July 1, 2022

The Honorable Katherine Tai
The Office of United States Trade Representative
600 17th St NW
Washington, DC 20006

RE: Docket ID-USTR-2022-0007

Dear Ambassador Tai:

The Rail Security Alliance (RSA) appreciates the opportunity to comment on the Office of the United States Trade Representative's (USTR) request regarding the statutorily-mandated review of the July 6, 2018 Section 301 action (List 1). We urge USTR to maintain the current Section 301 tariffs on all railcar parts included in List 1 (see Appendix A).

Introduction

RSA represents the manufacturing segment of the rail industry in North America for freight railcars and the supply of railcar components. Working alongside congressional leaders, as well as current and past administrations, we have sought to work toward a competitive playing field for domestic freight railcar manufacturers who must compete against the Chinese state-owned and subsidized rail enterprise (SOE), China Railway Rolling Stock Corporation Limited (CRRC), as it pursues its goal of dominating railcar manufacturing in the United States and around the world. This $28.6 billion SOE[1] has made aggressive and alarming inroads into the U.S. CRRC uses state-backed financing, direct government subsidization ($1.3 billion since 2015)[2], below-market pricing, and other anti-competitive tactics. Their goal is to decimate domestic railcar manufacturing and with the single end goal of producing all railcars in the People's Republic of China (PRC). This would wipe out American manufacturing in the process.

Our domestic freight railcar industry is a vital component of our economy. It supports more than 65,000 family wage jobs and upwards of $6.5 billion in GDP.[3] Freight rail is also a crucial part of America's critical infrastructure. It safely and efficiently carries hazardous materials, military equipment, key commodities, energy products, and everyday goods. In 2013, President Obama and Vice President Biden recognized freight rail's importance to the security of critical infrastructure by issuing Presidential Policy Directive 21 (PPD-21), explicitly including the freight

[1] CRRC Corporation Limited, *Annual Report 2020*, April 2021.
[2] Oxford Economics, Off Track: The Role of China's CRRC in the Global Railcar Market, July 2022.
[3] Oxford Economics, *Will We Derail US Freight Rolling Stock Production?* May 2017.

rail industry.[4] Given the challenges the nation's freight rail industry has faced, beginning with the COVID-19 pandemic and the country's ongoing economic and supply challenges, we must ensure the survival of the U.S. freight railcar industry. It is the cornerstone of our nation's transportation and infrastructure systems and is vital to every state in the U.S.

China's Aggressive International Expansion

As noted above, over the past 6 years, CRRC has made aggressive inroads into the U.S. market in an attempt to decimate our domestic railcar manufacturing. The subsidies received by CRRC enable it to significantly underbid private companies for global rolling stock contracts. They pose a direct threat to our domestic rail manufacturing industry and national security.

According to CRRC, its products are now offered in more than 104 countries and its share of the global rail and rolling stock market stands at 83%.[5] Further underscoring the threat from CRRC, the Department of Defense included the firm in a June 2020 list of 20 major state-owned companies it says are effectively controlled by the Chinese military.[6]

CRRC's activities in Australia can serve as a blueprint of its designs for the American market. Within a decade of entering Australia's once-thriving domestic rail manufacturing industry, CRRC used its anti-competitive tactics to wipe out Australia's domestic rail manufacturing entirely in less than 9 years. Today, Australia's railcar manufacturing is completely controlled by CRRC.

CRRC also secured more than $2.6 billion in U.S. taxpayer-supported transit contracts to provide passenger railcars for the cities of Boston, Chicago, Philadelphia, and Los Angeles (federal funding is included in three of those contracts). CRRC underbids its competitors by 22% on average but has submitted bids as much as 50% lower than "Buy-America" compliant companies with large manufacturing facilities in the United States.[7] CRRC also attempted to win a number of other transit contracts in the U.S., including one from the Washington Metropolitan Area Transit Authority (WMATA). However, these bids failed due to a combination of public and Congressional pressure, as well as the passage of the Transportation Infrastructure Vehicle Security Act (TIVSA).

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[4] Presidential Policy Directive 21 (PPD-21) identifies 16 critical infrastructure sectors, including "Transportation Systems." The Department of Homeland Security defines "Freight Rail" as one of the seven key subsectors. See generally, *PPD-21, Critical Infrastructure Security and Resilience*, Feb. 12, 2013.

[5] @CRRC_global, "Following CRRC's entry to Jamaica, our products are now offered to 104 countries and regions. So far, 83% of all rail products in the world are operated by #CRRC or are CRRC ones. How long will it take for us conquering the remaining 17%?" Twitter, January 11, 2018.

[6] U.S. Deputy Secretary of Defense David L. Norquist. *Letter to Senator Tom Cotton*. June 24, 2020.

[7] Nigel Cory, Information Technology and Innovation Foundation, *Heading Off Track: The Impact of China's Mercantilist Policies on Global High-Speed Rail Innovation*, April 2021.

CRRC has also turned its attention to the Canadian domestic market, further highlighting the need to address their encroachment into North America. In 2017, CRRC won a bid to supply Montreal's transit system with 44 double-decker coaches.[8] That same year, CRRC announced a joint venture with ARS Canada Rolling Stock Inc. to build freight railcars in Moncton, New Brunswick. In 2019, ArcelorMittal purchased CRRC freight railcars for use in its mining operations. More recently, CRRC has also moved to the Mexican domestic market. In 2019, CRRC was awarded a $1.5 billion contract to renovate Line 1 of the Mexico City metro.[9] In 2020, the firm won a $60 million contract for the Monterrey Metro.[10]

China's Anticompetitive Domestic Rail Market

While CRRC has been making aggressive inroads internationally, the Chinese government has continued to implement hostile, anticompetitive practices toward foreign firms in China. They now have one of the most restricted procurement markets in the world.[11] For instance, foreign market access to China's rail markets has decreased dramatically in recent decades. The Association of the European Rail Supply Industry (UNIFE) found that the Chinese rail market was only 17% accessible for the period of 2017–2019, as compared with 63% for the period of 2009–2011.[12]

China also has a long, continuing pattern of forced technology transfer in the rail sector. For instance, in 2004, the Ministry of Railways announced three tenders for the construction of high-speed trains. Each tender required foreign companies to collaborate with domestic partners and transfer key technologies to Chinese firms.[13] Forced technology transfers remain a lynchpin of China's broader rail and high-speed rail development strategy. For example, the country maintains an ongoing requirement for 100% Chinese-owned technology in many procurement contracts. Foreign firms must also engage with majority-Chinese-owned joint ventures (JV) submit bids for contracts. These factors result in an effective mandate to transfer technology to Chinese firms.[14] Despite announcements by China's State Council to the contrary, procurement discrimination in the rail market not only persists but abounds.[15]

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[8] Railway Age, *First Look: Montreal's CRRC Multilevels*. February 2022.
[9] BNamericas, *Spotlight: Chinese companies' growing railway footprint in Mexico*. November 2020.
[10] Rail Journal. *CRRC wins Monterrey metro vehicle contract*. December 2019.
[11] European Commission, *Study on the competitiveness of the Rail Supply Industry*. November 2019.
[12] UNIFE. *White Paper on levelling the playing field as regards foreign subsidies position*. September 2020.
[13] China Daily, *China gears up for high-speed rail plan*. November 2005.
[14] Nigel Cory, Information Technology and Innovation Foundation, *Heading Off Track: The Impact of China's Mercantilist Policies on Global High-Speed Rail Innovation*, April 2021.
[15] Mingyan Xu, "China's State Council Issued Measures To Launch New Round Of High-Level Opening-Up," *Mondaq,* December 15, 2017

China's Subsidization of CRRC[16]

China continues to significantly subsidize its rail champion, CRRC. It is one of the most heavily subsidized companies in China. In fact, CRRC received explicit government subsidies of $271 million in 2020 and almost $1.3 billion from 2014 to 2020.[17] Like other Chinese SOEs, CRRC is the recipient of larger implicit subsidies. In a recent report, the Center for Strategic and International Studies estimated that direct subsidies to Chinese firms represent less than 20% of total industrial spending.[18] For instance, as one of the ten sectors China targets under the Made in China 2025 strategy, CRRC is also eligible to receive preferential subsidies and tax incentives for R&D.[19] In addition, China reduced the income tax rate for high-tech firms like CRRC from 25% to 15%, and raised the rate of additional deductions of R&D expenses from 50% to 75%.[20]

Equally troubling is the fact that CRRC makes clear that its chief obligation is to the Chinese state. Company executives and employees have direct ties to the Chinese Communist Party and the People's Liberation Army. According to a 2018 report, three of CRRC's current board members previously held high-level positions at state-owned defense companies, the Aviation Industry Corporation of China (AVIC) and the China Shipbuilding Industry Corporation (CSIC). Moreover, two former CRRC board members held positions at AVIC and the China North Industries Group Corporation Limited (NORINCO).[21]

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[16] For a more details of on this topic, please find Oxford Economics' July 2022 Report "Off Track: The Role of China's CRRC in the Global Railcar Market" in Appendix B

[17] Oxford Economics, Off Track: The Role of China's CRRC in the Global Railcar Market, July 2022.

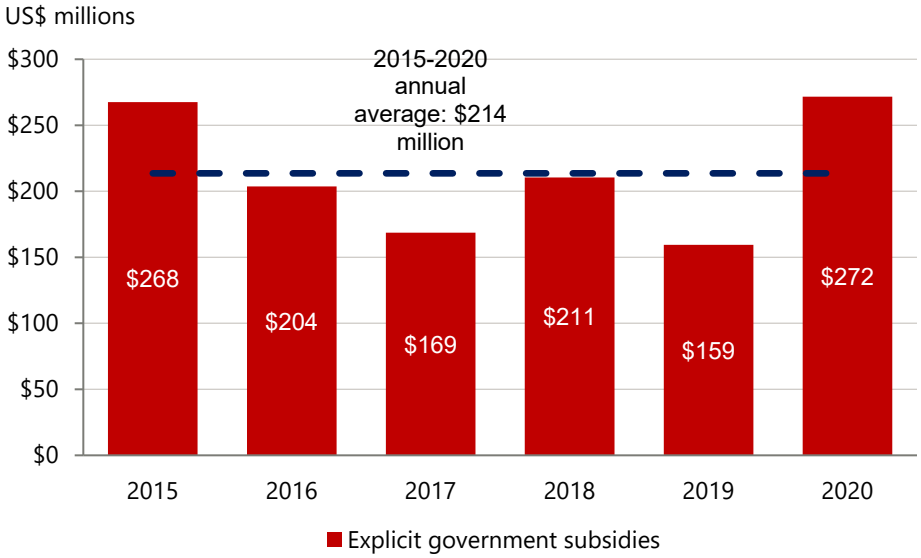
[18] DiPippo et al. The Center for Strategic and International Studies (CSIS). *Red Ink: Estimating Chinese Industrial Policy Spending in Comparative Perspective*. May 2022.

[19] Emily de La Bruyère & Nathan Picarsic. Radarlock. *Beijing's Dash for Global Rolling Stock Dominance*. October 2019.

[20] UNIFE, *A call for urgent action: The Fast Expansion of China's State-Owned Rail Suppliers*, November 2019.

[21] Brigadier General John Adams, US Army (Retired). (Oct 2018). (publication). *National Security Vulnerabilities of the U.S. Freight Rail Infrastructure and Manufacturing Sector – Threats and Mitigation*.

Fig. 1. CRRC explicit government subsidies, 2015-2020



Source: Bloomberg, CRRC annual reports, Oxford Economics

Recommendation-Do Not Remove Section 301 Tariffs for Railcar Parts on List 1

We urge you and the Biden Administration to ensure current trade agreements and tools are used to hold China accountable for its unfair and anti-competitive policies and practices. Section 301 of the Trade Act of 1974 is a key enforcement mechanism that can be used to address a wide variety of discriminatory acts, policies, and practices of U.S. trading partners. Current Section 301 tariffs are vital to aggressively and appropriately push-back on China. We applaud the Administration's decision to put in place a thoughtful system to review existing 301 tariffs. The tariffs are an essential tool to level the playing field against Chinese state-subsidized parts and fully-built railcars currently being sent into the U.S. market. We strongly support keeping the tariffs against Chinese railcar parts, railcar components, and fully built railcars and railcar kits in place.

For the facts laid out above, the dangers of removing tariffs on rail cars and rail products are clear: It would allow CRRC's anticompetitive actions to give China's government an even greater stronghold over the U.S. rail manufacturing market — from freight rail to transit. To put it bluntly, if the tariffs are removed, China will use its government-controlled manufacturing operations in the U.S. to import vast quantities of subsidized rail products into the country at below-market prices, displacing even more U.S. manufacturing and potentially decimating this vital domestic industry and the tens of thousands of jobs it supports.

The domestic freight rail manufacturing industry is a robust and thriving industry that supports over 65,000 jobs and represents $6.5 billion in GDP. There has never been a time when the U.S. manufacturing industry could not fulfill all of the U.S. demand for these rail products with North American manufacturing facilities. These products have always been available from sources on the North American continent. Continued exclusions for rail parts and components would significantly harm the U.S. railway equipment industry.

Conclusion

RSA commends the efforts of the United States Trade Representative and President Biden's continued vigilance toward the threat China poses to America's economy and manufacturing sector. Together, we can build a better and stronger America and keep the freight rail market in the U.S. thriving for decades to come. The President envisions railroads as a crucial component of future U.S. critical infrastructure; to ensure that the American freight rail industry survives to be a part of that future, we ask for the Administration's continued support of 301 tariffs for railcar parts.

Sincerely,

Erik Olson
Executive Director
Rail Security Alliance

Appendix A - Rail Parts Included in List 1 Tariffs

HTS Subheading	Product Description
8601.10.00	Rail locomotives powered from an external source of electricity
8603.10.00	Self-propelled railway or tramway coaches, vans and trucks (o/than those of 8604), powered from an external source of electricity
8603.90.00	Self-propelled railway or tramway coaches, vans and trucks (o/than those of 8604), o/than powered from an external source of electricity
8604.00.00	Railway or tramway maintenance or service vehicles, whether or not self-propelled
8607.12.00	Parts of railway/tramway locomotives/rolling stock, truck assemblies for other than self-propelled vehicles
8607.19.06	Parts of railway/tramway locomotives/rolling stock, parts of axles
8607.19.12	Parts of railway/tramway locomotives/rolling stock, wheels, whether or not fitted with axles
8607.19.15	Parts of railway/tramway locomotives/rolling stock, parts of wheels
8607.19.90	Parts of railway/tramway locomotives/rolling stock, parts of truck assemblies for self-propelled vehicles or for non-self propelled nesoi
8607.21.10	Parts of railway/tramway locomotives/rolling stock, air brakes & parts thereof for non-self-propelled passenger coaches or freight cars
8607.21.50	Parts of railway/tramway locomotives/rolling stock, air brakes & parts thereof for self-propelled vehicles or non-self propelled stock nesoi
8607.29.10	Parts of railway/tramway locomotives/rolling stock, pts of brakes (o/than air brakes) for non-self-propelled passenger coaches or freight
8607.29.50	Parts of railway/tramway locomotives/rolling stock, pts of brakes (o/th air brakes) for self-propelled vehicles or non-self propelled nesoi
8607.91.00	Parts, nesoi, of railway/tramway locomotives
8607.99.10	Parts (o/than brake regulators) nesoi, of railway/tramway, non-self-propelled passenger coaches or freight cars
8607.99.50	Parts, nesoi, of railway or tramway rolling stock, nesoi
8608.00.00	Railway or tramway track fixtures and fittings; mechanical signaling, safety or traffic control equipment of all kinds nesoi; parts thereof

Appendix B - Oxford Economics Report – "Off Track: The Role of China's CRRC in the Global Railcar Market"

OXFORD ECONOMICS

RSA
RAIL SECURITY ALLIANCE

OFF TRACK:

THE ROLE OF CHINA'S CRRC IN THE GLOBAL RAILCAR MARKET

JULY 2022

OXFORD ECONOMICS

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JULY 2022

The modelling and results presented here are based on information provided by third parties, upon which Oxford Economics has relied in producing its report and forecasts in good faith. Any subsequent revision or update of those data will affect the assessments and projections shown.

To discuss the report further please contact:

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EXECUTIVE SUMMARY

With $35 billion in total revenue in 2021, CRRC, the Chinese state-owned railroad rolling stock manufacturer, is the largest player in the $71 billion global railroad rolling stock industry. Like other Chinese state-owned enterprises (SOEs), CRRC is the beneficiary of both implicit and explicit government subsidies. According to its annual reports, **CRRC received $271 million in explicit Chinese government subsidies in 2020, and nearly $1.3 billion total between 2015 and 2020.**

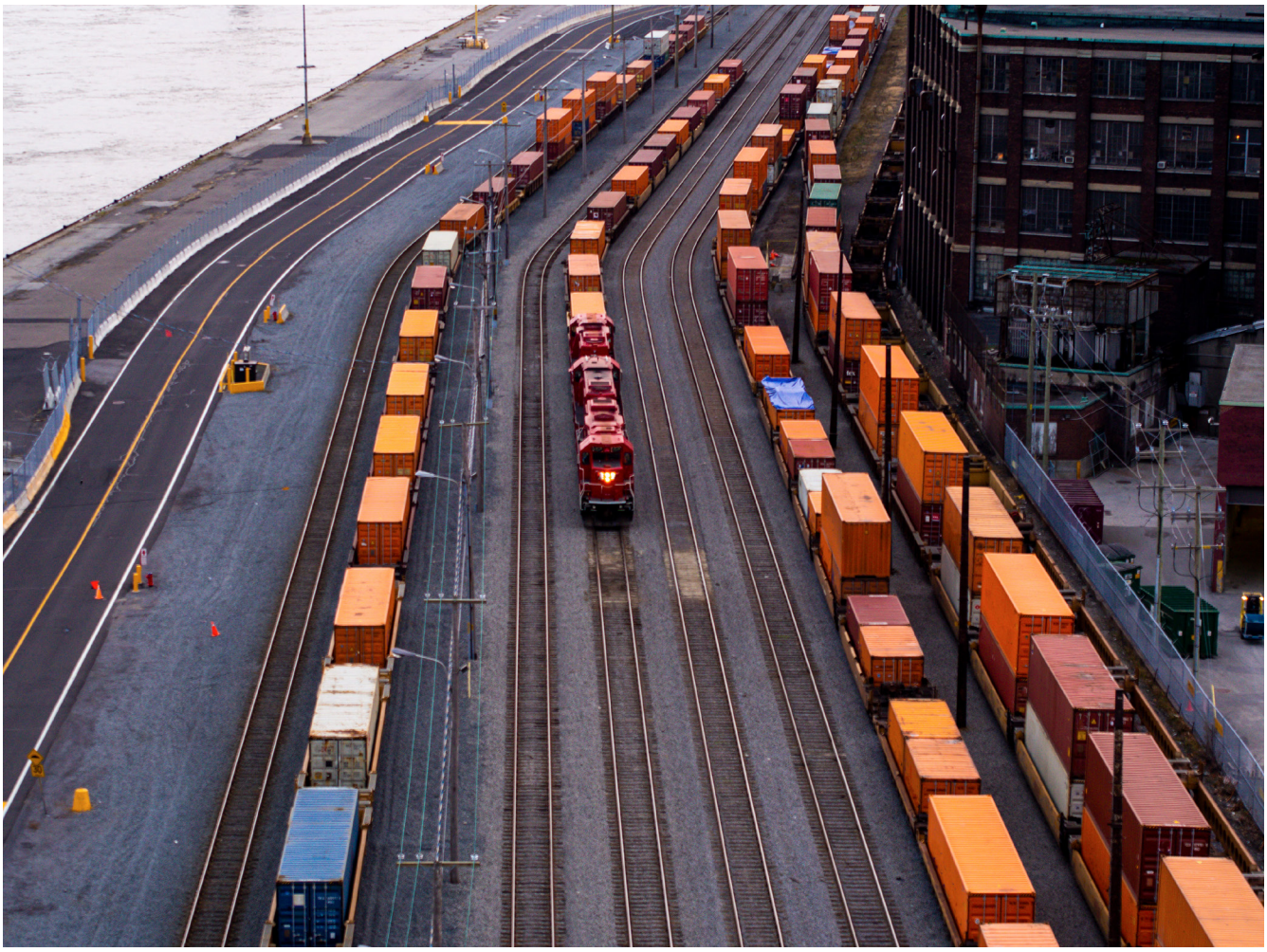
Implicit government subsidies to SOEs like CRRC are harder to quantify and come in a variety of forms. For example, an SOE may obtain production inputs, such as financing or land, at below market-rate prices. It may also sell its outputs at above market-rate prices, a possibility that is particularly relevant to rail manufacturing, where much of the output is sold to government entities. **Estimates by other researchers show that explicit government subsidies represent only about a quarter of the total government subsidies that Chinese SOEs receive.**

Since the 1990s, China has pursued a policy towards SOEs of "grasping the large, letting go of the small," investing in national champions to dominate their respective industries. Under the management of the State-owned Assets Supervision and Administration Commission (SASAC) since 2003, SOEs have been encouraged to "go big and go global" through domestic consolidation and expansion, as well as through foreign mergers and acquisitions. The effect of these policies, which are fundamentally mercantilist in nature, has been for these national champion SOEs like CRRC to capture their domestic markets, using the economic rents so generated to finance global expansion. Between 2006 and 2018, SOEs' share of the assets of the largest global firms has increased from approximately 6% to 20%, with Chinese SOEs accounting for essentially all of this increase.

While SASAC has targeted specific industries for its national champion, the overall trend in recent years has been towards continued government divestment from legacy SOEs. SOEs' share of national industrial employment fell from 60% in 1998 to 38% in 2003 to 20% in 2010. Thus, as reflected in planning documents, the selection of industries for the fostering of national champions is anything but random and reflects the strategic interests of the Chinese government. In the case of rail, the government's strategic interest is transparent and is laid out in the Belt and Road Initiative (BRI)—**China seeks to dominate an integrated global rail transportation network based on Chinese technical standards.** China expects to obtain significant financial and geopolitical benefits from this outcome and may be willing to absorb losses on individual foreign rail projects in order to break into foreign markets.

Between 2015 and 2020, CRRC won seven passenger rail projects in North America worth over $4.3 billion. They undercut the next lowest bidder on these projects by an average of 21%. According to its annual reports, between 2015 and 2021, CRRC took in $21 billion in revenue from outside of mainland China, roughly 10% of its total revenue over this period. However, despite the goals of the BRI, there is not clear evidence of an upward trend in CRRC's penetration of foreign railroad rolling stock markets, either in CRRC's reported foreign revenue or in global trade statistics on Chinese rolling stock exports.

The precise reason for CRRC's failure, thus far, to significantly expand its share of the global rolling stock market outside of China is not certain. It may simply reflect the long lead time of rail projects, especially in high-speed passenger rail. It likely also reflects the success of investment restrictions by other countries against Chinese rail imports, such as provisions to strengthen the Committee on Foreign Investment in the United States (CFIUS), the Transportation Infrastructure Vehicle Security Act (TIVSA), and the SAFE TRAINS Act in the United States.



1. INTRODUCTION

CRRC, a Chinese state-owned enterprise (SOE), is the world's largest railroad rolling stock manufacturer. Formed in 2015 from the merger of two other SOEs; in 2021,[1] CRRC employed 161,000 workers, and took in $35.0 billion in revenue (more than three times that of its nearest competitor).

This report, which was commissioned by the Rail Security Alliance, a coalition of North American freight rail manufacturers, builds on previous research carried out by Oxford Economics on the role of SOEs in the North American rail market.[2] It seeks to explore the economic considerations of having an SOE compete in and dominate the global market for railroad rolling stock.

The report is organized as follows:

- Chapter 2 discusses the theory of SOEs, with a particular eye toward SOEs in China. This includes the history of reform since 1978, and a look at how the general pattern of Chinese SOEs applies to CRRC in particular.
- Chapter 3 addresses CRRC's status as an SOE directly, reviewing key financial details from its annual reports, including the question of explicit government subsidies, as well as discussing non-financial governmental objectives for CRRC, and CRRC's sales outside of China, especially in North America. For context, the chapter opens with some general information on the global railroad rolling stock market, and the Chinese and North American markets in particular.
- Chapter 4 concludes.

1 Where company financials are discussed, years refer to fiscal years.
2 Oxford Economics, "Will we derail US freight rolling stock production?" May 2017.

2. OVERVIEW OF STATE-OWNED ENTERPRISES

2.1 ECONOMIC PERSPECTIVES ON SOEs

As recently as the dawn of the 21st century, economists were broadly dismissive of SOEs, regarding them as a relic from an earlier era of Marxist theorizing.[3] Both Eastern and Western governments had spent the previous 20 years divesting themselves of failed state-run entities. SOEs appeared inherently inefficient, and therefore only justifiable when a strong public policy purpose existed, and in industries where market failure prevented the efficient provision of the goods or services by private entities. The important questions were therefore thought to be which industries (e.g., utilities, education, healthcare) justified the low productivity of direct government provision, and how to handle the political economy of divesting from legacy SOEs.

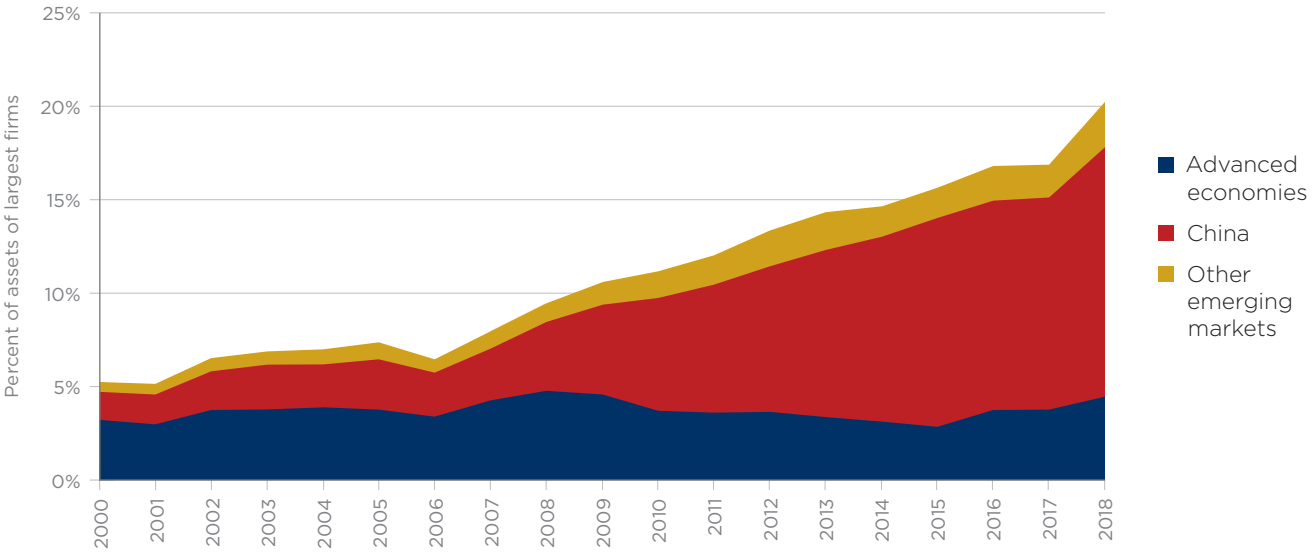
There are good theoretical reasons to expect SOEs to be less efficient than their private counterparts. Like all firms, SOEs are subject to the principal-agent problem, whereby firm owners seek to control the actions of firm managers in order to maximize the owners' objectives. For private owners, these objectives are effectively synonymous with medium- to long-run profit maximization. For an SOE, the objectives of the state owner are multiple, and may include the maintenance of political or social stability through generous employment and retirement policies, or over-investment in local development projects. These problems may be largely overcome by properly incentivizing SOE managers, and through greater oversight. However, if the goal is profit-maximization, governments can better achieve this aim through taxation of, or portfolio investment in, a private entity.[4]

Over the last couple of decades, however, something unexpected has happened: the role of SOEs in the global economy has expanded. As Fig. 1, adapted from an International Monetary Fund report on SOEs, shows, the share of assets of the largest global firms that are controlled by SOEs increased from approximately 6% in 2006 to 20% by 2018, driven to a large extent by the growth of Chinese SOEs. Clearly, the theory of SOEs' increasing irrelevance has not been born out in the world's second largest economy.

3 For a good summary, see Adrei Shleifer, "State versus Private Ownership." *Journal of Economic Perspectives* 12(4): 133-150, 1998.

4 This presentation follows Barry Naughton, "State enterprise reform today." In China's 40 Years of Reform and Development: 1978–2018. Australia National University Press, 2018. Naughton emphasizes the "impossible trinity" of SOE corporate governance: governments seek 1) to incentivize managers to maximize firm profits, 2) greater oversight and political control over the operations of SOEs, and 3) multiple (i.e., not just profitability) policy objectives for the SOE. According to Naughton, governments can achieve any two of these objectives, whereas the current policy of the Chinese state-owned Assets Supervision and Administration Commission (SASAC) seeks to balance all three.

Fig. 1. Share of nonfinancial SOEs among the largest firms[5]



Note: Figure shows the share of SOE assets among the world's 2,000 largest firms.

Sources: S&P Capital IQ; UNCTAD; S&P Global UDI World Electric Power Plant database; and IMF staff estimates.

2.2 THE ROLE OF SOEs IN CHINA TODAY

Given its communist history (and continued official status as a communist country), China has a complex relationship with SOEs. Under Communist Party Chairman Mao Zedong, the state controlled essentially all production, with key industries directed by relevant government ministries. Unlike the experience of "shock therapy" in the former Soviet Union, China did not rapidly divest from its SOEs; rather, there has been a gradual and evolving policy of SOE reform since China began its economic reform in 1978. That process is described in more detail in section 2.3 below.

Fig. 2. SASAC goals for Chinese SOEs by industry group[6]

Category	Industries included	Ownership goal
Strategic and key industries	Defense, power generation and distribution, oil & petroleum, telecom, coal, civil aviation, shipping	Maintaining 100% state ownership or absolute control; increasing state-owned assets in these industries
Basic and pillar industries	Machinery, auto, IT, construction, steel, base metals, chemicals, land surveying, R&D	Absolute or conditional relative controlling stake; enhancing the influence of state ownership even as the ownership share is reduced where appropriate
Other industries	Trading, investment, medicine, construction materials, agriculture, geological exploration	Maintaining necessary influence by controlling stakes in key companies; in non-key companies, state ownership will be clearly reduced

Source: Mattlin (2007) citing Chinese State Council opinion released 12 May 2006

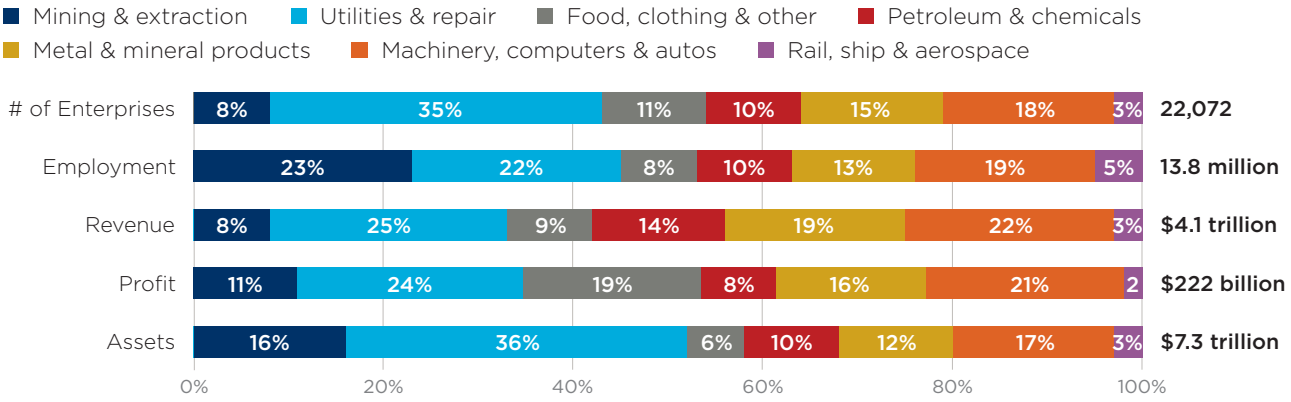
5 Adapted from figure 3.3 of: IMF (2020). "Chapter 3 State-Owned Enterprises: The Other Government." In Fiscal Monitor, April 2020.

6 Adapted from Mikael Mattlin, "The Chinese Government's new approach to ownership and financial control of strategic state-owned enterprises." BOFIT Discussion Paper No. 10/2007.

Since the 1990s, the Chinese government has pursued a policy of divesting from smaller, less-productive SOEs in non-strategic industries, while maintaining government ownership in key sectors (see Fig. 2). Under the management of the State-owned Assets Supervision and Administration Commission (SASAC) since 2003, SOEs have been encouraged to "go big and go global" through domestic consolidation and expansion, as well as through foreign mergers and acquisitions (M&A).[7] The general strategy, which is fundamentally mercantilist in nature, is to use the captive domestic Chinese market, protected using mainly non-tariff trade barriers, to build the competency and scale for Chinese national champions to compete in global markets. The economic rents generated through monopolistic control of the Chinese market can also be used to finance this global expansion. Song (2018)[8] describes this strategy:

> *"The government has used a variety of industrial policy measures to allocate resources, especially financial resources to SOEs in the strategic and pillar industries. The most common action is the use of administrative, technical or regulatory entry barriers. SOEs were also provided with preferential access to loans or credits through the banking sector, which is dominated by the state-owned banks, and better access to land. These measures, in the context of marketisation, created substantial economic rents, which were accrued primarily to SOEs and provided them with a significant amount of earnings and savings with which to expand."*

Fig. 3. Distribution of Chinese industrial SOEs by industry, 2020[9]



Source: Chinese Statistical Yearbook 2021, Oxford Economics

The scale of Chinese SOEs is vast, and it should be understood that these SOEs include far more than just the national champions described above. According to SASAC, in 2020, Chinese SOEs took in $4.4 trillion in revenues and generated more than $200 billion in profits.[10] The Chinese Statistical Yearbook, published by

7 See Naughton, Barry (2018). "State enterprise reform today." In *China's 40 Years of Reform and Development: 1978–2018*. Australia National University Press.
8 Ligang Song, "State-owned enterprise reform in China: Past, present, and prospects," *China's 40 Years of Reform and Development: 1978–2018*. Australia National University Press, 2018.
9 See http://www.stats.gov.cn/tjsj/ndsj/2021/indexeh.htm table 13-4 and analogous tables in previous years.
10 See http://en.sasac.gov.cn/2021/01/21/c_8544.htm. SASAC reports revenues of ¥30.3 trillion or $4.67 trillion, implying an exchange rate of 6.5 Chinese yuan to the US dollar. We use SASAC's reported yuan value, and, as elsewhere in this report, rely on a market exchange rate from Refinitiv\Haver Analytics, which in 2020 was approximately 6.9 Chinese yuan to the US dollar.

the National Bureau of Statistics of China, reports $4.1 trillion of revenue among "industrial" SOEs, and breaks out these revenues and other characteristics by industrial sector (Fig. 3).[11] Railroad rolling stock manufacturing is grouped with ship and aerospace manufacturing for reporting purposes; together, they represented only about 3% of the total revenue ($116 billion) and 5% of the total employment (652,000 workers) of Chinese industrial SOEs in 2020.

2.2.1 Chinese government subsidies

The scale of Chinese government support to key firms in strategic industries (many, but not all of which, are SOEs) is vast, though hard to quantify. A recent attempt by DiPippo et. al. to estimate the scale of Chinese industrial policy spending estimates the total value of this government support at $248 billion in 2019, or approximately 1.7% of Chinese GDP.[12] They identify and quantify nine types of subsidies. In decreasing order of size, these are:

- Below-market credit;
- Other [than R&D] tax incentives;
- Direct subsidies;
- Below-market land sales;
- State investment funds;
- R&D tax incentives;
- Government support for R&D;
- SOE net payables; and
- Debt-equity swaps.

Only $63 billion of this $248 billion (25%) is represented by direct subsidies, of which $44 billion went to SOEs.[13] Given the SASAC figures reported above, this would imply that direct government support represents approximately 1% of SOEs' collective revenue, and approximately 22% of their profits.

2.3 CRRC IN THE CONTEXT OF CHINESE SOE REFORM

The modern shape and size of CRRC has its origins in the recent history of Chinese SOE reform. Since the start of the Chinese economic reform in 1978, SOEs in China have gone through four distinct phases of reform, as described in Fig. 4, which is based on an article by Song.[14]

11 Taking these two sources together (both of which were converted from yuan using the same exchange rate—see previous footnote) would therefore imply that "industrial" SOEs represent about 93% of all SOEs by revenue.

12 Gerard DiPippo, Ilaria Mazzocco, and Scott Kennedy, "Red Ink: Estimating Chinese Industrial Policy Spending in Comparative Perspective," May 2022. Center for Strategic & International Studies.

13 DiPippo et. al. do not attempt to estimate direct subsidies to private unlisted (on a stock exchange) firms, while they do impute direct subsidies for unlisted SOEs, so direct subsidies to private (non-SOE) firms are underestimated. While the $63 billion in direct subsidies are estimated from public filings by listed firms, some of this value is then reallocated to the R&D support and tax incentive categories.

14 Ligang Song, "State-owned enterprise reform in China: Past, present, and prospects." In *China's 40 Years of Reform and Development: 1978–2018*. Australia National University Press, 2018. A similar but less detailed overview is presented in Karen Lin, Xiaoyan Lu Jingrong, Zhang Junsheng, and Zheng Ying, "State-owned enterprises in China: A review of 40 years of research and practice." *China Journal of Accounting Research* 13(1): 31-55, 2020.

Fig. 4. History of SOE reform in China

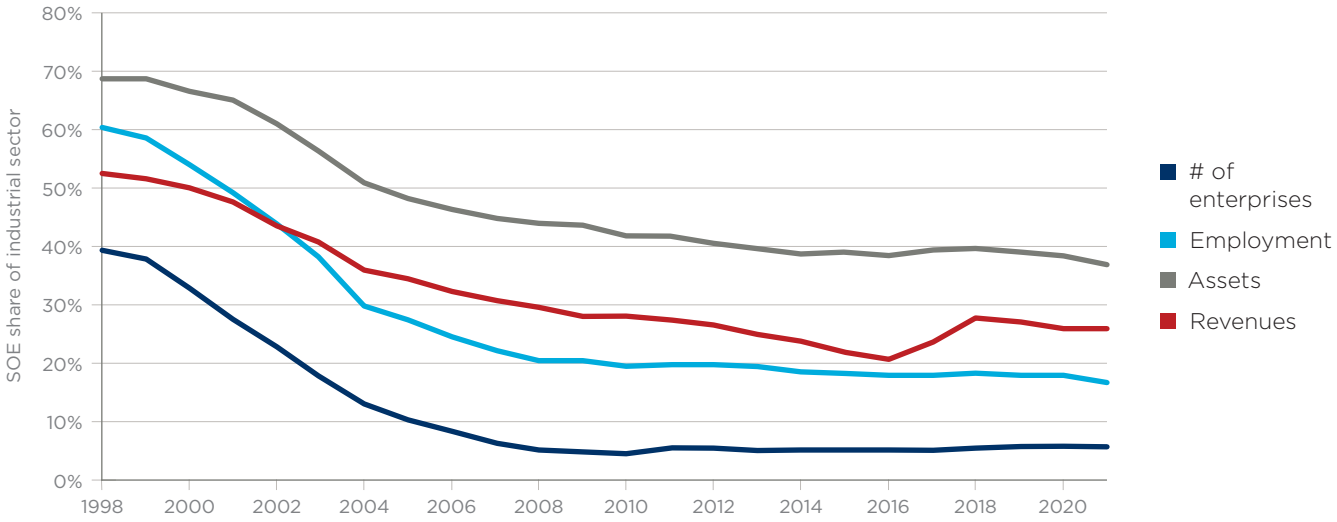
Dates	Reforms	Impact
1978–1992	Initial opening up of the Chinese economy, previously almost entirely state-controlled, to private competition. SOEs are subject to market forces and price signals for the first time, but there is no large-scale privatization of SOEs.	While there is some evidence of increasing SOE productivity over this period, government losses mount. Huang (1999) estimates total government subsidies to SOEs increased from 1.4% of Gross National Product in 1978 to 10.0% in 1992.[15]
1992–2003	In order to stem losses, the government steps up privatization efforts, adopting a policy of "grasping the large, letting go of the small." Legal reforms like the Company Law of 1993 move SOEs toward a Western corporate structure, with minority shares sold on newly opened stock exchanges, and corporate boards appointed.	SOE share of the Chinese economy employment declines considerably. Government (and state bank) losses on SOEs decline, but SOEs' performance still lags that of private enterprises and SOEs continue to be a fiscal drag on the Chinese government.
2003–2013	SASAC founded in 2003 to provide cross-sector oversight of SOEs and improve profitability. Continued divestment from smaller, less strategic SOEs, with remaining SOEs expanding to dominate their industries. Under the "go global" policy, SOEs are encouraged to pursue foreign mergers and acquisitions and to compete in foreign markets.	SOE performance improves considerably. But China's use of SOEs to provide economic stimulus after the 2008 global financial crisis is seen to have distracted from ongoing reform.
2013–present	A new initiative to revitalize SOE reform is adopted at the 18th National Congress in 2013. SOEs are categorized, first into public service SOEs (primarily local utilities) vs. commercial firms. Commercial firms are further divided between those operating in purely competitive sectors and those in less than fully competitive sectors.	In fully-competitive sectors, firms are encouraged to seek outside investors, even allowing the government to become a minority owner. Less-than-fully competitive firms asked to "better serve important national strategies and macroeconomic control."

Early SOE reform resulted in massive fiscal losses for the Chinese government. By the mid-1990s, the government had adopted a policy of "grasping the large, letting go of the small," targeting the largest and most strategically important SOEs for greater government oversight, and divesting from the rest. The result was that SOEs' share of the economy declined considerably; for example, the share of industrial employment accounted for by SOEs fell from 60% in 1998 to 38% in 2003 to 20% in 2010 (Fig. 5). Remaining SOEs were encouraged to expand to dominate their industries, and to "go global," in part through foreign mergers and acquisitions (M&A).

This history of China's SOE reform can be seen in the Chinese railroad rolling stock industry. CRRC was founded in 2015 through the merger of two existing SOEs, China South Locomotive & Rolling Stock Corporation Co. (CSR) and China North Locomotive & Rolling Stock Corporation Co. (CNR), then the world's first and second largest rail manufacturers respectively. This merger reflects the ethos of the post-2013 era of SOE reform described above, in particular the formation of national champions to compete on the global stage.

15 Yanghua Huang, "State-owned enterprise reform," in R. Garnaut and L. Song (eds), *China: Twenty years of reform*, Canberra: Asia Pacific Press, 1999.

Fig. 5. SOE share of industrial sector, 1998–2021[16]



Source: CEIC, Oxford Economics

In fact, as Song describes,[17] the experience of CSR and CNR may have helped to inform this SASAC policy in the first place, after the two companies found themselves competing with one another for international contracts, including in Turkey in 2011. In 2013, both firms submitted bids for a high-speed rail (HSR) contract in Argentina, with CSR submitting a quote far below that of CNR and below manufacturing costs, leading the Argentinians to distrust the quality of Chinese HSR trains.

CRRC has also followed the SASAC playbook in engaging in foreign M&As to expand and to acquire foreign intellectual property. Cory (2021) identifies eight foreign M&As since 2008 by CRRC or by Chinese SOEs that are now part of CRRC.[18]

The existence of CSR and CNR in the first place reflects an earlier era of Chinese SOE reform. Previously a single company, the China National Railway Locomotive & Rolling Stock Industry Corporation (CRRSC),[19] the two firms were separated in 2002, during a period when Chinese SOE reform focused to a greater degree on improved profitability and corporate governance. Encouraging competition between the companies was intended to spur greater efficiency at both firms.

16 See footnote 11 for notes on the definition of the "industrial sector."
17 Song (2018) p. 363.
18 Nigel Cory, "Heading Off Track: The Impact of China's Mercantilist Policies on Global High-Speed Rail Innovation." Information Technology & Innovation Foundation. P. 71-72, 2021.
19 CRRSC itself was a product of the earliest wave of SOE reforms, spun off in 1986 from General Bureau of Railway Manufacturing of the Ministry of Railways. See Yanghua Huang, "The Multiple Roles of State-Owned Enterprises in China's Innovation System: A Case Study of High-Speed Railways," *The China Review* 22(1): 77-105. P. 90-91, 2022.

3. CRRC'S ROLE IN A GLOBAL MARKET

As discussed in the previous chapter, CRRC is the "national champion" SOE in China's railroad rolling stock industry. Additionally, CRRC plays a significant role in the global railroad rolling stock market. As an SOE, however, CRRC operates with both different objectives and different constraints than the privately owned companies that it competes against.

To understand the role CRRC plays in this global market, it is useful to first explore the size and characteristics of that market itself, which we do in section 3.1. Following this, we review CRRC's key financial information from its annual reports (3.2), documenting the explicit subsidies the company receives from the Chinese government (3.3). Section 3.4 then considers the evidence for the Chinese government's non-financial strategic interests in CRRC. Finally, section 3.5 reviews data on CRRC's foreign sales, particularly in North America.

3.1 THE GLOBAL RAILROAD ROLLING STOCK INDUSTRY

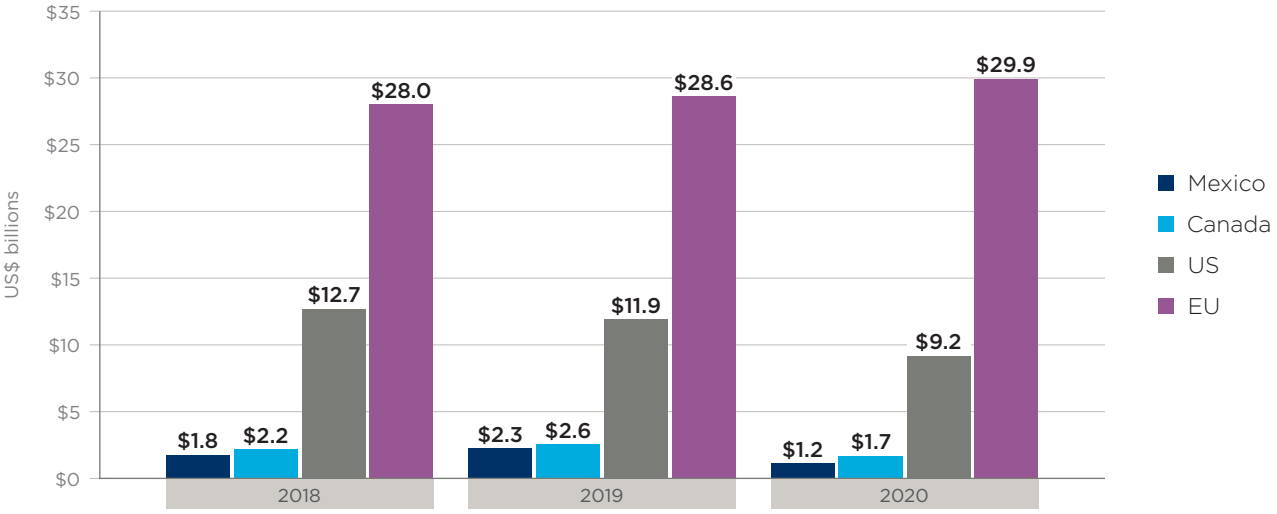
The railroad rolling stock industry manufactures the vehicles that travel on the world's railways. In addition to the production of final locomotive, passenger, and freight railcars, however, the industry (as defined by government statistical agencies) also includes the production of differentiated rail parts (e.g., wheel or door systems), as well as major servicing or rebuilds of existing rolling stock. UNIFE, the Association of the European Rail Supply Industry, estimates the market volume of the rolling stock industry at approximately **$71 billion in annual production** averaged over 2017–2019.[20]

According to national statistical data, in 2020 sales by the North American railroad rolling manufacturers totaled $12.1 billion, and those by EU-based manufacturers totaled $29.9 billion (Fig. 6). As the Chinese government does not publish output figures for the railroad rolling stock industry, the best indicator of Chinese railroad rolling stock output is likely provided by the revenue (from rail products) figures of CRRC itself, suggesting a value of roughly $20 billion (see Fig. 9 and surrounding discussion below).[21]

20 UNIFE "World Rail Market Study," April 2021. It is important to bear in mind that different measures of industry output may result in different totals. For example, rail parts sold from one manufacturer to another are classified as rolling stock output, but the value of those parts will also be incorporated into the cost of the final railcar when it is sold, potentially resulting in double-counting. In addition, the corporate revenue of railroad rolling stock manufacturers may include significant revenue from other sources.

21 While CRRC is the monopoly producer of railcars in China, there are still some minor manufacturers of rail parts whose output should be included if the intent is mimic the national statistics shown in Fig. 5, suggesting a higher value. On the other hand, CRRC revenue includes CRRC production outside of China, which should be excluded under this standard (see section 3.4 for more on foreign sales). Overall, the $20 billion figure, which reflects CRRC's revenue from railway equipment and urban rail transit vehicles and urban infrastructure, is likely reasonably accurate.

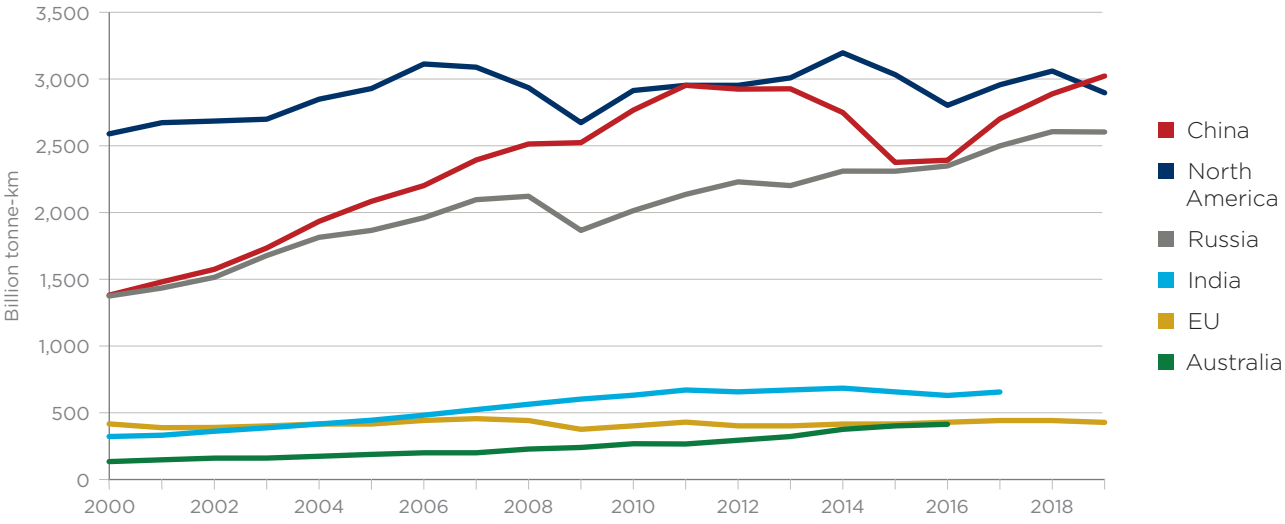
Fig. 6. Railroad rolling stock industry sales for North America and EU, 2018–2020



Source: National statistical agencies, Oxford Economics

Statistics on the North American and Chinese *rail transport systems* themselves help provide additional context for their rolling stock manufacturing industries. Both China and North America are global leaders in *freight* rail transport, rivaled only by Russia (Fig. 7). In *passenger* rail transport, however, China is by far the global leader, rivaled only by India; while North America has only a small passenger rail system (Fig. 8). Thus, while no good government statistics break out the production of freight from passenger rolling stock (or locomotives, parts, or rebuilds), the strength of the North American industry lies largely in its freight rail manufacturing, while China has both a strong freight and passenger rolling stock manufacturing industry, centralized under its state-owned monopoly producer, CRRC.

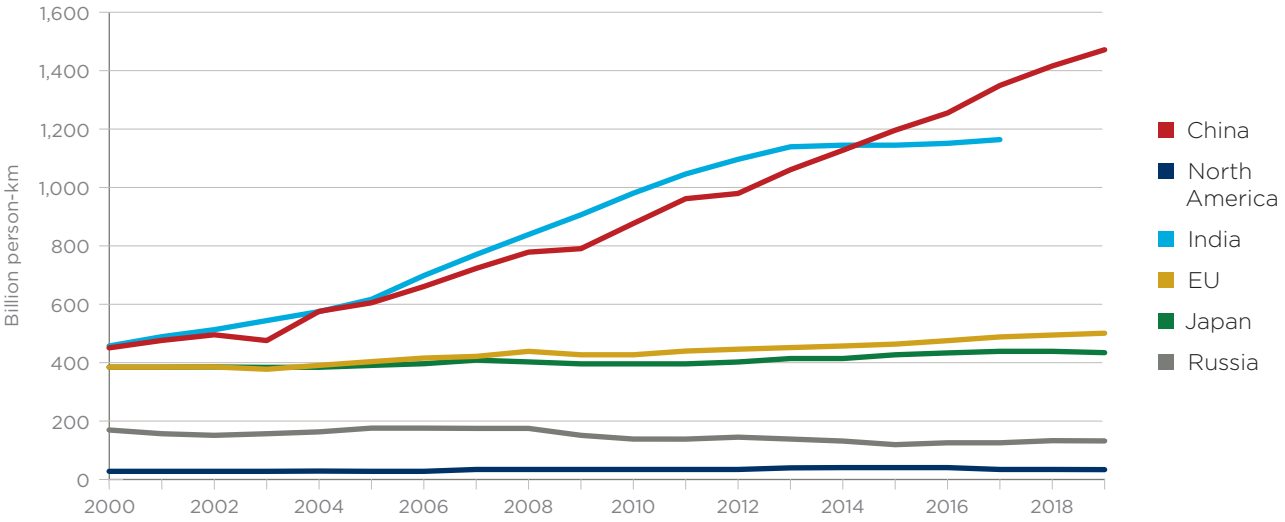
Fig. 7. Total rail freight volume of top countries/regions, 2005–2019[22]



Source: OECD, Oxford Economics

22 North America in this and following figure comprises the US, Mexico, and Canada. The EU is the EU28 (including the UK).

Fig. 8. Total rail passenger volume of top countries/regions, 2000–2019



Source: OECD, Oxford Economics

Indeed, since the sale of Bombardier's rail division to Alstom in 2021, there is not a single major North American-owned passenger railcar manufacturer. The major North American railcar and parts manufacturers, Wabtec, Trinity, Greenbrier, National Steel Car, and Amsted Rail, all focus primarily on freight or locomotive manufacturing. This of course does not mean that no passenger railcars are manufactured in North America, only that this manufacturing is done by foreign-owned manufacturers. In the United States, for example, the Buy America Act of 1978,[23] requires that all railcar purchases involving federal funds (which includes many local transit projects) must be assembled in the United States and meet domestic content requirements. The Transportation Infrastructure Vehicle Security Act (TIVSA), passed in 2019, places additional restrictions on federal funds being used to purchase railcars produced from foreign SOEs.

23 See Congressional Research Service, "Effects of Buy America on Transportation Infrastructure and U.S. Manufacturing," CRS report R44266, updated July 2019.

THE ORIGINS OF CHINA'S HIGH-SPEED RAIL TRAINS

In 2000, the Chinese Ministry of Rail (MOR) launched a plan to develop a domestically designed high-speed rail (HSR) trainset to meet the demand for faster passenger rail travel in China. Dubbed the China Star, the prototype took two years to build, and achieved a world record speed of 321.5 km/hour shortly after completion. Quickly though, "dozens" of serious quality flaws were discovered in many key components. Fewer than 30 trains of the China Star line were ultimately produced; the project was a flop.[24]

Following the failure of the China Star, in 2004, the MOR proposed, and the central government approved, a new plan for Chinese HSR. Under this plan, the MOR adopted a strategy of "exchange market for technology," under which it solicited bids for joint ventures with foreign partners to build the next generation of Chinese high-speed trains. Ultimately, Chinese SOEs signed deals with four of the world's most sophisticated passenger rail manufacturers[25] to build 280 high-speed train sets in China.

According to Cory (2021),[26] Chinese HSR manufacturers followed a "mercantilist playbook" that China has used in the case of much foreign technology. This playbook consists of the following four steps:

- "Identify a technology/industry as a key national goal.
- "Use access to the giant and monopolistic Chinese market as a weapon to force foreign companies to engage in joint ventures and compel the transfer of foreign technology to Chinese firms.
- "Use a variety of means, including direct subsidies, low-interest loans, tax breaks, forced mergers, foreign acquisitions, discriminatory public procurement, and other incentives to accelerate Chinese firms' technological and competitive capabilities.
- "Once Chinese firms have mastered foreign technology and gained domestic market dominance, finance 'going out' (i.e., exporting to foreign markets) on the basis of protected and subsidized domestic market and massive export subsidies."[27]

Cory relates the experience of Japan's Kawasaki Heavy Industries in its Chinese joint venture. Initially, Kawasaki provided a small number of trainsets produced in Japan as models, helped outfit factories and develop local supply chains, and trained Chinese engineers, including taking dozens of them to Japan to tour Kawasaki's existing factories. According to a Kawasaki senior executive, "each time Kawasaki signed a deal [to provide additional technology], it earned several million dollars in fees," but after a few short years, the company had been cut out of its joint venture.

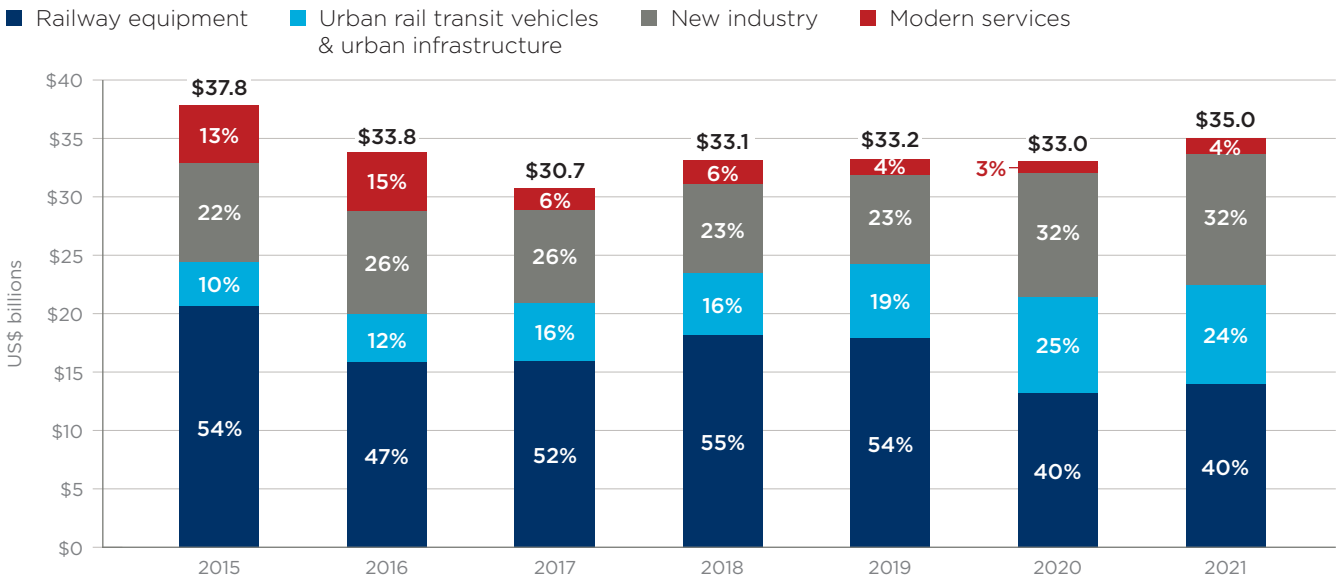
Publicly, most Chinese officials claim that Chinese rail manufacturers "digested" the foreign rail technology within the first few years of the joint venture, and that China's current HSR trains, the fastest in the world, represent an autonomous design. Numerous rail experts disagree, however, and see the Chinese trains as little more than a knock-off of the Kawasaki design. Cory cites a 2011 "candid interview" with former deputy director of the MOR's high-speed department Zhou Yimin in which he acknowledged that the technology behind China's high-speed trains was foreign, and said that the Chinese trains were able to go faster simply "by eating into the safety tolerances" of the originals.

24 Yanghua Huang, "The Multiple Roles of State-Owned Enterprises in China's Innovation System: A Case Study of High-Speed Railways," *The China Review* 22(1): 77-105, February 2022.
25 Japan's Kawasaki (120 Electric Multiple Unit trainsets—EMUs), Germany's Siemens (60 EMUs), France's Alstom (60 EMUs), and Canada's Bombardier (40 EMUs). See Huang (2022) p. 97.
26 Cory (2021) Appendix 1.
27 Cory (2021) p. 18.

3.2 CRRC FINANCIAL PERFORMANCE

Since its inception in 2015, CRRC has consistently taken in $30–38 billion in revenue annually (Fig. 9). Not all of CRRC's revenue is from the sale of railway equipment, however; roughly 64% of CRRC's 2021 revenue came from railway equipment and urban rail transit vehicles and urban infrastructure. The remainder came mainly from "new industry" projects (32% of the total) in industries such as "wind power equipment, … industrial digital, heavy machinery, ship electric drives and marine engineering equipment."[28] The final 4% came from "modern services," such as financial and logistics services.

Fig. 9. CRRC revenue by business segment, 2015–2021[29]

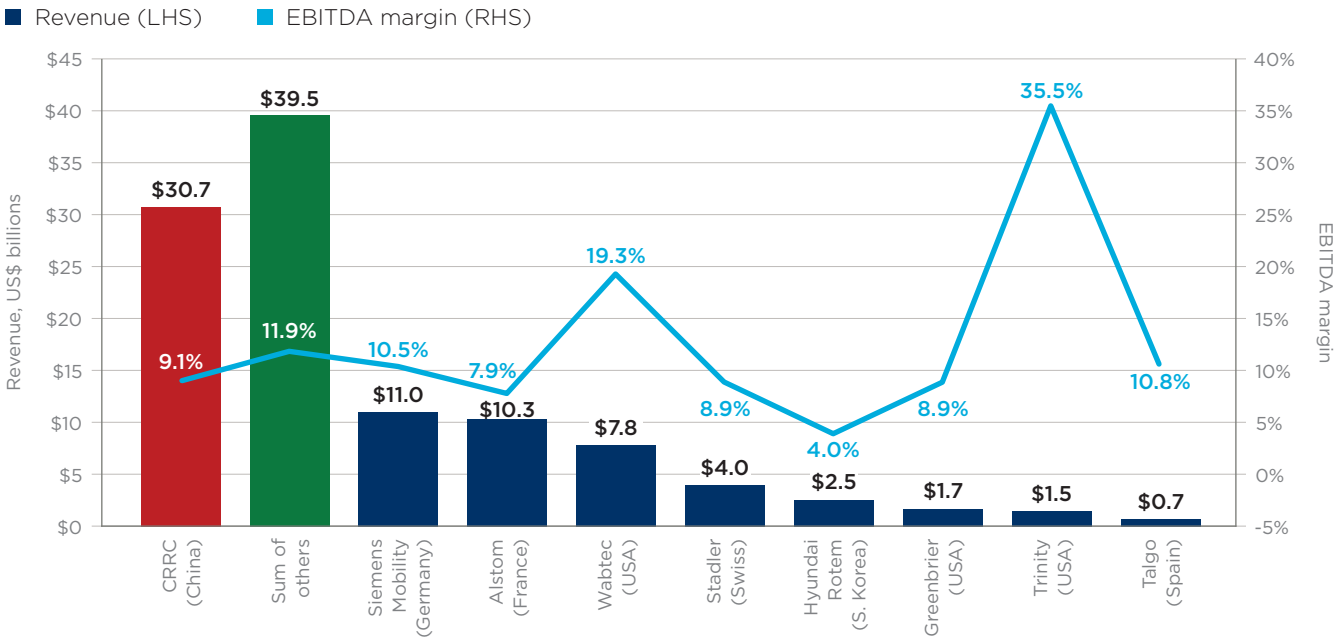


Source: Bloomberg, CRRC annual reports, Oxford Economics

In 2021, CRRC had earnings before interest deductions taxes and amortization (EBITDA)[30] of $3.2 billion, or 9.1% of its $35.0 billion of revenue. As Fig. 10 shows, CRRC's EBITDA margin (a measure of profitability) was nearly three percentage points lower in 2021 than the average of its major competitors for which public financial data were available, and lower than that of Trinity, Wabtec, Siemens Mobility, and Talgo.

28 CRRC, 2020 annual report p. 12-13.
29 Throughout this chapter, we use exchange rates from Bloomberg to convert currencies.
30 EBITDA is a standard measure used to evaluate a firm's profitability, stripping out factors that can affect other measures of profit, and providing a more comparable measure to compare different firms operating in different institutional environments. For this section, unadjusted EBITDA consistent with Generally Accepted Accounting Principles (GAAP) was sourced from Bloomberg. In the case of CRRC, this differs slightly from the EBITDA value reported in the company's annual report. In 2020, Bloomberg reports a GAAP value of 22,801.0, whereas CRRC reported EBITDA of 24.502 billion yuan, 7% higher.

Fig. 10. Revenue and EBITDA margin of major publicly traded railroad rolling stock manufacturers, FY2021[31]



Source: Bloomberg, company annual reports, Oxford Economics

Thus, despite the explicit and implicit government subsidies CRRC receives (see section 3.3 immediately below), and its status as the monopoly supplier of railcars in the domestic Chinese market, CRRC is not particularly profitable compared to its foreign competitors. This is likely due to a number of factors that are intrinsic to the way in which CRRC operates as an SOE within the Chinese economic system.

As discussed in chapter 2, the Chinese government has achieved significant success in recent years at improving the financial performance of its SOEs. Nevertheless, the absence of market forces to discipline SOE managers inherently tends to hamper SOE profitability. Additionally, CRRC, like other SOEs, needs to meet constraints imposed by non-financial governmental objectives, which will incur costs in terms of diverted resources and lost opportunities.

These non-commercial objectives may include, for example, political pressures to maintain high levels of employment and compensation for current and former workers. As with other Chinese national champion SOEs, these objectives also include an imperative to expand globally and penetrate foreign markets. In CRRC's case, this imperative is bolstered by the geopolitical aim of the Chinese government to dominate global rail networks, which is discussed in section 3.4. This objective may be leading CRRC to underbid on its foreign rail projects, earning little to no profit—or even losing money—on these sales, and hampering its overall profitability. Evidence for this in the North American context is presented in section 3.5.1.

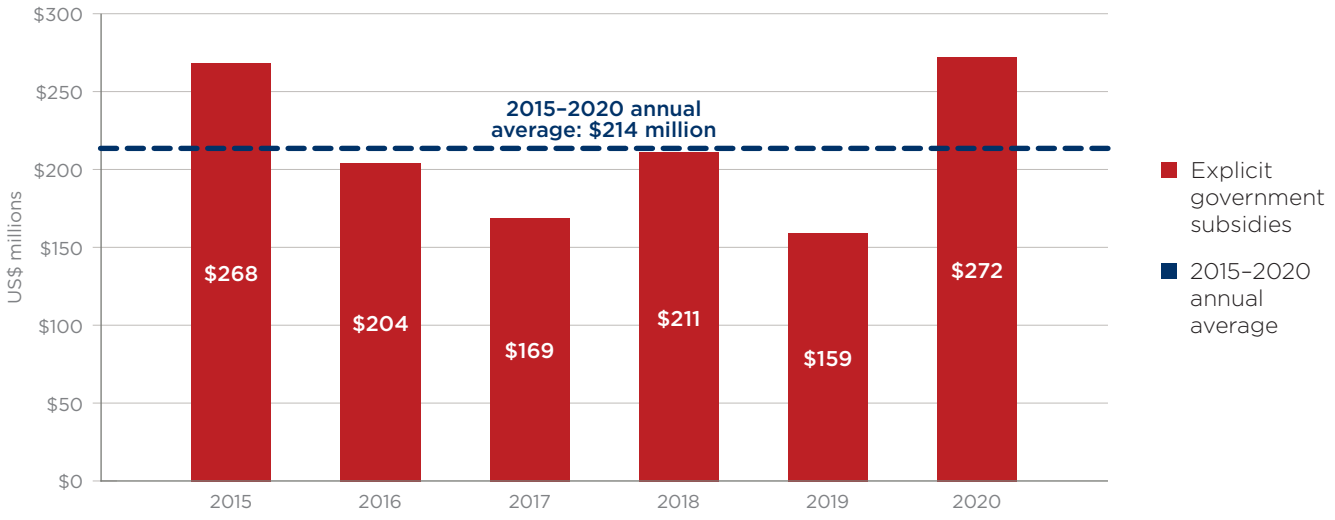
31 This selection of companies is not perfectly comparable or exhaustive of global manufacturers. Amsted was excluded because it is privately held and does not report these measures; Progress Rail (a subsidiary of Caterpillar), and Kawasaki were excluded because it was not possible to obtain data specific to their rail manufacturing operations. Fiscal year definitions vary between companies.

3.3 CRRC BENEFITS FROM GOVERNMENT SUBSIDIES

As described in chapter 2, the Chinese government has a variety of tools that it routinely uses to subsidize its national champion SOEs. Because CRRC is an SOE selling, in many cases, either to other SOEs or to government agencies (for example. to a local subway system) the prices it charges for its products reflect negotiations between related parties rather than market forces. Since the Chinese railcar market is effectively closed to foreign competition, and CRRC is the monopoly domestic supplier, it faces no real competition in its domestic market, which constitutes more than 90% of its revenue (see Fig. 12 below). Implicit government subsidies can also be made on the inputs side, through below-market rate credit, below-market land sales, and potentially through cheap material inputs purchased from other SOEs. Ultimately, there is no way to fully capture the implicit subsidies CRRC receives.

In addition to these implicit subsidies, in its annual reports, CRRC discloses explicit government subsides it receives. In 2020, these subsidies totaled $272 million, or 8% of its 2020 EBITDA of $3.3 billion. Between 2015 and 2020, CRRC received an average of $214 million of government subsidies annually, or nearly $1.3 billion in total over these six years.

Fig. 11. CRRC explicit government subsidies, 2015–2020



Source: Bloomberg, CRRC annual reports, Oxford Economics

3.4 NON-FINANCIAL OBJECTIVES OF THE CHINESE GOVERNMENT

As section 2.2 describes, the Chinese government targets its selection of national champion SOEs deliberately, focusing on industries where it holds key strategic aims. To be sure, as discussed in section 2.3, improved profitability has also been a major focus of SOE reform over the last four decades, and especially over the past two. However, the significance of domestic and foreign rail projects (which extend beyond rolling stock to investment in fixed infrastructure), especially passenger

HSR, as a source of national pride for China has resulted in CRRC receiving greater attention from government leaders than its financial scale among Chinese SOEs (see Fig. 3) would otherwise merit.

In a document prepared for the U.S.-China Economic and Security Review Commission,[32] Ker (2017) discusses the special significance of "HSR diplomacy" for China.[33] As Ker explains, "around 2011, after successfully developing HSR domestically, Beijing began a drive to win deals for HSR projects abroad. International observers and eventually Beijing itself dubbed this drive 'HSR diplomacy.'" Chinese rail firms' overseas push benefits from strong political support: Chinese leaders, notably Premier Li Keqiang, actively promote China's HSR industry during overseas trips, and Chinese-led multilateral initiatives like One Belt One Road provide the industry with further support.

The One Belt One Road Initiative, now referred to as the Belt and Road Initiative (BRI), is a plan announced by Chinese President Xi Jinping during an official visit to Kazakhstan in 2013 for Chinese dominance of global transportation networks on land and at sea. The "belt" refers to a new overland rail and road route through central Asia, while the "road" references a "maritime silk road" trading route. The BRI has been described as a centerpiece of President Xi's foreign policy.

Radarlock (2018)[34] also considers the question of the political objectives the Chinese government seeks to achieve through state ownership of CRRC, concluding that "through transportation networks, Beijing seeks to control resources as the move over land; to claim the infrastructure for the future, [the] 'smart' transportation system of the Internet of Things era; and to establish corresponding information dominance."

Adams (2018) discusses potential US national security concerns related to Chinese dominance of western rail networks.[35]

3.5 CRRC'S RAIL SALES OUTSIDE OF MAINLAND CHINA

The preceding sections have made the case that CRRC is strongly incentivized, both by the long-run profits obtainable through securing a greater share of the global rolling stock market, as well as by the geopolitical interests of its majority owner, to expand vastly expand its foreign sales. CRRC's reported revenue from foreign sales has remained consistently between $2.5 billion and $3.1 billion since 2016 (Fig. 12). These foreign sales include both exports of finished CRRC railcars and rail parts from China, as well as sales by CRRC-owned subsidiaries undertaking railcar manufacturing outside of China.[36]

32 The U.S.-China Economic and Security Review Commission was created by the United States Congress in October 2000 with the legislative mandate to monitor, investigate, and submit to Congress an annual report on the national security implications of the bilateral trade and economic relationship between the United States and the People's Republic of China.

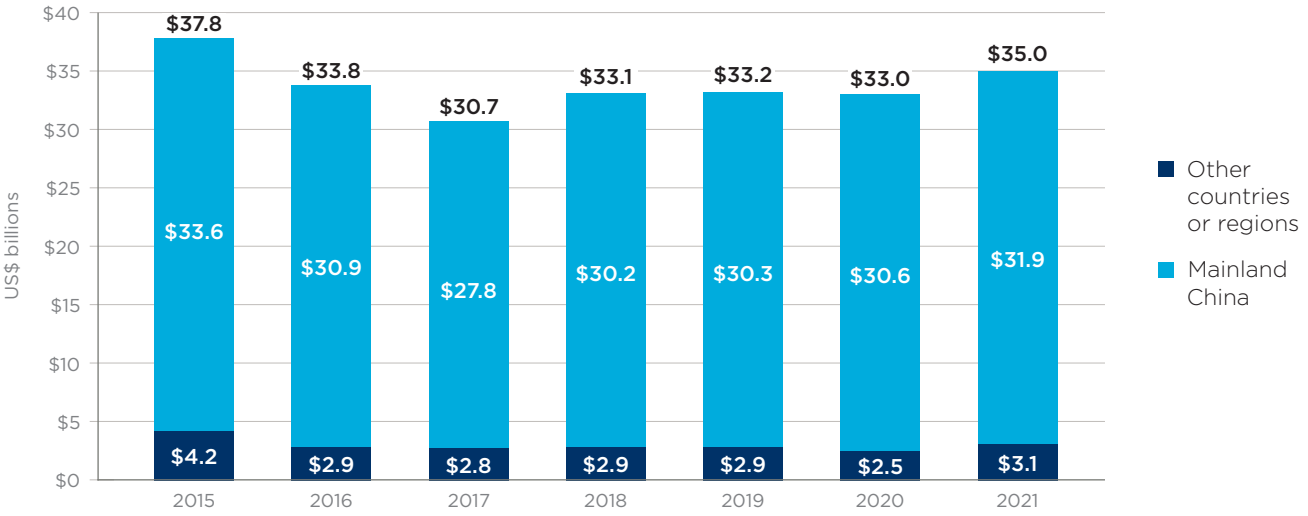
33 Michelle Ker, "China's High-Speed Rail Diplomacy," U.S.-China Economic and Security Review Commission Staff Research Report, February 2017.

34 Radarlock, "CRRC and Beijing's dash for global rolling stock dominance," October 2019.

35 John Adams, "National Security Vulnerabilities of the U.S. Freight Rail Infrastructure and Manufacturing Sector—Threats and Mitigation," October 22, 2018.

36 Production in the country of sale is required by many countries, for example the requirements of the Buy America Act in the United States.

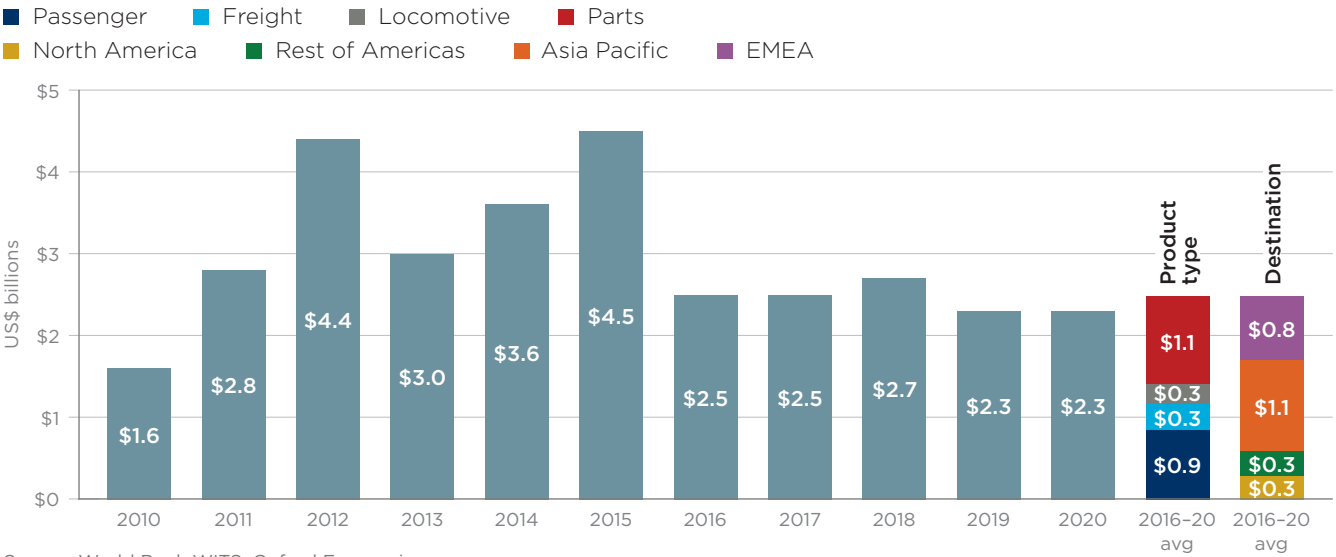
Fig. 12. CRRC revenue from China, other countries, 2015–2020



Source: CRRC annual reports, Bloomberg, Oxford Economics

This pattern is largely corroborated by global trade data on Chinese rail product exports, which have averaged $2.5 billion per year (Fig. 13). The largest share of these exports ($1.1 billion annually on average between 2016–2020) were rail parts, some of which may have been used in local assembly at CRRC foreign ventures, as well as for production by other manufacturers and for railcar maintenance. The next largest share was passenger railcars ($0.9 billion), with exports of freight railcars averaging only $0.3 billion annually. Geographically, the largest share of exports has gone to the Asia-Pacific region ($1.1 billion annually), followed by Europe and central Asia ($0.8 billion). Exports to North American have averaged $0.3 billion annually over this period.

Fig. 13. Chinese rail product exports, 2010–2020[37]



Source: World Bank WITS, Oxford Economics

37 Based on World Bank WITS data classified by Harmonized System (HS) codes. Shown here are HS 86 products, excluding 8609, intermodal containers.

3.5.1 CRRC's sales in North America

Between 2015 and 2020, CRRC won seven passenger rail projects in North America worth more than $4.3 billion (Fig. 14). This represents nearly a quarter of CRRC's $18.1 billion in reported foreign revenue over this period (Fig. 12). However, it is worth noting that these two figures are not entirely commensurate, as project wins reflect future revenue, much of which will not have been realized over the period in question.

In its wins in North America, CRRC has frequently undercut its nearest competitor by significant margins. In fact, for the six projects for which we have information, CRRC's winning bid was on average (weighted by the size of the project) 21% lower than the second-place bid. This has led to industry speculation that CRRC is actually losing money on these projects in order to establish itself in foreign markets and facilitate future sales. Indeed, CRRC has described the facilities it is building for its 2020 Mexico City bid—a project for which it underbid its nearest rival by 30%—as a base to supply rail projects throughout Latin America.[38] CRRC's status as an SOE with a large captive domestic market helps to make such a loss-leading strategy feasible. This outlook is also consistent with SASAC's general strategy towards national champion SOEs described in section 2.2, as well as with the specific goals of the BRI discussed in section 3.4.

Fig. 14. Summary of CRRC winning bids for North American passenger railcar projects[39]

Buyer	Location	Year won	Winning bid (US$ mil)	2nd-place bid (US$ mil)	Difference (% of 2nd-place bid)	Number of cars ordered
MBTA	Boston	2015	$567	$721	21%	284
CTA	Chicago	2016	$1,309	$1,536	15%	846
SEPTA	Philadelphia	2017	$138	$172	20%	45
LA Metro	Los Angeles	2017	$647	$683	5%	282
RTM	Montreal	2017				44
Nuevo Léon Metro	Monterrey, Mexico	2019	$60	$73	18%	26
Mexico City Metro	Mexico City	2020	$1,600	$2,300	30%	
Total			**$4,321**	**$5,485**	**21%**	**1,527**

Source: News reports and industry interviews, collated by Oxford Economics

38 International Railway Journal, "CRRC plans Mexican rolling stock plant," May 20, 2021.

39 This table is adapted and expanded from Figure 1 in Oxford Economics' previous report on this topic: Oxford Economics (June 2019). "Assessing how foreign state-owned enterprises U.S.-based operations disrupt U.S. Jobs." For a summary of CRRC sales in Europe between 2015 and 2109, see UNIFE, "A Call for Urgent Action: The Fast Expansion of China's State-Owned Rail Suppliers," November 2019.

4. CONCLUSION

CRRC is a near perfect example of the sort of outward-looking national champion SOE envisioned by the current iteration of Chinese SOE reform. Additionally, CRRC's status as the monopoly Chinese producer of railcars gives it a special role in the BRI, China's plan to connect Eurasia in a modern version of the Silk Road.

CRRC received explicit government subsidies of $271 million in 2020, and almost $1.3 billion between 2013–2020; but like other Chinese SOEs, is likely the recipient of larger implicit subsidies on both its outputs, a large share of which are sold to government entities, and its inputs, including financing. Framed another way, CRRC is the monopoly seller of railcars in China, providing a large captive market from which it can extract economic rents to subsidize sales abroad.

Between 2016 and 2021, CRRC's foreign sales were between $2.5 and $3.1 billion annually. However, these totals do not reflect orders won but not yet delivered. Rail projects inherently have long lead times, especially in the case of HSR, where track improvements are typically necessary before compatible rolling stock can be deployed. Revenue figures reflect payments received, and so may lag international sales efforts.

CRRC's penetration of foreign markets likely would have been greater were foreign markets not highly regulated, with governments frequently being directly involved in purchasing decisions. While most rail markets are not as closed as China's, significant barriers exist to new foreign entrants. In the United States, for example, the 1978 Buy America Act, TIVSA (passed in the FY 2020 National Defense Authorization Act), and the SAFE TRAINS Act (passed as section 22425 of the Infrastructure Investment and Jobs Act in November 2021), all restrict foreign sales of railroad rolling stock. These and similar rules in other countries may therefore be playing a key role in forestalling further Chinese dominance of the global railroad rolling stock market.

However, the history of China's SOE reforms shows that the Chinese government selects its national champions with strategic goals in mind. Policymakers in other countries need to be aware that CRRC's majority owner, the Chinese state, expects to receive both financial and geopolitical benefits, and foster social stability through full employment from this arrangement, and may be willing to absorb upfront losses on foreign rail projects to bring this about.

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