



Radarlock

CRRC AND BEIJING'S
DASH FOR
GLOBAL ROLLING
STOCK DOMINANCE

October 2019

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Data-driven insight into techno-economic competition

Table of Contents

• About Us	04
• Summary	05
• Introduction	06
• Background	08
» State Support and Subsidies	10
» Siphoning Strategic Resources	13
» A Pillar of the Military-Civil Fusion Enterprise	15
» Links with Huawei	17
» Party Connections	19
• Conclusion	20

ABOUT US

Radarlock is a research organization that uses data-driven analysis to understand techno-economic dynamics in world affairs. Radarlock supports a range of private and public sector actors in diagnosing competitive environments and crafting responsive strategies. Recent research has explored transformations in international competition, China's military-civil fusion strategy, and the weaponization of cooperation in a globalized era. These analyses leverage novel data collection and analysis techniques developed by the Radarlock team. Please visit www.rlock.org for more information.

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SUMMARY

In the late 1980s, Beijing launched its “Go Out Policy,” (走出去战略) a national-level strategy to promote Chinese investments and business activity abroad.¹ Bolstered by Chinese Communist Party (CCP) backing and guidance, Beijing’s State champions would deploy globally to “obtain domestically scarce resources in the international market and to foster comparative advantage.”²

CRRC’s expanding global presence plays a prominent role in this ambition. Since 2009, Beijing has promulgated a Go Out strategy for high-speed rail at the national level.³ In 2010, the Ministry of Railways “established the layout of this strategy in different countries in the world.”⁴ Xi Jinping’s Silk Road Economic Belt and OBOR focus on proliferating Chinese rail and transport systems globally. Made in China 2025 labels rail a “key industry” and proposes ambitions for a “world-leading Chinese rail transit equipment system.”⁵ With such capabilities, Beijing seeks to control resources as they move over land; the infrastructure for the future, “smart,” transportation system of the Internet of Things era; and corresponding information dominance. The CCP wields CRRC as a national, strategic tool with which to claim as much.

CRRC was formed in 2015 out of the SASAC-governed merger between and China North Locomotive and Rolling Stock (CNR) Corporation and China South Locomotive and Rolling Stock (CSR) Corporation – two State-owned companies that had themselves emerged out of the China National Railway Locomotive and Rolling Stock Industry Corporation (LORINC) in 2008 and 2007, respectively. The merger sought to create the scale and coordination within China’s rail industry necessary to “increase international competitiveness”⁶ and “realize the Go Out strategy.”⁷ As intended, the post-merger years have seen CRRC establish a global footprint, exporting to “more than 105 countries,”⁸ building research and development (R&D) centers across the world, and forming a growing web of international standards.

In terms of direct financial support, CRRC is one of the most heavily subsidized companies in China. Since 2015, CRRC has reported a total of 5.4 billion RMB (almost 800 million USD) in direct subsidies, with 1.37 billion RMB (approximately 191 million USD) in 2018.⁹

CRRC is expanding its global presence – is internationalizing, acquiring foreign technologies, and collecting global data – in concert with not just CCP, but also military actors. CRRC’s annual report explicitly declares its dedication to Beijing’s military-civil fusion (军民融合) (MCF) strategy: “We will implement the military-civil fusion development strategy and expand the application of technology and products,”¹⁰ writes the company, alongside commitments to One Belt One Road (OBOR), Made in China 2025, Beijing’s ambitions to become a “Manufacturing Great Power,” the Internet+ program that underlies the social credit system, and “Go Out.”¹¹

CRRC also works with other, less explicitly military players that the United States has already labeled as predatory actors or national security threats. For example, CRRC actively cooperates with Huawei, connecting the physical infrastructure of rail to Huawei’s information technology networks in pursuit of a government-linked “Internet of Things with Chinese characteristics.”¹²

These connections are not accidental. CRRC is clear in its mandate that its chief obligation is to the Chinese State. The nature and status of company personnel reveal indelible ties to the CCP. “Most of the managers are directly appointed for political purposes.”¹³ Executives at CRRC wear dual hats as corporate and as Party leaders.

INTRODUCTION

In the late 1980s, Beijing launched its “Go Out Policy” (走出去战略), a national-level strategy to promote Chinese investments and business activity abroad.¹⁴ Bolstered by Chinese Communist Party (CCP) backing and guidance, Beijing’s state champions would deploy globally to “obtain domestically scarce resources in the international market and to foster comparative advantage.”¹⁵ Those “scarce resources” are chiefly technology – intellectual property (IP), for example – and data; “comparative advantage” largely secure positioning, information-gathering, and influence for market leverage. The 2006 State Council National Medium-and Long-Term Program for Science and Technology Development (2006-2020) (MLDP) and 2010 Strategic Emerging Industry (SEI) Initiative honed Go Out’s focus areas: The “commanding heights” in new energy, new energy vehicles, new materials, high-end manufacturing, next-generation information technology, biotechnology, and energy efficiency. Subsequent Five Year Plans, Made in China 2025, and new iterations of the SEI initiative underline as much.

These plans also acknowledge Beijing’s overarching strategic goal: To build the emerging networks among and within its focus areas. China would establish a “global transportation system” composed of new energy and smart vehicles. It would form a “global smart grid” system connecting new energy sources. It would proliferate “sensor networks” based on advances in microelectronics, optoelectronics, new materials.¹⁶ Beijing would link all of those on a “ubiquitous,” “backbone” “Internet of Things (IoT)”¹⁷ – extending internationally, but also across the “space, ocean, and deep sea” fields that high-end manufacturing would make tractable.¹⁸ Those would grant locked-in control over the systems along which the future world’s resources will flow, also the information on corresponding movement.

Xi Jinping frames the ambition as the “Network Great Power Strategy.”¹⁹ It is a bid for global control through network – and information – control. Made in China 2025 outlines a preliminary phase; Beijing’s plan for a global upper hand in manufacturing the physical components of its techno-economic offensive. The emerging China Standards 2035 defines the next step; Beijing’s plan to set the intangible standards, or rules, according to which global networks will operate.

Beijing pursues its strategy through a range of actors and mechanisms – leveraging scale and centralization in an otherwise open, fragmented ecosystem. It deploys everything from outright espionage to academic exchange to intentional maneuvering of ostensibly independent companies. Those companies include private but State-responsive ones like BYD²⁰ as well as State-owned enterprises (SOEs). They present on the international stage like any other, competing for contracts in transportation or energy grids or telecommunications, releasing annual statements, welcoming investments, engaging in joint ventures, and building research and development (R&D) hubs. But they do so supported by the Chinese government, by extension the Chinese Communist Party (CCP), directed by its interests first and market forces second – if at all.

Rail industry – and China Railway and Rolling Stock Corporation (CRRC) within it – offer a prime example. In 2009, Beijing promulgated a national-level Go Out strategy for high-speed rail.²¹ In 2010, the Ministry of Railways “established the layout of this strategy in different countries in the world.”²² The MLDP calls for intensive development of high-speed rail technologies. Xi Jinping’s Silk Road Economic Belt and One Belt One Road (OBOR) focus on proliferating Chinese rail and transport systems globally. Made in China 2025 labels rail a “key industry,” outlining ambitions for a “world-leading Chinese rail transit equipment system.”²³ Through transportation networks, Beijing seeks to control resources as they move over land; to claim the infrastructure for the future, “smart,”

Introduction (continued)

transportation system of the Internet of Things era; and to establish corresponding information dominance.

The CCP wields CRRC as a national, strategic tool in that effort. Controlled by the State Council's State-Owned Assets Supervision and Administration Commission (SASAC),²⁴ CRRC is the largest rolling stock manufacturer in the world. Through subsidiaries, investments, and partnerships, its business extends across the entire the rail and land transit ecosystem – new materials, alternative energy sources, electric motors and transmissions, sensor networks, autonomous driving, semiconductors, energy storage – with a recent focus on “smart transportation” and data systems. As an SOE, it responds to the CCP rather than market forces. It derives its resources from the Chinese government rather than free economic exchange. Tsinghua University's Chen Jin wrote in 2018: “Under the guidance of the high-speed railway development strategy...CRRC adheres to the principle of ‘national needs first.’”²⁵

In summary:

- CRRC is Beijing's national champion in rail transit and emerging transportation systems broadly. Those fields play a key role in China's techno-economic offensive – as manifest in the military-civil fusion strategy (军民融合), Made in China 2025 (中国制造2025), One Belt One Road, “Go Out,” Internet +, and the Strategic Emerging Industry (SEI) Initiative. CRRC officials and documents publicly cite those plans as their chief mandate.
- CRRC receives direct financial backing from Beijing, backing worth orders of magnitude more than the “government grants” listed in CRRC's English language annual reports. CRRC's Chinese financial documents report subsidies totaling more than 5.4 billion RMB (al-
- most 800 million USD) since 2015.
- CRRC receives indirect government support as well. Government leaders both protect the domestic market for the national champion and set up its international deals, acting as “unpaid salesmen.” The State also intentionally crafts a positive narrative around CRRC to improve the firm's investment prospects, grants it beneficial tax treatment, and helps optimize its structure for international competition.
- Through both data collection and technology, CRRC contributes to Beijing's military and military-civil fusion projects: Explicitly declaring, in its company documents, a role in the military-civil fusion strategy, CRRC has set up an investment fund dedicated to MCF; operates in MCF industry zones; shares technology, resources, and data with military- and MCF-affiliates; and assigns the MCF label to high-profile projects and centers.
- CRRC also partners with other, MCF-connected entities whom the United States has already identified as national security threats (e.g., Huawei) in building and exporting technologies that threaten individual and data security.

Background

The Chinese system classifies CRRC as a “central enterprise under the Ministry of Railways.” Fifty-three percent of the company’s shares are held by the China Railway and Rolling Stock Group Corporation – a holding company entirely owned by China State-Owned Assets Supervision and Administration Commission (SASAC), a State Council commission. As is true of many Chinese SOEs, the remaining 47 percent of CRRC is held by a range of shareholders with various connections among themselves. At least fourteen of those, holding an additional fifteen percent of the company, are State-owned: China Security Finance Corporation Limited (中国证券金融股份有限公司), CNIC Corporation Limited (国新投资有限公司), CRRC Financial and Securities Investment Co., Ltd. (中车金证投资有限公司), Central Huijin Asset Management Ltd. (中央汇金资产管理有限责任公司), Industrial Bank Co., Ltd. (兴业银行), and several funds within the Agricultural Bank of China (农业银行).²⁷

CRRC’s core and original business is the manufacture of rolling stock. But through subsidiaries, investments, and partnerships, its footprint extends across the entire rail and land transit ecosystem. CRRC boasts 46 wholly-owned and majority-owned subsidiaries (see the Appendix of this report).²⁸ They reflect a presence at every point of the rail industry’s value chain, as well as emerging, adjacent domains (e.g., autonomous systems, sensor networks).

CRRC was formed in 2015 out of the SASAC-governed merger between and China North Locomotive and Rolling Stock (CNR) Corporation and China South Locomotive and Rolling Stock (CSR) Corporation – two State-owned companies that had themselves emerged out of the China National Railway Locomotive and Rolling Stock Industry Corporation (LORINC) in 2008 and 2007, respectively. The merger was designed to create the scale and coordination within China’s rail industry necessary to “increase international competitiveness”²⁹ and “realize the Go Out strategy.”³⁰ Technically speaking, the merger underwent a monopoly screening process. That process was run by the State Council, the very body orchestrating the merger. Chinese commentary emphasizes that, from a strategic perspective, the merger succeeded because it cut out domestic competition and guaranteed a global scale advantage:

Before the merger, CSR and CNR were the first and second rail vehicle manufacturers in China. After the merger, there is no relevant company in the country to compete... Before the merger, CSR and CNR accounted for 29 and 24 percent of the global rail transit equipment manufacturing respectively. As of August 8, 2016, China CRRC’s share of the global rail transit market has reached 69 percent, making it the largest rail transit manufacturer in the world...³¹

Or, per another analysis:

After CNR and CSR merged into CRRC, it claimed an exclusive monopoly on domestic locomotives, buses, trucks, EMUs, and urban rail, thereby significantly improving the company’s overall purchasing bargaining power and market ability.³²

As intended, CRRC has established a global footprint in its post-merger years. It exports to “more than 105 countries.”³³ CRRC has signed deals to sell electric trains and EMUs to Malaysia, Argentina, Belarus, Brazil, and Macedonia; trams to Turkey; tank cars to France; diesel trains to South Africa, Argentina, and New Zealand; freight cars to Australia; subway and commuter systems, unmanned and traditional, to Singapore, Mumbai, Argentina, Hong Kong, Brazil, Boston, Philadelphia, Los Angeles, and Chicago.³⁵

Background (continued)

Of that last contract, the Deputy Director of the Party Committee of the National Development and Reform Commission (NDRC) wrote: “This is the largest rail vehicle purchase in Chicago’s history, and the largest metro vehicle project that Chinese rail transit equipment companies have exported to developed countries. The ‘Made in China’ subway will land in Chicago.”³⁵ CRRC intends to bid on the Washington, DC metro.³⁶

CRRC boasts research and development (R&D) centers in Austria, South Africa, Turkey, the Czech Republic, Israel, Germany, the United Kingdom, Russia, Australia, Switzerland, Italy, and the United States. Those in the US focus on rail technology, 3D printing, new energy, data processing, sensor networks, and in-vehicle wireless network equipment.³⁷

Company documents state that “in line with Go Out” and OBOR, CRRC’s “overseas target market has expanded from developing countries to developed ones.”³⁸ Zhang Hongmei of Zhejiang Gongshang University wrote in 2018 that “in order to implement the national Go Out Policy...CRRC will expand to developed markets in Europe and America while consolidating Asian, African, and Latin American developing ones.”³⁹

CRRC carefully maneuvers around policy barriers – namely legislation in various countries, including the United States, designed to keep the transit industry local – to build that presence. Acknowledging European legislation intended to protect domestic entities, Zhang wrote in 2016 that CRRC “seeks the right partners to jointly produce or build factories in the European Union (EU) to create conditions that permit entering the EU market.”⁴⁰ In 2018, CRRC’s Chairman Liu Hualong put that in terms of the US market: “CRRC needs to adapt to a series of ‘local’ policies...For example, in the United States we have two bases, in April 2018 we put one into operation, Chicago is investing in another one, it requires a localization rate of 60 percent.”⁴¹

Under the auspices of China’s standard strategy, CRRC also positions itself to compete for and influence international rail, information, and manufacturing standards⁴² – at a first level so that it can transcend “policy barriers” that might impede its global expansion;⁴³ at a second level so that it can shape the global market to its interests.⁴⁴ “In the past three years, CRRC has hosted or participated in the drafting or revision of more than 70 international standards.”⁴⁵

State Support and Subsidies

CRRC is able to build its global footprint thanks to active, wide-ranging government support. Direct and indirect subsidies let CRRC undercut foreign competitors on price: It won a contract to produce subway cars for Boston by “underbidding the next-lowest bidder by 22 percent.”⁴⁶ PRC sources make no secret of this: “CRRC has become a famous firm in China. It not only carries Chinese manufacturing to the international community, but it is also an indispensable strategic piece of the country’s One Belt One Road...From the valuation of pricing to the financing of capital to the choice of payment methods, the hands of government support are everywhere.”⁴⁷

In terms of direct financial support, CRRC is one of the most heavily subsidized companies in China. CRRC’s English language annual reports suggest that it received approximately 243 million RMB (about 34 million USD) in “government grants” in 2018 and 994 RMB (about 140 million USD) in 2017. Chinese financial statements list far more.⁴⁸ Since 2015, CRRC has reported in its Net Profit Loss (NPL) a total of 5.4 billion RMB (almost 800 million USD) in government subsidies “excluding those that are continuously enjoyed or align with certain government standards.” In 2018 alone, that figure was 1.37 billion RMB (approximately 191 million).⁴⁹

That line item likely represents a lower bound on the full value of State funding going to CRRC. Company financial documents also acknowledge government subsidy contributions to “non-operating income,” “other receivables,”⁵⁰ and “other cash received relevant to business activities,” categories that appear to be distinct from, and additive to, the figure included in the NPL. The government subsidies from those three categories since 2015 total to 11.78 billion RMB (or 1.66 billion USD), with 1.8 billion RMB (254 million USD) of that in 2018.

The most significant contribution to government grants classified as “other receivables” stems from government support for electric vehicle production. According to CRRC’s reporting, those subsidies provided the company with 499 million RMB in 2015, 1.77 billion RMB in 2016, and 159.69 million RMB in 2017 for a total of 2.45 billion RMB (or about 345 million USD) in those three years. The Chinese edition of CRRC’s 2016 annual report notes: “Other receivables increased by 53.98 percent mainly due to an increase in government subsidies for new energy vehicles at the end of the period.”

Still, those figures may understate the degree of government financial support for CRRC, considering:

- Indirect PRC subsidies in the form of tax cuts for R&D in strategically relevant industries, including manufacturing. In 2018, the State Administration of Taxation increased the tax deduction for R&D expenses from 50 percent to 75 percent. “That basically subsidizes 11 to 18 percent of actual R&D.” Vice President of CRRC Zhan Jingyan explained in March that, for CRRC, which invests about 10 billion (about 1.4 billion USD) annually into R&D, that amounts to “at least 1 billion RMB [about 140 million USD] of subsidies a year.”⁵¹
- The limited incentive to publicly report government financial support that is unlikely to come to light publicly;
- The ease with which the State can direct unreported funds to entities it controls.

Yet even just examining self-reported government subsidies, it is clear that CRRC is a top CCP priority. In 2018, CRRC was the seventh most subsidized listed company in China.⁵² In 2016, with 157 million RMB (22 million USD) in direct subsidies, it ranked eighth.⁵³ In 2017, it received 111.8 million RMB in direct support, making it the most subsidized of China’s “high-tech enterprises” that year.⁵⁴

State Support and Subsidies (cont'd)

CRRC also benefits from the State-supported R&D, innovation centers, national projects, and laboratories that it runs. Since 2016, it has led the implementation of the National Key R&D plan's Special Project in Advanced Rail Transit (国家重点研发计划先进轨道交通重点). The National Key R&D plan is the fusion of what used to be the separate 863 and 973 Programs; the most prestigious of the government R&D efforts.⁵⁵ Through the Special Project, CRRC won R&D projects worth at least 433 million RMB in 2016;⁵⁶ 44.21 million RMB in 2017; and 85.27 million in 2018 – more funding than any other entity involved in the National Key R&D program.

In 2017, the Ministry of Science and Technology (MOST) approved CRRC as the lead on the National High-Speed Train Technology Innovation Center (国家高速列车技术创新中心). The first in a planned twenty innovation centers proposed by MOST's "Guidelines for the Construction of national Technology Innovation Centers," that center was launched to "address the country's major needs" and "implement OBOR."⁵⁷ The Center is charged with implementing "Three Platforms, Two Centers, One Network, One Base" (三平台, 两中心, 一网络, 一基地) an effort to gather data from "globally radiated" rail and other land transit systems into a unified network.⁵⁸ The Qingdao government reported in 2017 that the Center and its project involved an investment of some 90 billion RMB.⁵⁹

In addition to those, CRRC also runs five government-supported National Key or Engineering Laboratories and three National Engineering Technology Research Centers: The National Key Laboratory of Traction and Control for Vehicles and Locomotives (车组和机车牵引与控制国家重点实验室), the National Key Laboratory of High-Power AC Drive Electric Locomotive System Integration (车组和机车牵引与控制国家重点实验室), the National Key Laboratory of New Power Semiconductor Devices (新型功率半导体器件国家重点实验室), the High-speed Train System Integration National Engineering Laboratory (North) (高速列车系统集成国家工程实验室北方), the National Engineering Laboratory for High Speed Train System Integration (South) (高速列车系统集成国家工程实验室南方), the National Heavy Load Express Railway Freight Car Engineering Technology Research Center (国家重载快捷铁路货车工程技术研究中心), the National Railway Bus System Integration Engineering Technology Research Center (国家轨道客车系统集成工程技术研究中心), and the National High Speed EMU Assembly Technology Research Center (国家高速动车组总成技术研究中心).

CRRC operates other State-funded projects, too, including, recently, a batch funded by the Ministry of Information and Industry Technology (MIIT), the ministry charged with implementing military-civil fusion. Those projects focus on standardization, intelligent manufacturing, and the industrial internet of things. Additional State support derives from mechanisms of the industry zones or military-civil fusion zones in which CRRC subsidiaries operate.

The CCP also helps to set up CRRC's international contracts. CRRC – and, before it, CSR and CNR – are "government-designated rail suppliers for OBOR."⁶⁰ The grand strategic plan's contracts thus directly fuel the company's margins: In 2016, Sun Peng Cong of Inner Mongolia University noted that "CNR and CSR, as government-designated locomotive suppliers to OBOR, have received a fresh influx of orders... In 2014, CSR's overseas orders reached 3.76 billion USD, an increase of 68.6 percent from the previous year period. For CNR, that figure was 2.994 billion USD, an increase of 73 percent compared to the same period the previous year."⁶¹

State Support and Subsidies (cont'd)

This also manifests in public diplomacy efforts to bolster CRRC's profile, profits, even share price. "The government supports the strong growth of CNR and CSR business operations and sends favorable news to make their investors optimistic and financing easier," writes Sun.⁶² Premier Li Keqiang is called the "super salesman" of CRRC. "Every time Li Keqiang goes abroad, he promotes CNR and CSR... His promotion has caused them to receive a large number of international orders."⁶³ Song Yuting of Northwest Normal University echoes the point: "When Premier Li Keqiang visits countries, he tries to promote China's high-speed rail."⁶⁴ Meng Fanchen, former senior vice president of Siemens China Ltd., was particularly forthright in 2014, "in developing markets, the government's public resource support, such as Premier Li Keqiang's role as unpaid chief salesman and cheap loans, will constitute an unparalleled winning advantage."⁶⁵

The details of the 2014-2015 CSR and CNR merger that gave birth to today's CRRC drive home the degree and nature of this State involvement. The merger marked an inflection point in China's rail strategy. International exchange and domestic incubation over the previous decades had allowed CSR and CNR to build the expertise and experience necessary to compete for foreign markets. To do so, they needed scale. As the editor of the Japan Economic News Asia Bureau opined at the time, the "CNR and CSR turned to monopoly because China believes that the state of competition has expanded from the domestic arena to the international arena."⁶⁶ The State Council approved the merger "under the strategic goal of China's high-speed rail Go Out;"⁶⁷ to "better optimize the resources and competitiveness of China's rail transit equipment manufacturing industry, removing internal competition and contradictions."⁶⁸ Put otherwise, Beijing sought "to enhance the international competitiveness of Chinese SOEs, which is conducive to building Chinese brands and occupying more international market share."⁶⁹

The merger process was disproportionately organized, overseen, and facilitated by the State. Both CSR and CNR were "central enterprises" under the State-Owned Assets Supervision and Administration Commission (SASAC). As a representative of a SASAC enterprise explained, "the reorganization of central enterprises is rarely discussed at the executive meeting of the State Council. Yet not only was the merger of CNR and CSR discussed at the meeting, but every step of the progress must report to the central leadership. The central leadership attaches importance to the merger of CNR and CSR. High-speed rail is China's advantageous industry. It is a business card of China and carries the Chinese strategy."⁷⁰

The merger would have been far more difficult without that oversight and central support. "If there had been no intervention by SASAC, it would have been difficult to complete the merger," explains Sun Pen Cong, noting that the government smoothed over conflicts between the two parties while the "National Development Bank and the Asian Infrastructure Investment Bank (AIIB) provided the necessary financing support."⁷¹ He goes so far as to say that "the AIIB was mainly established to provide a capital guarantee for OBOR infrastructure and to provide sufficient reserve funds for the acquisition of China CRRC."⁷²

Siphoning Strategic Resources

The “motive of CRRC’s internationalization,” wrote Luo Qin of Guangdong University of Foreign Studies in 2018, “is acquisition of strategic resources and acquisition of international markets.”⁷³ Strategic resources refer chiefly to technology and data. Thanks to its government backing, CRRC claims an upper-hand – and a channel into – international markets. It positions in those parasitically to acquire foreign technology and to establish market, and information, control.

Chinese sources do not hide that CRRC’s success is built off of siphoned foreign technology – or that it intends to continue that approach. The Party Central Committee and the State Council have jointly promulgated a strategy acknowledging as much; an “overall policy of ‘introducing advanced technology, jointly designing and producing, and building Chinese brands.’”⁷⁴ Histories of CNR and CSR note that they followed that policy “in order to acquire international renown.” “They carried out strategic cooperation with General Electric and Electro-Motive Diesel (EMD), introducing advanced foreign technology...In the process of technology introduction, digestion, absorption, and re-innovation, CRRC has not only greatly improved its technical level and ability, but also built a new generation of vehicles with complete intellectual property rights based on the imported products... laying a technical foundation for exporting to high-end markets.”⁷⁵

Nor was that just a stepping stone; a one-time approach in order to achieve parity before competing fairly. Huang Ying, an Economics Professor at Wuchang Shouyi College explains a deliberate CRRC strategy for “obtaining reverse technology spillovers.”⁷⁶ In early stages of its R&D, it pursues cooperation – as with GE and EMD – as well as cross-border mergers and acquisition. Take investments in Canada’s Dynix beginning in 2008 that allowed CRRC “to obtain high-power semiconductor products core technology and market share,” in Australia’s Delkor Rail in 2011, and in Germany’s E&M in 2013.

In the next step, CRRC proceeds to what Huang calls a “sponge model.” “After years of technical accumulation and knowledge acquisition, CRRC establishes overseas R&D centers.” She points in particular to the semiconductor R&D center in the United Kingdom built in 2012; the “rail transit, new energy, and in-vehicle networking” center built with the New Jersey Institute of Technology and the University of Texas in 2012; the 2015 cooperation with the Dresden University of Technology. These “promote the absorption capacity and integration capabilities.” They enable CRRC “continuously to acquire emerging technologies from the host country and to update technologies in a timely manner, and they ensure that spillovers and integration continue.”⁷⁷

Luo Qin summarizes the phenomenon: “With product life cycle changes, and without product innovation, China CRRC will be replaced sooner or later. So technology acquisition is still one of the reasons for internationalization.”⁷⁸

Data, too, constitutes a strategic resource driving internationalization. “CRRC will need to collect vehicle information.”⁷⁹ Beijing is not just building traditional rail systems. It chases this field because it sees it developing into an “intelligent” one; vehicles are information collectors, sensors, tools for a “ubiquitous” global IT network that Beijing wants to construct and control. In 2016, CRRC set up a “sensing technology R&D center” in Ningbo deigned to “improve the intelligence, integration, and digitization of sensors for rail transit,” to ease the “integration into the Internet of Things.” CRRC has obtained a 5G license from MIIT to build its “cloud control system,” able to collect, transmit, and digest large quantity of data. “In the next ten years,” writes the company’s chairman, “CRRC will

Siphoning Strategic Resources (cont'd)

follow the development trend of the Internet era, with digital, network, and intelligent as the main line, together with rail transit, equipment, and the entire industry data chain...To build an intelligent ecosystem, CRRC will build four prongs in the next few years...smart manufacturing, smart products, smart services, intelligent transportation.”⁸⁰

Nor is that data used only for CRRC’s immediate, business purposes. MIIT and the National Standardization Administration run a “two in one integration management platform,” a “strategic deployment of the Party Central Committee” designed to collect and to integrate information across the industrial system and to use that to claim related standards – to create a large-scale industrial internet, under the Chinese government, radiating internationally. CRRC is not just a member of the platform. It is also on the Guiding Committee, alongside China Ordnance Equipment Group, MIIT’s Electronics Institute, the State Grid Corporation, China Mobile, Huawei, Tsinghua, Beijing Aerospace University, Haier, and ZTE, among others.⁸¹

A Pillar of Military-Civil Fusion

As that list of Council member suggests, CRRC is building this – is internationalizing, acquiring foreign technologies, and collecting global data – in concert not just with the CCP, but also with military actors. CRRC’s annual report explicitly declares its dedication to Beijing’s military-civil fusion (军民融合) (MCF) strategy: “We will implement the military-civil fusion development strategy and expand the application of technology and products”⁸² writes the company alongside commitments to OBOR, Made in China 2025, Beijing’s ambitions to become a “Manufacturing Great Power,” the Internet+ program that underlies the social credit system, and Go Out.⁸³

The pursuit of MCF is no empty claim.⁸⁴ In May 2017, CRCC joined with state-owned China Aerospace Science and Technology Corporation (CASC) (中国航天科技集团公司), Guoxin International (CNIC) (国新国际), China Insurance Investment Fund (中国保险投资基金), Industrial and Commercial Bank of China (ICBC) (中国工商银行), Postal Savings Bank of China (中国邮政储蓄银行), Shanghai Pudong Development Bank (上海浦东发展银行), and the Beijing Municipal Government in launching an investment fund dedicated to MCF.⁸⁵ Called the “National Innovation Fund,” that fund – with a 113.9 billion RMB (approximately 15 billion USD) first phase – invests in “military-civil fusion industries.” It involves representatives not just of SASAC and the National Development and Reform Commission (NDRC), but also from the National Defense Science and Technology Bureau. The fund “will mainly invest in industries that are at the advanced level in the world, with huge market space and rapid growth,” including “aerospace, nuclear energy, shipbuilding, high-speed rail, advanced power grid equipment, new generation information technology, new energy vehicles, 3D printing, robots, graphene, carbon fiber, and high-temperature alloys.” CRRC has signed an additional “framework agreement” through the fund with the FAW Group and Dongfeng Motor Corporation to create a “central enterprise new energy automobile industry development fund and a high-speed railway equipment fund.”⁸⁶

CRRC’s more tangible research and development is also classified under the umbrella of MCF. Chinese discussion of CRRC’s National High-Speed Train Technology Innovation Center calls it a “military-civil fusion project.”

In 2018, CRRC participated in Beijing’s “Second National Defense Technology Industry Development Summit” alongside the military system’s Norinco, China Aerospace, AVIC, China Shipbuilding Heavy Industry, China Electronics, and others.⁸⁷ In a meeting convened by SASAC and Gansu Province in May, 2018, CRRC Dalian, CRRC Lanzhou, and AVIC all signed a “strategic cooperation agreement” with Gansu Province to launch an “MCF development project.” The cooperation would span “new materials, unmanned subways, and unmanned driving.”⁸⁸

China CRRC and Xinhua Cathay International Group have signed another “strategic cooperation agreement” to “fuse military and civil and drive OBOR as well as other national strategies.”⁸⁹ Xinhua Cathay International was until 2001 under the jurisdiction of the General Logistics Department of the People’s Liberation Army. It is currently a central enterprise under the SASAC.⁹⁰

CRRC also boasts a research and development center in a “military-civil fusion enterprise zone.” The Harbin Economic and Technological Development Zone.⁹¹ MCF zones are key hubs for bi-directional exchange between military and commercial entities.⁹² They support their members with funding, including “talent funding.” They also create channels for “research integration” – mechanisms for the sharing of technological and data resources.⁹³ Approved in 2012 by MIIT, the Harbin zone focuses on aviation, vehicle manufacturing, new energy equipment, robots, and intelligent electromechanical equipment. Alongside CRRC’s China North Car subsidiary, the zone hosts Harbin North Defense

A Pillar of Military-Civil Fusion (cont)

Equipment Co., Ltd, AVIC's Harbin Aircraft Industry Group, AVIC's Dong'an Engine Group, Chinalco's Northeast Light Alloy Co., and "other important military enterprises."⁹⁴ The Zone's industry committee commits itself to financial, logistical, technological, tax policy, development, entrepreneurial, and land support to its MCF entities. In 2018, the Zone's Heilongjiang Military Civil Fusion Industry Alliance (黑龙江军民融合产业联盟) joined with the Mongolia Bank Harbin Branch to launch a "two billion RMB [about 280 million USD] financing fund to help alliance members carry out research and development and technological transformation projects through the establishment of the first MCF industry development fund of the area."⁹⁵

Nor is such technology and data sharing relegated to MCF zones. CRRC's position as an SOE allows it seamlessly to transfer resources – information and expertise – back to the State and the MCF project. The National Key Research and Development Program run through CRRC incorporates not just a host of other SOEs, but also a range of military and MCF actors, including MIIT's Beijing University of Aeronautics and Astronautics, one of the "seven national defense schools;" the Chinese Academy of Engineering; five branches of the Chinese Academy of Sciences; State-owned and National Torch Program-funded CRSC.⁹⁶

Or take the September 2017 "technical exchanges" among MIIT, CRRC, and the Institute of Computing Technology of the Institute of Railway Science. At those exchanges, "data sharing and other issues were fully communicated and discussed, and the groups reached preliminary cooperation agreements for establishing the EMU data sharing platform and conducting joint big data analysis."⁹⁷ This points to the broader, or broadest, strategic and military role that the PRC assigns CRRC: The state-owned company, and others in network-able fields, are to assist the CCP's information-collecting and analysis effort; the core of Beijing's techno-economic offensive.

Links to Huawei

CRRC also works with other, less explicitly military players that the United States has labeled as predatory actors or national security threats. CRRC actively cooperates with Huawei, connecting the physical infrastructure of the rail domain to Huawei's information technology infrastructures in pursuit of an "Internet of Things with Chinese characteristics."⁹⁸

In May 2018, CRRC subsidiary CRRC Zhuzhou joined with Huawei to develop a light rail system. "CRRC Zhuji Co., Ltd is committed to becoming the world's leading supplier of rail transit solutions... The cooperation with Huawei has created the first 'crystallization,'" explained Zhou Qinghe, Chairman and Party Secretary of CRRC Zhuzhou. He also emphasized that this would be a "long-term, cooperative relationship" to develop "intelligent public transportation products."⁹⁹ Huawei's leadership appears to have been equally enthusiastic. At its annual meeting that year, it selected CRRC – from its pool of some 150 partners – to be recognized as its "Infrastructure Newcomer Cooperation Unit."¹⁰⁰ CRRC was the only rail transportation equipment supplier to receive that honor, suggesting that it may provide the backbone infrastructure for the smart transit system, and corresponding data collection system, that Beijing is working to build.

Cooperation continues. In March of this year, Jiangsu CRRC Digital Technology Co., Ltd, another CRRC subsidiary, and Huawei signed a "strategic cooperation agreement." "The two parties will partner extensively in the fields of industrial Internet platform construction and intelligent manufacturing." Chinese reporting on the agreement notes that the firms will focus on "developing the strategy of China CRRC Group in transforming, upgrading, and transnational operations; the two sides will jointly promote the construction and application of the industrial Internet platform, build a 'digital car' project, and realize the digitization and digital industry of CRRC." "The strategic cooperation agreement will rely on Huawei's strong R&D and strength in big data cloud computing and information and communications technology." Discussion of the cooperation stresses that CRRC digital products appear across "aerospace, aviation, rail transit, machinery manufacturing, military, and other fields."¹⁰¹ The clear implication is that the Huawei and CRRC cooperative network will extend also to those.

Cooperation involves partnership on a 5G system – with it, monitoring and data sharing. Huawei and CRRC's Zhuzhou subsidiary jointly developed a "5G system" in Chengdu: "During the running of the train, a large amount of monitoring data will be generated...CRRC Zhuzhou and Huawei have jointly developed a 5G system for rail transit application scenarios...Application results show that it provides rich data support for analysis of locomotive operation....The 5G era has seized the high-end market of international rail transit."¹⁰² The system is also to be applied to wind power and electric vehicles.

There is no shortage of indirect forms of cooperation, too – which point to the larger, more systemic, nature of this web. The month after the announcement of the strategic cooperation agreement between CRRC and Huawei, the latter's investment arm, Hubble Technology, invested in two semiconductor-related companies (as part of its effort to "build a complete supply capacity around chip manufacturing in the face of pressure from the United States"). One of them was Shandong Tianhua, whose core silicon carbide material product is a focus of Made in China 2025. That company's founder acknowledged in 2014 that it was "under the leadership of relevant State ministries and commissions as well as key enterprises of the industrial chain," including China South Rail [the company that would become CRRC], and Huawei Hisilicon."¹⁰³

Links to Huawei (continued)

Beidou – China’s space champion and one of its top MCF instruments – offers another prime example. In February 2016, CRRC’s subsidiary Dalian Electric Co. signed a “strategic cooperation framework agreement” with Beidou. “This is the first time that CRRC’s technology and aerospace technology will merge,” declared coverage of the event. Dalian Electric’s chairman stated that the two companies would “actively promote the launch of more intelligent products...jointly establish a cross-border innovation team to expand the application of the Beidou system and build a Chinese autonomous rail transit equipment control system.” That would also extend to Beidou’s “off-road engineering machinery, ships, and smart-city supporting products.”¹⁰⁴

Party Connections

These connections are not accidental. CRRC is clear in its mandate that its chief obligation is to the Chinese State. The nature and status of company personnel reveal indelible ties to the Chinese Communist Party. “Most of the managers are directly appointed for political purposes.”¹⁰⁵ Executives at CRRC (and, before it, CNR and CSR) wear dual hats as corporate and as Party leaders. The chairman of the board, Liu Hualong, for example, is also Party Secretary. Vice Chairman Xi Guohua is also Deputy Party Secretary. The Party staff organizes typical propaganda events – convening staff, for example, to watch the National People’s Congress. The Party apparatus is also charged with overseeing the company’s interactions abroad. The “personnel department” – the Party Committee and Cadre Department – oversees “foreign affairs management” for the company, which includes “approving overseas travel,” eliciting and reading employees’ “summaries after returning” from abroad and inviting foreigners to China.

CRRC’s job listing for a Senior Manager of Party Work summarizes that position’s main responsibilities as “drafting the company’s party and group work plan;” “drafting and maintaining the company’s confidential work system and supervising all departments to implement the confidential work system;” and “planning and organizing the company’s corporate culture construction and maintaining the company’s corporate image.”

CONCLUSION

CRRC is a keystone player in the CCP's "Go Out." It draws from abundant State support to outbid global rivals. It works to cement a global position designed to serve CCP ambition, using its private facade to funnel foreign R&D, data, and money back to Beijing's centralized apparatus.

CRRC's case is not anomalous. Beijing pursues the same strategy throughout and through the entire rail transit ecosystem – as well as those of the other SEI, Made in China 2025, and China Standards 2035 domains. This reflects a broader trend. As Chinese analyses readily point out, State support over the past decade has chiefly "targeted" the energy, automobile, and transportation domains – with all of those connected to its other focus area, information technology networks.¹⁰⁶ In all of those, Beijing takes a dynamic, flexible, and pervasive approach: Where exports do not work, it builds factories abroad or manipulates joint ventures. Where SOEs are blocked, it turns to the "private" firms in its arsenal. If those fail, there are creative uses of Chinese capital that can be deployed directly or indirectly to reach targets.

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⁴ Ibid.

⁵ Radarlock translation of “Notice of the State Council on Printing and Distributing ‘Made in China 2025,’ ” Beijing: May 8, 2015.

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⁸ China CRRC.

⁹ Those numbers are reported in CRRC’s Chinese, but not English, annual reports.

¹⁰ 中国中车股份有限公司 2018 年年度报告 [China CRRC Co., Ltd 2018 Annual Report]. March 29, 2019.

¹¹ See, for example, 中国中车 2017 年社会责任报告 [China CRRC 2017 Social Responsibility Report], crcc.cn.

¹² Emily de La Bruyere and Nathan Picarsic. “Game of Phones: 5G is the Next US-China Battlefield,” The Octavian Report, Summer 2019, <https://octavianreport.com/article/5g-us-china-standards-fight/>.

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¹⁹ Emily de La Bruy è re and Nathan T. Picarsic, “Worldwide Web: Why China is Taking Over the Internet of Things,” The Octavian Report, April 2019, <https://octavianreport.com/article/why-china-is-taking-over-the-internet-of-things/>.

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²³ Radarlock translation of “Notice of the State Council on Printing and Distributing ‘Made in China 2025,’ ” Beijing: May 8, 2015.

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⁴⁹ Those numbers are reported in CRRC’s Chinese, but not English, annual reports.

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⁵⁸ 国家高速列车技术创新中心攻坚实施协议 [National High Speed Train Technology Innovation Center Co-Construction Implementation Agreement Officially Signed], Ministry of Science and Technology, February 13, 2018.

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