigenize, and several planning documents at the national, provincial, and local levels provide insight into how Chinese policymakers see indigenous innovation and standardization as complementary. In May 2015, the State Council published Several Opinions on Accelerating the Cultivation of New Competitive Edges in Foreign Trade.[35] Not only does the term "indigenous innovation" appear alongside "standards" nine times in the document, but it also outlines plans to "encourage the propagation of Chinese standards."[36] Given the document's explicitly stated purpose of "cultivating a competitive edge in foreign trade," the motivation behind the proposed

propagation of Chinese standards appears to be somewhat competitively driven.

This competitive drive is even more pronounced in the ICT sector. The National Informationization Development Strategy, published by the CPC Central Committee and the State Council in July 2016, not only contains several paired references of "indigenous innovation" and "standardization," but these passages have also been flagged as "explicitly problematic" by several foreign companies.[37] One passage calls for standardization to be part of a "comprehensive multilevel protection scheme" for China's ICT industry. While the plan is largely hortatory and aspirational in nature, with very few specific policy prescriptions, a recent report by the European Commission of the Directorate-General for Trade indicated that standards-setting is also appearing alongside calls for protecting new industries at the provincial level.[38] For example, in Guangdong Province's Action Plan for the Year 2014-2015 on Building a Powerful Province With Quality, a section titled "Strengthen Standardization Work" begins with, "we shall focus on areas of strategic emerging industries such as areas of high-end new electronic information ... and promote the establishment of advanced standards with indigenous intellectual property rights."[39] Apart from Guangdong's provincial level plans, similar language can be found in ICT sector development plans in Zhejiang and Fujian, with the phrase "advanced standards with indigenous intellectual property rights" appearing even at the municipal level in plans specific to Shanghai, Ningbo, and Xiamen.[40]

Outside the ICT sector, standardization is connected to localization most often in plans related to the automobile industry. The Energy-Saving and New-Energy Automotive Industry Development Plan (2012-2020), published by the State Council, identifies "expediting the formation of technology, standards, and brands using indigenous intellectual property" as a "basic principle."[41] Overall, the presence of this language across a broad spectrum of plans points heavily to a broader move towards localization, in which standards play a significant role.

ISO Participation

In conjunction with its efforts to use standards as a mechanism for reforming its domestic industrial policy, China is also pursuing an international leadership role in standards development through increased participation in ISO's standards development process. ISO centers its standards development process on technical committees composed of industry experts from various countries. ISO publishes standards, but it does not autonomously create them; rather, ISO serves as a kind of arena in which different countries and standards coalitions lobby for their own domestically conceived standards.[42] Getting a standard ratified and promulgated by ISO is beneficial for countries and standards coalitions in two ways. First, it bestows the standards maker with the previously discussed first-mover advantage, as global producers overwhelmingly subscribe to ISO standards, particularly in high-tech industries like ICT. Second, ISO ratification carries an implicit recognition of

China's decision to sign a group of bilateral standards agreements at the ISO meeting ... indicates that China is pursuing a parallel strategy of promoting its standards alongside increased participation in ISO.

the standards maker's technical expertise, and signals that they have an influence on the market that operates on a level above that of pure market share. In China's case, ISO standardization also signals to domestic Chinese consumers that the overall quality of Chinese goods is increasing, to the point that Chinese goods can be used as an international benchmark.[43]

China was a participating member in 706 ISO technical committees in 2012. ISO's most recent membership information lists China as a participating member in 730 technical committees, which is a significant increase. For reference, Germany, widely considered to be ISO's most active Western member country, went from participating in 715 technical committees to 724 in the same time period.[44] China's increased representation in technical committees indicates that Chinese policymakers and industries see value in ISO participation. Chinese policymakers have not only increased their representation in ISO technical committees but now also have companies and experts chairing them. Huawei currently chairs an ISO Joint Technical Committee on AI Standardization (ISO/IEC JTC 1/SC 42).[45] This particular committee includes premier U.S. ICT standardization organizations, including USITO and the National Institute of Standards and Technology (NIST). Buy-in from these organizations into Huwaei's ISO committee is a significant indicator of China's progress towards its goal of becoming a standards maker.

Apart from its participation in ISO standardization processes, China is also pursuing a broader leadership role in the organization. In September 2016, Beijing hosted the 39th ISO General Assembly, and the Chinese government was determined to display enthusiasm for international standardization during the meeting while also outlining its vision for China's future role in standards development. Zhang Xiaogang, a Chinese steel magnate, serving as ISO's president during the Beijing General Assembly, used his remarks to point out that, despite its push to lead in international standardization, China "only led in 0.7 percent of international standards, and needs intensified participation in the formulation of international standards."[46]

During the meeting, China signed several agreements with the European Committee for Standardization, outlining a framework for mutual recognition of standards and "exchanges of personnel and information."[47] Studies have shown China has a history of using multilateral organization meetings as a forum for signing separate bilateral agreements with other participants, often to support its own international objectives that are outside the parameters of, but broadly in line with, the spirit of the international organization convening the meeting.[48] China's decision to sign a group of bilateral standards agreements at the ISO meeting, discussed below, indicates that China is pursuing a parallel strategy of promoting its standards alongside increased participation in ISO.

Standards and the Belt and Road Initiative

During the 2016 ISO General Assembly in Beijing, China also signed bilateral standards agreements with nine other countries, including Albania, Russia, and Turkey. Chinese press reports regarding these bilateral standards agreements all emphasized their role in BRI.[49] Apart from its various other roles in China's international economic engagement strategy, BRI is seen by Chinese policymakers as a premier opportunity to "export Chinese standards while upgrading Chinese industry"—language that echoes its domestic industrial policies.[50] Alongside its publication of guidelines governing standardization, the State Council has also produced two standards development plans specifically related to BRI, the Action Plan to Connect "One Belt, One Road" Through Standardization (2015–2017), and the Action Plan on Belt and Road Standard Connectivity (2018–2020).

While the 2018–2020 plan is more up to date on current events and accounts for political changes that have occurred in focus countries, the two plans are similar and provide insight into the parallel international standardization framework China is pursuing, apart from its involvement in ISO. Both plans exhort Chinese standards makers to facilitate the "going out" of Chinese standards and outline several strategies for accomplishing this goal. For example, the 2015–2017 plan calls for "conducting comparative analysis of standards in bulk import/export sectors across One Belt One Road countries," and the subsequent promotion of Chinese standards if the countries in question have not already adopted ISO standards.[51] The 2015–2017 plan also proposes tying BRI funding to the broader adoption of Chinese standards in countries hosting BRI projects, which may serve as a mechanism to entice these countries to adopt Chinese standards.[52] The 2018–2020 plan goes even further, calling on Chinese standards experts to "establish a preliminary 'standardization think tank' to conduct research on the standardization laws, regulations, systems, and development strategies of BRI countries in order to push for early outcomes."[53]

Furthermore, the 2018–2020 plan offers some insight into how China plans to use BRI as a means to increase its influence in ISO. The plan proposes allocating funding for the establishment of "standardization centers" in BRI countries to "train local standards experts and support standardization capacity-building in BRI countries, so as to enhance Chinese standards' influence overseas."[54] In coordination with building the standardization capacity of BRI countries, a separate subsection of the plan proposes working with these countries to "push the ISO to establish new technical institutions in the fields which have significant impacts on the industries of the BRI."[55] This seems to indicate that if the Belt and Road initiative moves forward according to plan, Chinese-led standardization efforts in ISO will receive the support of standards experts from other countries involved in BRI. Chinese standards will also likely become more prevalent as countries in Africa, Europe, and the Middle East are incentivized to adopt them if they choose to become more involved in BRI projects in the future.

Implications of China's Standards Push for the International Trading System

The foundations of China's emerging comprehensive standardization strategy have the potential to significantly affect the rules and norms governing the role of standards in international trade. It is outside the scope of this paper to predict the concrete effects that China's standards push will have on international trade using trade data. Changes in imports and exports are notoriously difficult to attribute to standards empirically; the few studies that have managed to do so focus on the diffusion of a single standard across multiple countries and rely on relatively advanced econometrics techniques.[56] There is currently little data available that would support an attempt to model the effect of standardization on China's economic behavior, as China's standards strategy is still emerging. However, there are still methods to qualitatively assess the potential implications of China's standards push on the norms governing standards and international trade.

One method of evaluating these implications involves examining the drafting process of the 2017 Standardization Law and its reactivity to input from international standards makers. While international institutions such as ISO and IEC publish standards, they do not impose any legal obligations on their member countries that dictate how standards are used. Powerful international standards leaders including ANSI, the European Committee for Standardization (ECS), and DIN set de facto standards of best practice that most other standardization organizations generally

follow, but they have no enforcement power that can compel countries to adopt internationally accepted standards.[57] That power effectively rests with the WTO. When SAC and the National People's Congress began drafting the new Standardization Law, they solicited public comments from international standards makers and industry associations. ANSI, ECS, and DIN all submitted comments that shared one common point of concern—China's draft Standardization Law contained no clause signifying intent to adhere to the WTO's 1997 agreement on Technical Barriers to Trade (TBT), which is the closest approximation the world has to an enforceable global normative framework governing standardization.[58]

The WTO TBT agreement stipulates that "where technical regulations are required and relevant international standards exist or their completion is imminent, members shall use them, or the relevant parts of them, as a basis for their technical regulations."[59] Effectively, the TBT agreement requires WTO member countries to use internationally accepted standards or risk retaliatory action through the WTO's arbitration apparatus. ISO, ANSI, and ECS all use the WTO TBT Agreement as a reference for how their standards are internationally applicable.[60]

During the drafting process, comments submitted by the US-China Business Council (USCBC) reveal that SAC scaled back the role of international standards while drafting the Standardization Law. According to USCBC, "the draft law deleted language promoting the adoption of international standards; the draft law also adds language placing conditions on the adoption of international standards."[61] Despite input from these influential standards and trade organizations calling on SAC to include language that supports the existing standards and trade governance, the final version of the Standardization Law only includes a single clause obligating standards makers in China to support "the adoption of international standards in the Chinese context."[62] The only other related language in the Standardization Law calls for increased participation in international standardization activities, a priority that is reflected in China's increased participation in ISO meetings and committees.[63]

Using the standards push framework proposed by this paper to evaluate SAC's failure to integrate language supporting international standards (outside of a Chinese context) into the new Standardization Law has potential implications for international standardization and trade. The first potential implication is that China could indeed be preparing to use its growing list of unique national standards as technical barriers to trade to protect industries essential to its industrial policy. As foreign companies seek to enter China's market, they may begin to face standardization measures that limit their ability to compete with domestic manufacturers. One area where this may already be occurring is the automobile industry. The recent Section 301 investigation conducted by USTR identifies several standardization measures in the automobile industry that increase local content requirements, require increased compliance testing for foreign cars entering the market, and push foreign auto manufacturers to turn over certain elements of their intellectual property during certification processes.[64] The report also notes standards in cybersecurity and biopharmaceuticals that "drastically exceed the burden and scope of international standards."[65]

USTR's finding that these standards are designed to advance China's industrial policy goals are supported by the framework developed by this paper. Each of these areas is a priority sector linked to Made in China 2025, and as the documents analyzed in this paper establish, standardization is an essential part of advancing China's overall industrial policy goals. As China continues to push for the adoption of its own unique standards, both domestically

and internationally, particularly along BRI, foreign companies looking to access China's market or become involved in BRI projects are likely to face conformity with evolving Chinese standards as a barrier to entry.

The second and more far-reaching implication is that China is developing a network of standards designed to eventually supplant widely used international standards. Despite the Standardization Law's encouragement of stakeholder participation in standardization activities, Western standards experts and industry associations appear to be increasingly shut out of technical committees (TCs) that make standards in China. The European Chamber of Commerce in China has noted that European and U.S. businesses are afforded little to no opportunity to participate in Chinese standards-setting. The report notes that "foreign-invested enterprises are sometimes only granted observer status in TCs, or even excluded from membership altogether."[66] The report also points out that Chinese standards relating to data security and cloud computing do not align at all with international standards such as the EU's proposed General Data Protection Regulation (GDPR).[67] If Chinese data protection standards and the GDPR end up competing, China's growing standards expertise and support for Chinese standards in international projects like those involved in BRI could provide Chinese data protection standards with an advantage.

As China continues to prioritize participation in ISO, its efforts to minimize foreign stakeholder input in its own standardization processes, combined with its use of ISO meetings to sign separate bilateral standards agreements, could also be seen as an effort to increase its role in ISO at the expense of Western standards makers. This possibility is supported by China's plans to invest in "standardization capacity building"[68] in countries involved in BRI, many of whom are also members of ISO. Increasing the number of Chinese-trained standards makers in ISO, including those coming from BRI countries trained by Chinese standards experts, will also likely increase the influence of Chinese standards in international trade.

Foreign companies looking to access China's market or become involved in BRI projects are likely to face conformity with evolving Chinese standards as a barrier to entry.

Suggestions for Future Research and Conclusion

China is likely to continue to increase its involvement in international standardization and propose its own unique standards in new areas and in areas where international standards are already widely adopted. Framing this behavior in the context of a broader standards push linked to Chinese industrial policy could help guide future research on China's standards development. Currently, the utility of the standards push framework for evaluating China's standardization strategy in detail is relatively limited. However, it provides a useful starting point for evaluating future actions by China in the international standards-setting community. For example, if China continues to sign more bilateral standards cooperation agreements, this framework could prove useful for placing each bilateral agreement in the context of China's broader standardization

strategy. The standards push framework proposed by this paper will also be useful in measuring the progress China makes towards its standardization goals in the time between the current 13th Five-Year Plan and its future iterations.

Additionally, each of the three elements of the standards push framework proposed by this paper could be further explored. The tranche of Five-Year Plans, State Council directives, and guiding opinions analyzed in this paper are a small sample of hundreds of industrial policy documents. If other documents connected to China's industrial policy and the 13th Five-Year Plan are analyzed for similar language, a data set could be built that allows for the identification of broader trends in China's domestic standardization processes. Using this data set to track which provinces, municipalities, and industry sectors implement the largest number of new standardization measures could be useful for investigating the role of standards in China's political economy. Finally, as China invests in improving its own standardization expertise and the standardization expertise in countries involved in BRI, tracking the participation of standards experts from these countries in ISO technical committees over time could help determine the efficacy of those investments.

As new frontiers for technical standards such as 5G telecommunications, AI, and cloud computing continue to open up in the future, we will likely see China push for an even greater leadership role for itself and its standards in the global economy. Unfortunately, the new Standardization Law is unlikely to contribute to the alignment of international standards and Chinese standards as much as other standards-setting organizations hoped it would. In fact, the new law's emphasis on increased Chinese participation in the setting and adoption of international standards in the Chinese context imply an intent to keep Chinese standards and international standards at least partially at odds. As long as standardization remains an integral component of China's broader industrial policy, standardization reform in China is unlikely to bring Chinese and international standards into further alignment in the foreseeable future.

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