

EXHIBIT 5



Shipping Fact

Shipping and World Trade: World Seaborne Trade

Overview

The international shipping industry is responsible for the carriage of around 90% of world trade.

Shipping is the life blood of the global economy. Without shipping, intercontinental trade, the bulk transport of raw materials, and the import/export of affordable food and manufactured goods would simply not be possible.

Seaborne trade continues to expand, bringing benefits for consumers across the world through competitive freight costs. Thanks to the growing efficiency of shipping as a mode of transport and increased economic liberalisation, the prospects for the industry's further growth continue to be strong.

There are over 50,000 merchant ships trading internationally, transporting every kind of cargo. The world fleet is registered in over 150 nations, and manned by over a million seafarers of virtually every nationality.

Ships are technically sophisticated, high value assets (larger hi-tech vessels can cost over US \$200 million to build), and the operation of merchant ships generates an estimated annual income of over half a trillion US Dollars in freight rates.

World Seaborne Trade

It is difficult to quantify the value of volume of world seaborne trade in monetary terms, as figures for trade estimates are traditionally in terms of tonnes or tonne-miles, and are therefore not comparable with monetary-based statistics for the value of the world economy.

However, the United Nations Conference on Trade and Development (UNCTAD) estimates that the operation of merchant ships contributes about

US\$380 billion in freight rates within the global economy, equivalent to about 5% of total world trade.

Shipping trade estimates are often calculated in tonne-miles, as a way of measuring the volume of trade (or “transportation work “, as it is sometimes referred).

Throughout the last century the shipping industry has seen a general trend of increases in total trade volume. Increasing industrialisation and the liberalisation of national economies have fuelled free trade and a growing demand for consumer products. Advances in technology have also made shipping an increasingly efficient and swift method of transportation. Over the last four decades total seaborne trade estimates have quadrupled, from just over 8 thousand billion tonne-miles in 1968 to over 32 thousand billion tonne-miles in 2008.

As with all industrial sectors, however, shipping can be susceptible to economic downturns. Indeed, following several years of incredibly buoyant shipping markets, for many trades the best in living memory, much of the international shipping industry has fallen prey to the worldwide economic downturn. Shipping is inherently the servant of the economy, so the contraction in trade, following the beginning of the ‘credit crunch’ in late 2008, has translated into a dramatic and abrupt reduction in demand for shipping.

Notwithstanding the current situation, the longer term outlook for the industry remains very good. The world’s population continues to expand, and emerging economies will continue to increase their requirements for the goods and raw materials that shipping transports so safely and efficiently. As the below graph illustrates, the volume of world trade carried by sea has again begun to steadily increase in recent years. In the longer term, the fact that shipping is the most fuel efficient and carbon friendly form of commercial transport should work in favour of an even greater proportion of world trade being carried by sea.

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On National Maritime Day and Every Day, U.S. Economy Relies on Waterborne Shipping

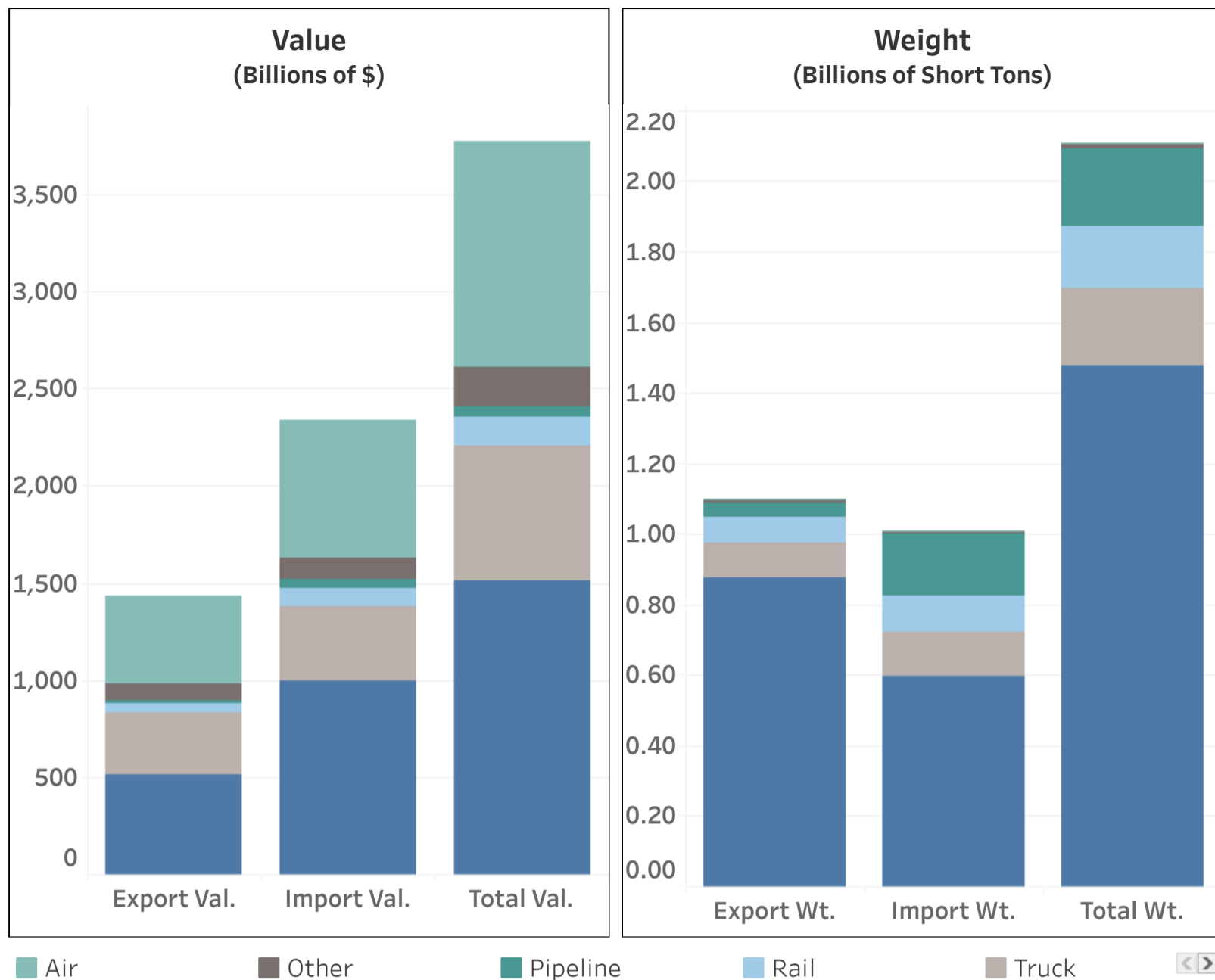
Wednesday, May 12, 2021

In 1933, Congress declared National Maritime Day to commemorate the first transatlantic crossing under steam propulsion. BTS honors Maritime Day by observing the importance of waterborne shipping in U.S. international trade and in Americans' everyday lives.

Maritime vessels account for 40% of U.S. international trade value, nearly 70% of trade weight, with trade of goods accounting for 18% of 2020 GDP.

In 2020, waterborne shipping carried more tonnage (nearly 1.5 billion short tons) and value (more than \$1.5 trillion) in U.S. trade than any other mode of transportation. As the chart below shows, maritime led in both imports and exports. Higher-value, light-weight cargo shipped in cargo containers accounts for most of U.S. imports, while lower-value, heavy cargo shipped in bulk contributes heavily to exports.

U.S. International Trade Carried in 2020 by Cargo Type



Notes:

1 short ton = 2,000 pounds.

Source:

Total, water and air data: BTS analysis of trade data from the U.S. Census Bureau. Truck, rail, pipeline, and other/unknown data: BTS [North American Transborder Freight Data](#).

Maritime industry cargo categories cover a wide range of products and commodities.

International maritime cargo includes containerized freight such as that which was recently in the news when the container ship [Ever Given got stuck in the Suez Canal](#). But, maritime cargo also includes dry bulk ships for grain and other commodities, tanker ships for energy products such as crude oil and petroleum products, roll-on/roll-off (Ro/Ro) ships for cars, trucks, construction vehicles, etc., and breakbulk ships for a variety of non-containerized products, such as rolls of paper or coils of steel, and commodities, such as bags of coffee beans (often loaded on pallets).

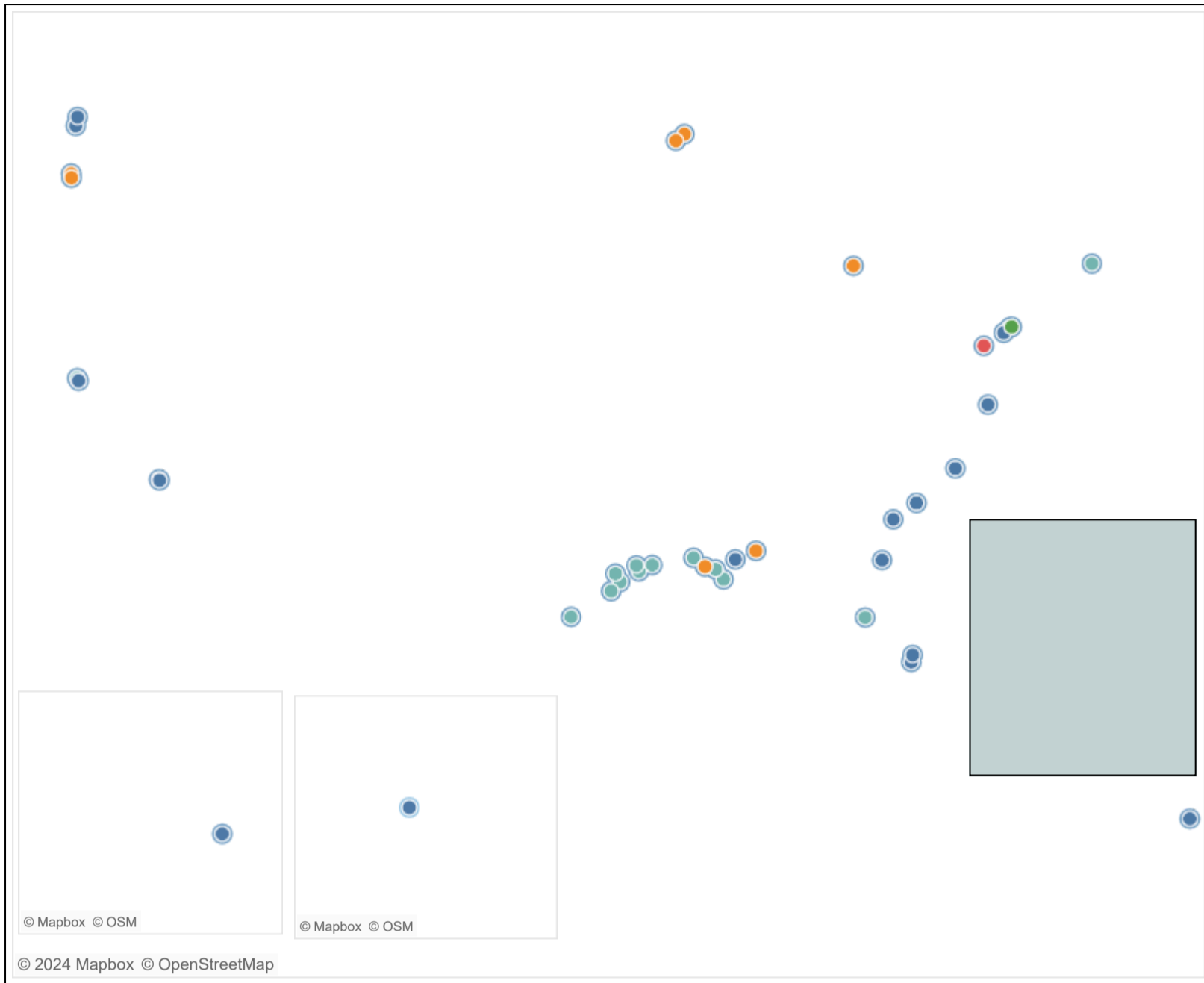
In 2020, U.S. ports saw more than 465,000 vessel calls, more than 10% of the global total.

Each port has its own arrangement of marine terminals serving different types of cargo. One terminal might be equipped with grain elevators to load and unload dry bulk commodities, such as coal and grains, while another uses cranes to load and unload containers, and another uses pipelines to load and unload liquid bulk cargo, such as natural gas and oil. When a ship arrives with goods to load or unload (vessel call), it uses a terminal suited for its designated cargo type.

The map below displays the percentage of vessel calls by cargo type for the top 40 U.S. ports. For example, the Port of Houston services vessels carrying all of the cargo categories discussed above, but tankers comprise about 2/3 of all vessel calls. The Port of Duluth handles dry bulk and breakbulk, but its Minnesota neighbor, the Port of Two Harbors, only handles dry bulk.

For more information on U.S. ports, please visit our [Port Performance](#) page.

Type of Port as Measured by Vessel Entrances & Ship Type: 2020



Source:

BTS analysis of AIS data provided by U.S. Army Engineer Research and Development Center.

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EXHIBIT 7

2021

The Middle Kingdom Returns to the Sea, While America Turns Its Back—How China Came to Dominate the Global Maritime Industry, and the Implications for the World

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THE MIDDLE KINGDOM RETURNS TO THE SEA, WHILE AMERICA TURNS ITS BACK

How China Came to Dominate the Global Maritime Industry, and the Implications for the World

Christopher J. McMahon

The condition of the American Merchant Marine is such as to call for immediate remedial action by the Congress. It is discreditable to us as a Nation that our merchant marine should be utterly insignificant in comparison to that of other nations we overtop in other forms of business. We should no longer submit to conditions under which only a trifling portion of our great commerce is carried in our own ships. To remedy this state of things would not merely serve to build up our shipping interests, but it would also result in benefit to all who are interested in the permanent establishment of a wide market for American products, and would provide an auxiliary force for the Navy.

PRESIDENT THEODORE ROOSEVELT,
ANNUAL MESSAGE TO CONGRESS, 1901

Command of the marine transportation system has long acted as the stage on which great powers compete. . . . The infrastructure facilitating the transport of maritime commerce—ocean-going vessels, deep-water ports, high-speed railways, and fiber optic cables—descend from technologies Western powers once leveraged in the 19th and 20th centuries to expand their access to foreign markets. Today, the MSR [China's Maritime Silk Road] mimics these strategies, for example, by building railways in Africa or laying transoceanic data cables. In some locations, new MSR projects are literally replacing colonial projects. The MSR is a strategic economic policy, intended to promote the Chinese workforce, build bilateral ties, foster dependence, and ensure near-exclusive access to foreign ports for Chinese controlled or affiliated vessels. . . . Through MSR projects, China can advance both economic and non-economic objectives simultaneously.

REPRESENTATIVE SEAN PATRICK MALONEY (D-NY), CHAIR,
HOUSE SUBCOMMITTEE ON COAST GUARD AND
MARINE TRANSPORTATION, 17 OCTOBER 2019

Since the founding of the United States during the Revolutionary War, nearly every president has recognized and called for congressional support of a strong U.S. maritime industry.¹ As the United States supposedly is a maritime nation with a massive international trading economy, it seems obvious that control of, or at least strong influence over, America's seagoing supply chains is important.² Through the first half of the nineteenth century, the U.S. Merchant Marine was one of the largest and most efficient of its kind in the world—partly because of public and political support.³ In those decades U.S.-flag clipper ships dominated many trades, including—ironically—the China trade. But the second half of that century saw the industry go into steep decline—in some measure because political support had evaporated. For economic and strategic reasons during the first half of the twentieth century—specifically, immediately prior to World Wars I and II—Congress intervened, taking critical steps to support the industry. But today that past support of the industry has disappeared once again, and the U.S. maritime industry engaged in international trade is in a perilous state of affairs. This has occurred as the People's Republic of China (PRC) has become, by far, the leading commercial maritime power in the world.

The lack of a vibrant U.S. maritime industry engaged in worldwide trade places the strategic and economic interests of the United States and its allies in grave jeopardy. This is particularly so given that the PRC now dominates most sectors of the world's maritime industry, and consolidation in all sectors is occurring at a rapid rate that benefits the PRC. The influence and the effectiveness of the PRC's political and governmental intervention and funding in all sectors of China's maritime industry are causing numerous other companies in the global industry simply to cease operations or suffer absorption by Chinese companies. There is a strong prospect that within little more than a decade, or even sooner, China virtually will control the world's seagoing supply chain. The consequences of this happening for the United States and the world as a whole are staggering. As a nation dependent on maritime transportation for its economy and for the movement of its military forces, the United States must take decisive and immediate steps to promote the reestablishment of U.S.-flag shipping and further enable all sectors of the U.S. maritime industry to compete in a significant way in the global industry.

ONCE UPON A TIME

It was the winter of 1979–80. A buzz was going around the offices of the New Orleans-based Lykes Brothers Steamship Company (also known as Lykes Lines) and through its fleet of forty-five vessels. Word had it that SS *Letitia Lykes* was loading full and down on the West Coast of the United States with eighteen thousand tons of cargo bound for Shanghai, China. *Letitia* would be the first U.S.-flag

ship to call on a mainland Chinese port since World War II. This event was the result of the ongoing rapprochement between the PRC and the United States that followed President Richard M. Nixon's historic visit to China in 1972 and follow-on efforts by Presidents Gerald R. Ford and Jimmy Carter. The opening of this new market indeed was cause for celebration.⁴

At the time, Lykes was one of dozens of U.S.-flag ocean-shipping companies. With its forty-five vessels, Lykes was one of the larger U.S. companies, but not the largest; that honor fell to SeaLand Services Corporation, which in 1979 was by far the largest container-shipping company in the world. But in 1980, even with more than 860 merchant ships, the U.S.-flag industry operated only about 3.8 percent of the world's merchant vessels, which then totaled about 22,872 ships.⁵ That percentage was down from a 1946 high, when the United States operated some 70 percent of the world's commercial shipping.⁶ By 1960, this number had fallen to 16.9 percent of the world's fleet. Even so, in 1980 U.S.-flag shipping still was significant. Plus, the U.S. maritime industry had made massive technological innovations that revolutionized the industry, such as the introduction of container shipping and lighter-aboard-ship (or LASH) vessels.

SS *Letitia Lykes*, like all Lykes ships, had been built in a U.S. shipyard, supported by the Maritime Administration (MARAD) through the Construction Differential Subsidy (CDS) program. U.S.-flag shipping companies were owned and operated by American citizens without any foreign corporate interests involved. Profits stayed in the United States. U.S. shipping companies, particularly SeaLand Services, owned or leased and operated dozens of container terminals in U.S. ports and in ports throughout the world. While the United States at the time was in the process of implementing a treaty to turn over operation of the Panama Canal to Panama, the United States still exercised significant influence in the canal's affairs.⁷

Although in these years the United States did not possess the largest merchant marine in the world, the size and influence of its industry still were considerable in global maritime affairs, and with its large navy the United States rightfully could be called a maritime nation, according to the criteria of naval historian Captain Alfred Thayer Mahan, USN, as laid out in his influential book *The Influence of Sea Power upon History, 1660-1783*. Mahan believed that history demonstrated that a truly maritime nation required a sizable merchant marine in addition to a powerful navy.⁸

TWENTIETH-CENTURY SUPPORT FOR THE U.S.-FLAG SHIPPING INDUSTRY

In the decades leading to World War I, American agricultural and industrial exports increased dramatically and America became the leading economic

superpower, even as the U.S. Merchant Marine continued to decline. Americans and American-owned businesses were confident that inexpensive foreign-flag shipping would remain bountiful and readily available as needed to provide the seagoing logistics the nation required. This proved to be a false assumption. With the outbreak of war in 1914, the American economy, dependent on international trade, suffered from a lack of availability of commercial ships. The European nations that had provided the commercial sealift for the American economy withdrew their vessels for political reasons and for wartime purposes. This caused widespread disruption in trade; manufactured products piled up on American docks, in railcars, and in warehouses, and agricultural goods spoiled because they could not be brought to overseas markets. The American economy suffered greatly because of the lack of available commercial shipping.⁹

The extent of the damage to the American economy caused by the shortage of U.S.-flag shipping in 1914 was so serious that Congress finally decided to act, but this took time, and the insufficiency of commercial shipping continued to imperil the economy. Following numerous and lengthy hearings, Congress passed the Shipping Act of 1916, which created the United States Shipping Board. The board was designed specifically to promote and assist the U.S. Merchant Marine. By the time the board was fully established, however, it was apparent the United States would enter the war soon. This placed the board on a wartime footing. In October 1917, the board requisitioned the entire U.S. Merchant Marine.¹⁰

In 1917, the Shipping Board initiated a huge shipbuilding program through the creation of the Emergency Fleet Corporation. Eventually, the board contracted for more than 1,700 merchant vessels. Despite this unprecedented effort, only 107 ships were delivered before the armistice was signed in November 1918. However, the remaining vessels were completed by 1922, and it was hoped that U.S.-flag companies would purchase them, and some did. Following World War I, the United States ranked number one in the world, at least in numbers of potentially available merchant ships. But the country never followed through on this advantage.¹¹ By the 1930s, the U.S. Merchant Marine again was in a perilous condition owing to political neglect. And ominously, the challenges of World War II were on the horizon.

Other legislation that attempted to support U.S.-flag shipping included the so-called Jones Act. The Merchant Marine Act of 1920 (Pub. L. No. 66-261) was sponsored by Senator Wesley L. Jones from Washington State. A major purpose of the act was to support the rights of American seafarers by solidifying laws passed during the late nineteenth and early twentieth centuries. For example, the act gave seafarers the right to sue their employer for workplace (shipboard) injuries. A second provision of the act would establish procedures for transferring the U.S. government-owned merchant vessels built in response to World War I to

private ownership. The lessons learned from World War I included recognition that the U.S. Merchant Marine was critical to national security. The preamble to the Jones Act included the following summary: “It is hereby declared the policy of the United States to do whatever may be necessary to develop and encourage the maintenance of a merchant marine . . . sufficient to carry the greater portion of its commerce and serve as a naval or military auxiliary in time of war or national emergency, ultimately to be owned and operated by citizens of the United States.”¹²

As one way to support and maintain the U.S. Merchant Marine, the Jones Act also renewed cabotage legislation that Congress had established and maintained during the late eighteenth century and throughout the nineteenth. The policy required trade between U.S. ports to be restricted to U.S.-built, U.S.-owned, U.S.-flag, and U.S.-crewed merchant ships. (The very first piece of legislation that Congress passed under the Constitution, in April 1789, established a tariff on imported goods to protect U.S.-flag shipping. This was followed by the Navigation Act of 1817, which expressly excluded foreign-flag vessels from trading between U.S. ports.)¹³ Cabotage legislation, including the Jones Act, always has ensured that there are U.S.-flag vessels to serve coastal, inland, and island trades, and it has continued to provide jobs for mariners, who then have been available to serve on strategic sealift vessels in times of national emergency. But this legislation was suspended prior to World War I because of the lack of U.S.-flag ships.

The key legislation that clearly defined support for the U.S. Merchant Marine in the twentieth century was the Merchant Marine Act of 1936. From the time the law was enacted through the next forty-five years, the U.S. Merchant Marine enjoyed generally strong support from Congress and presidential administrations. The act established the U.S. Maritime Commission (later renamed the Maritime Administration). It established the CDS program, which provided funds to support the construction of ships in U.S. shipyards. The act also established operating differential subsidies (ODSs), which provided funds to enable and encourage shipping companies to operate their ships under the U.S. flag. Finally, the act established the U.S. Merchant Marine Academy, an institution dedicated to educating and training merchant marine officers. It is not an exaggeration to state that the Merchant Marine Act of 1936 played a pivotal role in preparing the United States for World War II and, following the attack on Pearl Harbor, the quick construction of the largest and most capable merchant marine the world had ever seen, despite huge losses of ships and mariners during the early years of the war.¹⁴

In an effort to support U.S.-flag shipping further, Congress passed two companion bills in 1954, the Agricultural Trade Development and Assistance Act (Pub. L. No. 83-480) and the Cargo Preference Act (Pub. L. No. 83-664), which required a percentage of government-impelled cargo, such as food aid, to be carried

on U.S.-flag ships.¹⁵ These requirements, overseen by MARAD, have guaranteed cargoes for U.S.-flag ships and provided financial support for the industry.

With the support of Republican president Nixon, a Democratic Congress passed the Merchant Marine Act of 1970. This legislation increased the subsidies provided by MARAD's CDS program, which substantially increased the construction rate of new merchant ships in U.S. shipyards, yielding dozens of ships. As a result, relatively large numbers of new and technically innovative ships joined the U.S.-flag fleet in the 1970s, and the shipbuilding industry in these years was particularly healthy, as was the U.S. maritime industry in general.¹⁶ Many of these same shipyards built warships for the Navy, and the large numbers of both commercial and Navy contracts enabled economies of scale that allowed shipyards to build vessels at lower per-ship costs.¹⁷

THE GLOBAL MARITIME WORLD CHANGES—THE U.S. MARITIME INDUSTRY TODAY

When SS *Letitia Lykes* departed Shanghai on the transit back to the United States from its historic voyage in the spring of 1980, its cargo holds were nearly empty. In those years, the Chinese had little to sell to a U.S. market. With only twenty-six PRC-flag vessels in international trade, the Chinese shipping industry was equally insignificant.¹⁸ While Chinese shipyards built some small coastal trading vessels and fishing boats, they produced no large vessels. There were few or no Chinese companies operating in other countries, and certainly no Chinese companies operating ports and terminals outside China.

What a difference forty years makes! The U.S. maritime industry has retreated on all fronts, whereas the Chinese industry has exploded in size to become, by far, the largest in the world, in nearly every category. This has been the result of public, corporate, and political apathy in the United States and quite the opposite in China; in the latter, government and industry have partnered for decades to implement strategic plans to grow all sectors of the industry. In the United States, it also is the result of a public and political lack of understanding of the role the maritime industry plays in the strategic and economic health of the nation. The U.S. maritime industry engaged in worldwide trade had been in decline since World War II; however, those American companies still operating ships in international trade into the 1980s entered a *steep* decline at that time, eventually going bankrupt and ceasing operations.

When the Reagan administration came into office in 1981 it almost immediately eliminated the CDS shipbuilding program provided by the Merchant Marine Acts of 1936 and 1970. Over the next several years, this action, in turn, forced the closure of numerous commercial shipbuilding companies across America. In 1975, U.S. shipyards produced seventy deep-sea commercial ships.¹⁹

The Reagan administration's abolition of the CDS program crippled the industry. Today no subsidies are provided to build vessels in U.S. shipyards. As a result, only a few shipyards remain in the United States that are capable of building deep-sea commercial ships, and the future financial health of these remaining yards is in question. The only commercial ships built after 1980 have been for Jones Act trades, which require ships built in U.S. shipyards.

In 2016, the number of commercial ships constructed in U.S. yards averaged only five vessels per year during the previous five years, in a context of a world-wide production average of 1,408 vessels per year.²⁰ Ironically, whereas to some the elimination of shipbuilding subsidies had the apparent effect of reducing costs to the taxpayer, the actual impact may be the opposite. Navy vessels and Jones Act vessels were and still are required to be built in U.S. shipyards, but with fewer shipyards building fewer vessels, economies of scale could not be realized, so the unit cost of each ship became far greater.²¹ Between 1987 and 1992, an average of fewer than two commercial seagoing vessels were built per year; as noted, between 2010 and 2016, the average was five.²² Equally serious has been the loss of shipbuilding infrastructure and shipbuilding jobs, with a concurrent loss of shipbuilding skills and expertise. These are capabilities that cannot be turned on with the flick of a switch.

Since 1980, the size of the U.S.-flag fleet in international trade likewise has declined dramatically. In the early years of the Reagan administration, actions were taken to eliminate the ODS that enabled many companies to conduct operations under the U.S. flag.²³ These subsidies were provided by contract, so these payments had to be phased out over time as contracts expired. As ODS contracts were not renewed, the majority of U.S.-flag companies ceased operations or simply went bankrupt. This created a crisis for the military, which requires a capable U.S. Merchant Marine to carry equipment and supplies in the event of a national emergency. To remedy this situation, the Department of Defense spent billions of dollars to purchase and convert dozens of older, foreign-owned, -built, and -operated vessels, which were placed in a Ready Reserve Force (RRF) maintained and operated by MARAD (since 1981 part of the U.S. Department of Transportation).²⁴ In addition—and with the urging of the Defense Department—Congress in 1996 established the Maritime Security Program (MSP), which MARAD manages. MSP essentially provides a subsidy for sixty U.S.-flag ships—notably similar to the original ODS program created by the Merchant Marine Act of 1936.²⁵ Currently, the MSP program is funded at five million dollars per ship, per year.²⁶ Considering the high cost of establishing and maintaining the RRF in combination with the MSP program, it is questionable whether the taxpayers benefited at all from the elimination of the ODS program; the reverse probably is true. In any case, the results have included the loss of nearly all U.S.

shipping companies, a great reduction in the number of U.S.-flag vessels, and the loss of thousands of skilled mariner jobs.

The MSP law requires that U.S.-flag vessels be owned and operated by a U.S. company under the management of U.S. citizens, and the sixty MSP ships indeed are “owned and operated” by U.S. companies registered in the United States. However, nearly every one of these sixty ships is owned by a U.S. company that is merely a subsidiary of a foreign company—and the parent companies and their countries may have interests different from those of the United States. According to the United Nations Conference on Trade and Development (UNCTAD), in 2018 there were 94,169 commercial deep-sea vessels in the world, of which 50,732 were merchant ships.²⁷ Today, including the sixty MSP vessels, there are only about eighty U.S.-flag vessels operating in international trade.²⁸

As if political reversal of support for the U.S. Merchant Marine were not enough to decimate the U.S.-flag industry, attacks on the cabotage provisions of the Jones Act—periodically vigorous—have reached a new height in the last two years. Spearheaded by the Cato Institute and other special-interest groups, efforts have been made in the form of dozens of articles, conferences, and even recent proposed legislation on Capitol Hill to overturn the law.²⁹ While presenting no substantive and verified cost data to show that the Jones Act causes significant financial burdens to U.S. consumers in states, commonwealths, and territories served by the act compared with using foreign-flag carriers, Jones Act detractors fail to understand the law’s strategic importance. First, elimination of the Jones Act poses the possibility of causing Jones Act companies to cease operating under the U.S. flag, thus further reducing the number of available U.S. merchant ships. (This would be particularly true if foreign-flag companies, subsidized by their governments, were allowed to enter Jones Act—that is, domestic American—trades.) Second, with the loss of the jobs that Jones Act companies now provide, the pool of qualified U.S. merchant mariners virtually would disappear. This would make it impossible to crew the ships of the RRF and other strategic sealift vessels. This in turn would cripple military logistics, which is dependent on these ships in a national emergency. From a security standpoint, overturning the Jones Act has the potential to enable foreign companies (particularly those subsidized by their governments) effectively to assume control of inland transportation in the United States, with the result that thousands of foreign nationals would be operating vessels inside the United States—a potential security nightmare. Finally, under similar laws, U.S. airlines are afforded the same protections the U.S. maritime industry enjoys under the Jones Act. Some airline industry professionals believe that if the Jones Act were repealed these airline protections might be eliminated as well, possibly causing the demise of the U.S. domestic airline industry, similarly to what happened to the maritime industry.³⁰

Regarding port ownership and operation, whereas U.S. companies such as SeaLand Services once operated containership ports around the world, that company, like many U.S.-flag shipping companies, ceased to operate when it was purchased by a foreign-owned company. The ports and terminals once owned by SeaLand now are owned or operated by foreign port operators. The only U.S. port operator with terminal operations outside the United States is SSA Marine, which operates slightly more than a dozen terminals in ports around the world, in addition to its North American terminals. However, nearly half the interests in SSA are held by foreign nationals.³¹ In a reversal from the past, numerous foreign port operators and interests have purchased or leased control of many ports and terminals in the United States, which has caused national-security concerns.³² The United States no longer is involved in crucial maritime infrastructure in other countries. For example, there is little or no U.S. involvement in the Panama Canal; a Chinese company operates ports and terminals on both ends of the canal.³³

In short, if a *maritime power* is defined as a nation possessing a powerful navy, a sizable merchant marine, and capable maritime industries such as shipbuilding—a definition propounded by Alfred Thayer Mahan—then the United States clearly is no longer a maritime power. Instead, the United States probably is described better as a maritime-dependent nation, and likely is defined even better as a maritime nation that soon will be dependent on the Chinese maritime industry.

THE MIDDLE KINGDOM—HISTORICALLY A MARITIME POWER?

Understandably, given its huge terrestrial presence in Eurasia, for much of its history China primarily has been viewed as a continental nation. However, China also has had a strong maritime connection and has a rich maritime past. Geography encourages China to look toward the sea, particularly in the south, where mountains block easy access to the interior and there are thousands of populated islands off the coast. For centuries, southern seaboard provinces and islands have had large populations, but a dearth of available land has made it difficult to support those populations locally, making the sea critical for transportation, trade, fishing, and communication with other Chinese regions.³⁴

Today, China's land border is 13,743 miles long, and the country abuts fourteen other nations. Through its thousands of years of history, China has pursued countless wars of both aggression and defense against its many neighbors. Most, but by no means all, of these wars have been fought primarily with land forces. But China also has more than nine thousand miles of saltwater coastline, thousands of offshore islands, and several major rivers that connect to the sea, and the majority of the nation's population always has resided in coastal regions. Therefore China, to varying degrees, always has kept an eye on its maritime

interests. Chinese naval warfare began as early as the tenth century BCE and was common during the Warring States period (475–221 BCE). One story holds that in 471 BCE the great Chinese philosopher Confucius sought a leadership position with the Kingdom of Yue but was turned down because he lacked knowledge of naval operations.³⁵

Throughout most of its very long history, China has been a major manufacturing power, oftentimes the world leader. For thousands of years countries across the Eurasian landmass have sought Chinese goods. The long, overland passage called the Silk Road emerged as the major east–west trading route in the fourth century BCE.³⁶ Over the centuries that followed, the Silk Road continued to be a major trading route between China and the Middle East, and even to Europe; Chinese goods found their way to the Roman Empire. Eventually, the Silk Road expanded to include seagoing routes across the Indian Ocean to Middle Eastern and African ports. In his book *China as a Sea Power 1127–1368*, author Lo Jung-pang notes that “China tried to become a seapower (in centuries past); in particular, during the Qin and Han dynasties and later during the Sui and Tang dynasties.” He further notes that during the three centuries from the Southern Song to the early Ming period (twelfth century CE to fourteenth century CE), the maritime and overseas activities of the Chinese were so great that China was more of a sea power than a land power. It was by using its naval and maritime power, across many centuries, that China went abroad to trade, and even to colonize other Asian lands.³⁷

Chinese maritime power in centuries past reached its height during the first Ming period (1405–33), and especially during the reign of the third Ming emperor, Yongle (1402–24). He dispatched the renowned military commander Zheng He (1371–1433), known as the “Ming admiral.” From 1405 to 1433, Zheng completed seven extraordinary voyages, during which he sailed with as many as 250 ships and upward of thirty thousand men to destinations in southern Asia, the Middle East, and East Africa.³⁸

The main purposes of these military-oriented voyages were to expand Chinese influence throughout the Indian Ocean area and the Middle East, seek tribute for the Chinese court from local rulers, expand Chinese cultural influence, and improve trade. According to Naval War College professor Andrew Wilson, a key difference between European and Chinese efforts to seek trade during the early European age of exploration is that the Ming voyages did not seek trade so much as “the gravitational pull of the Chinese market (from these voyages) brought trade to [China]”—a phenomenon seemingly similar to the dynamic favoring China in the twenty-first century.³⁹

During the Ming period, China’s navy and merchant marine clearly were the largest and most powerful in the world, and their sphere of influence expanded

wherever Zheng's fleet landed. At the time, Chinese maritime technology far surpassed that of the Europeans. For example, the Chinese invented the compass and the rudder, which were huge innovations that enabled mariners to navigate and control vessels better on long voyages. Zheng's fleet included ships over four hundred feet in length. (By comparison, Columbus's *Santa María* was somewhere between sixty-two and eighty-five feet in length.) It is reasonable to assume that, had the Chinese wished to pursue ocean exploration and trade into the Atlantic and the Mediterranean and to Europe and even the Americas in the decades after Zheng's voyages, they likely would have become the dominant maritime power on earth, eclipsing European efforts.⁴⁰

For a complicated set of reasons, however, the Chinese abandoned their efforts to pursue great voyages beyond local Chinese waters after the death of Emperor Yongle. Following Admiral Zheng's seventh and final voyage, the new Ming emperor had the fleet destroyed, after which harsh punishments were decreed and imposed on those who even attempted to trade beyond Chinese waters.⁴¹ One law imposed the death penalty for building a ship with more than two masts, and a later law did the same for a ship with more than one mast.⁴² In essence, except for coastal trade and fishing, the Chinese, under the second Ming dynasty, largely abandoned the ocean.

This happened at the time when European countries were on the cusp of the age of exploration that was made possible by the development of new maritime technologies—many of which were based on lessons learned from Chinese nautical technological innovations such as the compass and the rudder. As the Europeans came to dominate global trade in the seventeenth through nineteenth centuries, the Chinese would pay dearly for their lack of maritime power. Their navy was largely ineffective and they no longer possessed a capable merchant marine by which to trade with other nations. For centuries this enabled the Europeans increasingly to impose countless demands on the Chinese and control Chinese seagoing trade, eventually resulting in “the century of shame” (extending from the mid-nineteenth century to the mid-twentieth century).⁴³ This fact has not been lost on the leadership of the PRC in recent times, and it helps to explain why the Chinese have taken such great steps to become not only *a* global maritime power but *the* dominant maritime power in the world today.

European control of China's seagoing trade continued into the twentieth century, following the collapse of the Qing dynasty in the early 1900s.⁴⁴ The world wars, Japanese occupation in the 1930s and '40s, and the civil war between the Nationalists and Communists decimated the Chinese economy. Following World War II, virtually all Chinese seagoing trade, both foreign and domestic, was carried in foreign-owned and -flagged ships. In 1950, the PRC merchant marine officially consisted of only seventy-seven ships, and the majority of these were

either unseaworthy or lying at the bottom of rivers and ports. Through the 1950s, China enjoyed a rather close relationship with the Soviet Union, and the Soviets encouraged Polish ships to carry Chinese seagoing trade; in fact, for many years the Polish merchant marine was China's primary provider of ocean transportation. During these years, there actually were no Chinese-flag ships engaged in international trade. As far as PRC ports and shipyards went, the picture was equally dismal in the 1950s. There were no shipyards capable of building ocean-going ships, and ports were hugely inefficient and few in number.⁴⁵ The Chinese did not own, lease, or operate any port terminals outside the mainland.

Despite the poor condition of the Chinese maritime industry in the early years of the PRC, the Communist Party's leadership fully grasped the importance of the industry and placed great emphasis on building a capable maritime industry in all sectors: ships, ports, shipyards, and mariners. It was clear to Mao Zedong's government that China needed a domestic maritime industry, particularly in coastal and river trades to compensate for the poor quality of roads and railroads.⁴⁶ With Soviet maritime expertise and the use of Soviet-built equipment, particularly engines, China began building domestic ships in the early 1960s. The initial building rate reached ten ships a year in 1960, but this fell to two following the deterioration of Sino-Soviet relations. The shipbuilding picture remained poor for many years because of the lack of Chinese technology and engineering capability and the inability to develop and build critical elements such as ship engines. In terms of ship ownership, in 1961 the state-owned China Ocean Shipping Company (COSCO) was formed under the Ministry of Communications. COSCO owned and controlled vessels under both Chinese and foreign flags. (In the 1960s the PRC began relying on foreign flags to operate many Chinese-owned ships. At the time, this included use of the British and Somali flags.)⁴⁷ The first voyage of a PRC-flag ship outside Asian waters was by *SS Heping*, which carried cargoes from China to the Republic of Guinea in West Africa in 1962. The Chinese merchant marine continued to grow through the 1960s, reaching more than three hundred ships by the early 1970s. Shipbuilding during this period remained a very limited industry, particularly since China did not have the expertise to develop and build nautical equipment and engines.⁴⁸

Through the 1970s and into the 1980s, the PRC continued to emphasize the development of its maritime industries, including shipping, shipyards, and ports. The number of PRC ships engaged in international trade doubled during this period. More ships were added to the Chinese flag-of-convenience fleets, particularly using the Somali and eventually the Panamanian flags. During these years, PRC ships began "cross trading," which involved carrying cargoes to and from ports other than China, and charging freight revenues in U.S. dollars, making the practice a good source of hard currency. In 1978, the number of PRC ships

in international trade surpassed that of the United States, and by 1982 China's merchant fleet ranked seventh in the world in size.⁴⁹

Of particular note during these years was the development of China's port and shipbuilding industries. Major efforts were undertaken to modernize Chinese shipyards, and with technical assistance from European, Japanese, and Singaporean shipbuilders the Chinese began building ships for domestic and export markets. Costs per ship were so low and demand was so high that Chinese yards had to suspend order books until shipbuilding capacity could be increased. During this period, ports also radically improved in capacity and capability. From 1959 to 1979, there was a 3,750 percent increase in cargo throughput in Chinese ports, but dock capacity had increased by only 30 percent. Given this serious situation, major efforts were undertaken to develop and build port infrastructure, including the introduction of container-handling equipment.⁵⁰ Through the next three decades, Chinese leaders continued to increase the capability and capacity of their maritime industries dramatically, in ship ownership, shipbuilding, port development, and a multitude of related industries. Today, China's maritime industry, in all sectors, is the largest in the world by far, and it still is growing rapidly.

THE CHINESE MARITIME INDUSTRY TODAY

The PRC government's decades-long support of the Chinese maritime industry has included substantial, even aggressive, financial subsidies, laws, and policies designed to enable all sectors of the industry to grow at phenomenal rates. Currently, with more than 5,500 merchant ships engaged in international trade, Chinese companies (including Hong Kong-based companies) own more ships than those of any other nation on earth.⁵¹ Chinese container-shipping companies combined carry more containers than the world's number one carrier, Maersk Line. This represents nearly 20 percent of all the containers carried by the top twenty carriers.⁵²

Chinese companies own or operate more ports and terminals around the world than those of any other country.⁵³ These Chinese companies include Hutchison Ports, COSCO Ports, China Merchants Ports, Shanghai International Port Group, and Qingdao Port International.⁵⁴ In fact, by 2015 "two-thirds of the world's top fifty container ports had some degree of Chinese investment in them, if not majority ownership and control, and this number is growing." These ports handle 67 percent of the world's shipping containers.⁵⁵ Chinese port companies in all ports around the world handle 39 percent of the total volume of containers—nearly double the share of the next largest port operator, which is headquartered in Singapore.⁵⁶ Of the top twenty ports in the world by cargo throughput (2016-17), fourteen are located in China.⁵⁷ Almost "under the radar," Chinese port companies acquired 49 percent ownership in France's CMA CGM

port operations, which has given Chinese companies operational control of Houston's Terminal Link port and South Florida Container Terminal in Miami.⁵⁸ COSCO has long-term lease/operations stakes in the ports of Los Angeles and Seattle as well.⁵⁹

By 2017, China was the number one shipbuilder in the world, as measured by the number of ships completed, new orders, and pending orders. Over 40 percent of the world's commercial ships now are built in China, and this percentage is growing as shipyards in other countries no longer can compete and are shuttered.⁶⁰ (Notably—and troubling from a USN perspective—during a mere eight-year period, from 2009 to 2017, the Chinese developed and built eighty-three warships for the Chinese navy, which now is the second-largest navy in the world, and within a few decades or less is expected to be the largest.)⁶¹ With 150 modern cutters and hundreds of other vessels, the China Coast Guard is the largest such service in the world.⁶² Numbered at more than two hundred thousand vessels, China's fishing fleet also is the largest in the world.⁶³

One of the secrets of Chinese successes in the incredible growth of the nation's maritime sector is the Chinese emphasis on maritime education—in nautical science, marine engineering, and maritime business. More than 115,000 students attend the several Chinese maritime universities and colleges.⁶⁴ Finally, China is a global leader in ship finance, providing funds for international shipping companies seeking to buy, build, or lease ships, particularly those from Chinese shipyards. In 2008, no Chinese bank was listed in the top ten of the world's shipbuilding-loan institutions; a decade later, the top two banks were Chinese—both state-owned institutions.⁶⁵ By 2025, it is projected that Chinese banks will provide 50 percent of all shipbuilding loans.⁶⁶ This means that, although China may not own or operate large numbers of the world's commercial ships, it will have influence, if not control, over a majority of the world's merchant fleet, because it will hold the mortgages on a major percentage of ships owned by companies in other countries.

China has made no attempt to hide its aspirations to influence, if not dominate, the world's maritime industry. In 2015, the Shanghai International Shipping Institute, a state-owned research institute, released a report, "China Shipping Development Outlook 2030." The report offers several conclusions. First, "China will remain the largest cargo trader in the world and will take a dominant role in global container shipping." Second, China will double its shipping engaged in worldwide trade and control at least 15 percent of that trade. To do this, China will become the number one shipowner in the world. (It already is.) Ship operators will evolve to become "global logistics providers" (much like other large containership operators, such as Maersk). The report notes that privately owned Chinese shipping companies will account for "over 70% of China owned ships." (However, this runs contrary to the current trend in China of state ownership,

which does not allow private-sector companies into the industry.) The report suggests that Chinese foreign-flag fleets will comprise upward of 90 percent of Chinese-owned ships. With regard to ports, the report notes that “throughput at Chinese ports will reach 505 million TEUs [twenty-foot-equivalent containers] by 2030.” Without providing specific metrics, the report indicates that “Chinese enterprises will build port networks around the globe, especially investing in port networks in South America, Africa, Southeast Asia, the Middle East, and other developing countries with strategic cooperation with China.” Finally, the report emphasizes China’s role as a global leader in ship financing and marine insurance.⁶⁷

HOW CHINA IS REALIZING ITS MARITIME AMBITIONS: CHINESE MARITIME STATE-OWNED ENTERPRISES

China’s Qing dynasty ruled the country from 1636 to 1912, a period of gradual but persistent incursion by Europeans, and eventually by the Japanese, into Chinese trade and influence. The Opium Wars with the British in the mid-nineteenth century saw Chinese military forces destroyed by the British, who then forced the Chinese to allow the British Empire to import opium into China in exchange for Chinese goods. Thus began “the century of shame,” during which Britain, France, Germany, Russia, and Japan essentially carved China up into spheres of influence.⁶⁸

Following the civil war in China that ended in 1949 with the defeat of Nationalist forces by Communist forces on the mainland and the establishment of the PRC, China’s economy was in complete shambles. For the next several decades, under the absolute rule of Chairman Mao, China essentially pursued a policy of isolationism and self-reliance under which the Chinese people were expected to produce agricultural and manufactured goods without the influence or assistance of outside nations.⁶⁹ Mao’s policies further destroyed the Chinese economy and caused the death of untold millions of people by starvation.

Following Mao’s death in 1976, Deng Xiaoping came to power and relentlessly pursued a policy of opening up China to the rest of the world by boldly seeking foreign investment and trade. Knowing that he could not abandon the façade of communist/socialist ideology, but likely knowing the failures of pure communism and socialism, Deng adhered to a strict policy of pursuing what he called “socialism with Chinese characteristics.”⁷⁰ The Chinese Communist Party continues to use the phrase today. It is purposefully imprecise, but in broad terms it refers to an economy that the state essentially controls while allowing varying degrees of private investment and ownership.

Under Mao’s leadership, state-owned enterprises (SOEs) were established in all sectors of the economy. These SOEs essentially operate as companies owned

by the state. SOEs, in China, typically are managed at a provincial or even municipal level. Others are managed at the central government level by the State-Owned Assets Supervision and Administration Commission (SASAC).⁷¹ The problem—as is typical of many government organizations worldwide—is that SOEs, lacking financial incentives, are inherently inefficient and often become bloated with choking bureaucracies and unproductive workers.

Deng knew this, and therefore introduced market-based reforms, including the potential for private investment and ownership. Notably, Deng focused on commercial shipbuilding as a critical industry, and under his leadership in 1982 the China State Shipbuilding Corporation (CSSC) SOE was established. In 1999, a second SOE was formed out of CSSC: the China Shipbuilding Industry Corporation (CSIC). These two SOEs dominated shipbuilding in China.⁷² In 2019, they were reunited into one larger SOE.⁷³

Over the decades since Deng, the role of SOEs has continued, with them exercising control over certain sectors of the Chinese economy but with private investment in SOEs being introduced to varying degrees and with varying success. (Of Chinese SOEs, 66 percent are listed on the Chinese stock exchange.) Today, privately owned companies actually employ more workers than SOEs, and these privately owned companies account for the majority of China's gross domestic product (GDP).⁷⁴ However, in certain sectors SOEs maintain absolute control. One such sector is the maritime industry, which China views as a strategic industry vital to the interests of the nation.⁷⁵ Despite statements in 2015 from Jin Jiachen, a director at the Shanghai International Shipping Institute, that Chinese ocean-shipping companies would privatize to a large degree, there is little evidence this has happened or will do so.⁷⁶ Furthermore, under Chinese president Xi Jinping there is new emphasis on and support of SOEs and less interest in privatizing many industries, including Chinese maritime industries.⁷⁷

COSCO is an SOE. The company operates a fleet of well over fifteen hundred vessels calling on over a thousand ports worldwide. The COSCO fleet includes most types of merchant ships, such as tankers, bulk ships, roll-on/roll-off (RO/RO) vessels, and containerships. In 2015, COSCO merged with the SOE China Shipping Group, retaining the name of China COSCO Shipping Corporation.⁷⁸ COSCO expanded further in 2017 with the government-funded \$6.7 billion acquisition of Orient Overseas Container Line (OOCL), a public company formerly based in Hong Kong. COSCO now is the third-largest containership operator in the world.⁷⁹ Even before its acquisition of OOCL in 2017, COSCO for a time had taken the lead as the number one container-shipping company in the world. With its acquisition of OOCL and its continued aggressive expansion policies, it is quite possible that COSCO will take the number one spot in container shipping permanently.⁸⁰

For years, the global trend in the container-shipping business has been increasing consolidation, leaving fewer and fewer container-shipping companies. China has taken full advantage of this trend, using the power of COSCO. A United Nations think tank associated with UNCTAD contends that there are now too few container-shipping companies left to ensure adequate competition.⁸¹ By mid-2018, the top ten container-shipping companies carried 75 percent of the world's shipping containers, with COSCO as the number three carrier, carrying over 12 percent of the world's containers. The UNCTAD report notes that the top container companies have formed three alliances that effectively are cartels. On the positive side, these alliances potentially reduce costs and rationalize service, which can lower freight rates; on the other hand, according to UNCTAD, they instead can create a serious risk of establishing corporate oligopolies that will reduce competition and constrain service.⁸² The Ocean Alliance consists of COSCO and CMA CGM (of France); the 2M Alliance links Maersk (of Denmark) and Mediterranean Shipping Company (MSC, of Switzerland); THE Alliance combines Hapag-Lloyd (of Germany), Yang Ming (of Taiwan), and ONE (of Japan). An effort by Maersk, MSC, and CMA CGM in 2014 to form an alliance to be known as the P3 Alliance was blocked by the Chinese government—a clear example of governmental intervention designed to support COSCO. Notably, in 2015 the Export-Import Bank of China (CEXIM) agreed to provide a billion dollars in loans or credit to the French CMA CGM to build new ships—in Chinese shipyards. Since that time, Chinese ties between COSCO and CMA CGM have continued to deepen.⁸³

As noted earlier, in the port sector China is the global leader in owning, leasing, and operating ports and terminals around the world. Most Chinese companies in the port and terminal business are SOEs; these include COSCO, Shanghai International Port Group, China Overseas Port Holdings, and China Shipping Group. China Merchants Holdings and Hutchison Port Holdings are additional Chinese companies engaged in global port ownership and operation that ostensibly are private companies but have Chinese government investment and oversight.⁸⁴ In 2013, China Merchants purchased a 49 percent share of France's CMA CGM's Terminal Link, which operates in many countries, including the United States. Of particular note, reports in September 2019 indicated that China Merchants Holdings was in discussion with CMA CGM to invest further in that company's port assets. These actions give rise to speculation, if not concern, regarding how much more of CMA CGM's shipping and port operations the Chinese will purchase.⁸⁵

China's shipyard sector grew from the 1980s through the first decade of the twenty-first century, with some 1,647 shipyards built in China. By 2010, China had become the number one shipbuilder in the world.⁸⁶ As noted earlier, the

largest Chinese SOEs in the shipbuilding business were CSSC and CSIC; they merged in 2019. Following the financial downturn in 2008, many Chinese private-sector shipyards went bankrupt, while the shipbuilding SOEs received massive government loans and subsidies. By 2014, three-quarters of all new orders went to Chinese SOE shipyards.⁸⁷

Despite possible, if not probable, inefficiencies within maritime SOEs, they enjoy numerous advantages over private-sector companies. They have easy access to huge loans and subsidies from the central government. In 2017, for example, the Chinese government announced it would invest \$26 billion in COSCO over the five-year period ending in 2022. Given that COSCO already is number three in container shipping, an investment of \$26 billion easily could propel the company into the number one spot, possibly leaving in its wake the bankruptcy of other major container-shipping lines, which already are becoming fewer in number each year owing to ongoing consolidation.⁸⁸ In addition to the possible infusion of substantial state funds to help SOEs compete with private-sector Chinese and international companies, SOEs also enjoy blanket protection in times of fiscal downturns and uncertainty, as well as huge preferences in terms of government policies and regulatory treatment.

China can use its substantial market power in shipping to achieve dominance over its competitors. A classic example of this involves the Brazilian corporation Vale SA. Vale is a large iron-ore mining company based in Brazil. As a major consumer of iron ore, China has been a crucial customer of Vale for many years. No doubt to save transportation costs and better manage logistics to China, late in the first decade of the twenty-first century Vale's leadership made the decision to build ultralarge iron-ore bulk carriers instead of chartering vessels to carry the company's iron ore to China.⁸⁹ Vale chose Chinese shipyards to build these vessels. However, when the vessels were completed and began carrying iron ore to China, Chinese officials would not let the Vale bulk ships enter Chinese ports, citing their immense size as a "safety issue." Vale was forced to sell the vessels to COSCO, which in turn leased them back to Vale on long-term charter.⁹⁰ Presumably this somehow must have made the ships safer, because they then were allowed to enter Chinese ports. This is a clear example of protectionism; COSCO's leverage as an SOE prevented Vale from entering the trade except on terms that COSCO accepted.

Chinese government banking entities clearly support the Chinese maritime industry in all sectors, including shipping, ports, and shipbuilding. Huge sums of capital have been made available to the industry for projects that promote Chinese geostrategic goals, not merely normal business investment. The \$26 billion that Chinese banks provided to COSCO, mentioned earlier, is a good example of this. In 2017, the chairman of SASAC noted "the importance of SOEs

as a mechanism for the government to direct the economy and achieve political objectives.”⁹¹

THE “NEW SILK ROAD,” THE BELT AND ROAD INITIATIVE— PART OF CHINA’S MARITIME STRATEGY

China has been an economic and manufacturing powerhouse for much of its very long history. Since ancient times, Chinese goods have found their way west via the overland Silk Road through Central Asia, and eventually they traveled across maritime trade routes through the Indian Ocean that were established by Arab traders. As noted earlier, over the period from the fifteenth century into the twentieth century Europeans gradually eclipsed Arab traders as European countries and companies took virtual control of all Chinese imports and exports, resulting in the “century of shame.” When the PRC was established in 1949, this clearly was a situation its government was determined to change. It has done so slowly but steadily through the decades since 1949.

At the Eighteenth National Congress of the Communist Party of China, in 2012, China for the first time “elevated the construction of a strong maritime country” to the level of a national goal.⁹² By 2013, China had become the world’s dominant commercial maritime industry leader. But far from being content with the country’s maritime achievements, President Xi announced in 2013 that the PRC would establish a 21st Century Maritime Silk Road, later called the One Belt, One Road initiative, and eventually the Belt and Road Initiative (BRI).⁹³ The vast majority of BRI funding comes from Chinese policy banks (SOEs), such as the Chinese Development Bank and CEXIM, as well as large Chinese financial institutions, including the Asia Infrastructure Investment Bank, the New Development Bank, the Industrial and Commercial Bank of China, the Bank of China, the China Construction Bank, and the Silk Road Fund. These institutions are state owned, or at least state controlled. To date, these Chinese financial institutions have invested, or committed to do so, nearly one trillion dollars in loans for ports and terminals, railroads, power plants and grids, and other transportation-related infrastructure.⁹⁴ With little exaggeration, the BRI can be called the most expansive, aggressive, and costly transportation and infrastructure scheme ever developed in human history. Currently, thousands of BRI infrastructure projects already have been built, are under construction, or are in the planning stages.⁹⁵

The Chinese have indicated that the BRI ultimately will involve a total of eight trillion dollars in investments in sixty-eight countries that are home to 65 percent of the world’s population.⁹⁶ Its two major initiatives are the Silk Road Economic Belt, an overland route to Europe via railroads and roads, and the Silk Road Maritime Road, an east–west route via the sea. While the BRI has both land and sea components, the maritime aspect is the dominant one by far. In 2016,

for example, 1,700 trains carried cargo from China to Europe via land corridors through Central Asia, carrying an estimated 150,000 containers. With BRI investments in these corridors, the Chinese estimate that in 2020 the number of containers carried by BRI roads and railroads will have risen to five hundred thousand. By comparison, the maritime sea routes from China to Europe in 2014 alone carried some twenty-two million containers, and BRI investments along the Maritime Silk Road are projected to increase this number greatly in the years ahead.⁹⁷ According to the Chinese government, there are three “blue passages,” or BRI maritime routes, one of which runs “from China to Africa and the Mediterranean, another to Oceania [in the Pacific] and South Pacific, and a third through the Arctic to Europe.”⁹⁸ The BRI also includes projects in Latin America and the Caribbean. Another major BRI initiative is known as the Digital Silk Road.⁹⁹

President Xi has thrown the full weight of his leadership and reputation behind the BRI, and it is hard to overemphasize the full implications of this massive initiative. The BRI may be an outgrowth of former Chinese president Jiang Zemin’s Going Out policy; however, it is much more prodigious in scale. At the Nineteenth Party Congress, in 2017, Xi projected that “by 2050, China will have become a global leader in terms of composite national strength and international influence.” The BRI is a major factor enabling this evolution to happen at present, and that will continue to be so. Currently, China’s maritime industry—its “blue economy”—already represents 10 percent of the country’s GDP, and this number will increase as maritime BRI projects reach fruition.¹⁰⁰

China’s public statements on the BRI note “that BRI will greatly benefit humankind and create a new era of world trade and globalization.”¹⁰¹ According to the official Chinese news agency Xinhua, the purpose of the BRI is to “promote policy coordination (between countries), connectivity of infrastructure, unimpeded trade, financial integration, and people-to-people bonds.” Xinhua goes further to suggest that, among other things, the BRI “will improve the marine environment, promote development and eradicate poverty, enhance cooperation on marine resource utilization, upgrade marine industry cooperation, facilitate maritime transport, strengthen connectivity of information and networks, improve security and search and rescue, and create innovative growth.”¹⁰² These are lofty goals, and it can be argued that there is some truth in many of these claims.

It is important to understand, however, that from a Chinese perspective the BRI has many additional advantages. Successful efforts under the BRI will increase export markets for China, which means more money and jobs in China. BRI projects themselves provide jobs for Chinese construction companies and tens of thousands of Chinese construction workers, since one of the prerequisites for a country to accept BRI funding is to employ Chinese construction companies

and allow Chinese workers to build the targeted infrastructure in whatever country receives the BRI loans.¹⁰³ In BRI port projects, Chinese companies and workers provide everything: finance, design, construction, operation, even dredging.¹⁰⁴ The Chinese construction companies that build BRI infrastructure are almost all SOEs, such as the China Communications Construction Company, the China Harbor Engineering Company, and the China Road and Bridge Corporation.¹⁰⁵

However, there are many drawbacks and concerns regarding BRI. Some analysts conclude that in many cases BRI is nothing more than a “debt trap.” Poorer nations that accept BRI infrastructure funding eventually become unable to fulfill debt payments, resulting in Chinese takeover of the infrastructure. A 2018 study completed by the Center for Global Development noted that “twenty-three countries are at risk of debt distress as a result of BRI loans from China.”¹⁰⁶ The port of Hambantota in Sri Lanka is a clear example of this. The Sri Lankan government received a Chinese BRI loan of one billion dollars to build a new port. By 2017, Sri Lanka was unable to repay the loan. This resulted in China obtaining a ninety-nine-year lease to control the port completely.¹⁰⁷ In another instance, in October 2019 the following was noted in testimony before the U.S. Congress: “In 2019, the Kenyan newspaper *Daily Nation* reported it had obtained a leaked copy of the agreement between China and Kenya for the construction [under BRI] of the Mombasa–Nairobi Standard Gauge Railway Project. According to Kenyan media, the contract states that China could take possession of the port of Mombasa should the Kenyan National Railway Corporation default on its \$2.2 billion repayments to China’s Exim Bank.”¹⁰⁸

Chinese loans often are provided at a higher interest rate than comparable loans from other countries and sources. The Chinese SOE banks are successful in securing these loans at the higher rates because, in most cases, for a variety of reasons, funds would not be available from any other source. In some cases, Chinese loans are sought because they do not come with the specific requirements (“strings”) attached that other sources, such as the World Bank, often impose on those seeking a loan. In the case of the port of Hambantota, for example, no competitors were interested in providing Sri Lanka a loan.¹⁰⁹

There are also real fears (and examples) of BRI funding leading to local corruption. Chinese companies involved in BRI projects have been “accused of corruption and collusion with local politicians in Equatorial Guinea, Malaysia, and Bangladesh, among many other countries.”¹¹⁰ The BRI SOE China Communications Construction Company and all its subsidiaries have been shown, in multiple instances, to have used bribes to officials and their families in many countries where the company and its subsidiaries had business or planned to conduct business.¹¹¹

Perhaps most troubling are the political influence and favors that Chinese authorities demand in exchange for BRI funding.¹¹² Via such funding in 2016, China's SOE COSCO obtained a controlling interest (51 percent) in the port of Piraeus in Greece; this proportion was due to increase to 67 percent in 2020.¹¹³ It comes as little surprise that in 2017 Greece and Hungary (also a recipient of BRI funding) vetoed a "joint EU [European Union] statement criticizing China based on human rights." The year before, both countries had refused to sign a joint EU statement that criticized China's actions in the South China Sea.¹¹⁴

In some cases, BRI projects have failed to produce tangible benefits for countries even while at the same time saddling them with debt. Vanuatu is a case in point. Under the BRI, the Chinese constructed a new cruise-ship pier in the country, at a cost of one hundred million dollars. Once completed, however, the new facility failed to meet expectations and adversely affected the country's economy.¹¹⁵

As *Forbes* notes, "there are often some key differences between how Chinese maritime companies operate internationally and what their projects look and feel like. . . . While China's new array of port holdings are fundamentally economically motivated projects, there is a glaring political dimension as well." By controlling major ports in key countries, China maintains more control over its import and export supply chains. Through investment and ownership, China in many cases can exercise political influence over other countries and help ensure that these countries stay friendly to Chinese interests. According to *Forbes*, "China is creating a new paradigm in the twenty-first century where economic leverage is the key."¹¹⁶ In African countries, through loans and BRI investments, China has gained considerable political leverage. In Djibouti, for example, China holds over 80 percent of the nation's debt. In Zambia, it is reported that China will take over the power grid because of the country's inability to pay back Chinese loans.¹¹⁷ Following the 2008 financial crisis, Iceland was in serious financial peril as a result of banking failures. In response to this, and in the absence of EU and U.S. support, Iceland accepted Chinese loans and investments that stabilized the economy. Since that time, Chinese-Icelandic relations have blossomed, which provides support for China's BRI efforts in the Arctic.¹¹⁸

SUMMING UP THE THREATS FROM CHINESE MARITIME DOMINANCE

In all respects, China is a global power, and the United States and other countries can expect it to assert its interests, as is normal. However, as numerous observers have noted, in some industries China has acted in a particularly aggressive manner, with a determination to dominate those industries globally. This certainly is the case with the maritime industry. While Chinese SOEs in the maritime industry certainly seek to make money, they also serve the political interests of

the Chinese state, and in some instances they take actions that result in *expected* financial losses because those actions serve the policy goals of the Chinese government. While it is true that Chinese initiatives such as the BRI stand to benefit dozens of countries and their populations in some ways, Chinese BRI funding and the related maritime dominance give China sizable political leverage and influence. According to Carolyn Bartholomew, chairman of the U.S.-China Economic and Security Review Commission, a “major goal of BRI [and the concurrent dominance of China’s maritime shipping industry] is to open more markets for Chinese goods, displacing goods and services currently provided by the U.S. and other countries.”¹¹⁹ Since the United States has retreated almost completely from the global maritime industry through a lack of interest in U.S.-flag shipping and international port ownership and operation, Chinese goals of controlling access to overseas markets have become ever easier to achieve.

As China’s maritime dominance in shipping, global port ownership, maritime finance, and shipbuilding continues to grow—as is expected and detailed in Chinese strategic plans and documents—China concurrently will gain political power and influence. It would be naive to think this will not affect nations around the world, including the United States and members of the EU. One only need consider the recent debacle that occurred during the summer of 2019 when a National Basketball Association (NBA) general manager expressed support for protesters in Hong Kong. The government in Beijing was outraged and demanded an apology. The situation threatened the NBA’s multibillion-dollar business in China. The result: the NBA backpedaled. The association released a statement in English that “affirmed both Beijing’s concerns and the league’s support for individuals educating themselves and sharing their views on matters of importance to them.” But—unbeknownst to most people—the NBA also issued a different statement in Mandarin that stated, “We are extremely disappointed in the inappropriate comments by the General Manager.”¹²⁰ Similarly, a flight attendant working for a subsidiary of Cathay Pacific, an airline based in Hong Kong, voiced her support for the Hong Kong protesters. The PRC government ordered the airline to dismiss the flight attendant, and it did so.¹²¹ While these events were relatively minor, one only can imagine the demands that China could make on countries, including the United States, given further dominance in the global maritime industry. In 2016, for example, the Dalai Lama visited Mongolia, which greatly displeased the Chinese. So China closed its border with Mongolia—which is landlocked. This severely affected Mongolia’s economy.¹²² In yet another example of Chinese bullying, a November 2019 *New York Times* article noted that Chinese officials recently had been outraged with the Czech Republic. Developing relations between the two countries and massive Chinese “investment, trade, and business deals” had prompted the Czech president to declare that “the Czech

Republic would become China's gateway to Europe." All was well until various events caused Czech leaders to question the commitment their country had made to the "one China" policy, and even to venture to demonstrate support for Taiwan. The result was soured relations with the Chinese, who then backed away from PRC-Czech business deals. China even implemented a policy restricting Chinese tourists from visiting Prague.¹²³ Recent history is replete with other examples of China bullying countries and companies, including firms in the United States, into complying with its wishes—"or else." Increasing dominance in the global maritime industry through ship and port ownership, maritime financing, and BRI funding will ensure the Chinese have ever-increasing leverage to do the same in the decades ahead. Meanwhile, the United States stands idly by. As far as international shipping and port operations are concerned, the United States has absolutely no leverage at all. What is worse is that lack of action on the part of the United States clearly threatens America's global trade.

Chinese control in the global maritime industry is the result of aggressive strategic planning coupled with favorable government policies backed by the power of SOEs and subsidies and other forms of government funding. There simply is no way for private-sector companies in the global industry to compete with this on their own. No matter what the economic conditions, SOEs have access to massive capital that the private sector simply cannot marshal. Further, to protect SOEs, the Chinese government can restrict outsiders' ability to compete and can enact laws and implement other policies that benefit its SOEs—and it has done so. The Chinese have shown themselves to be masters at this as they developed and promoted their maritime industries over decades.

A major concern is that the global maritime industry has been consolidating in all sectors, meaning that with each passing year there are fewer and fewer companies in all sectors of the industry. This is true in shipbuilding, ship operation, and port ownership and operation, despite the fact that the industry continues to grow as the global economy becomes more integrated.

Container shipping is but one powerful example of this. Forty years ago, it would have been difficult, if not impossible, to identify all the ocean shipping companies that operated freight vessels carrying global trade; there were hundreds of such concerns, including dozens of U.S.-flag companies. Today, container-shipping companies carry some 60 percent of all seagoing trade, and there are many more and larger vessels carrying freight (now mostly in shipping containers). But the number of companies has been reduced drastically through acquisitions and mergers. In early 2018, the top fifteen containership operators carried 70 percent of the global trade; just six months later the number had been reduced to ten companies carrying the same portion of the trade.¹²⁴ In 2019, the top five companies carried the majority of shipping containers.¹²⁵ In order by size, these

were A.P. Moller / Maersk (Danish), Mediterranean Shipping Company (Swiss), COSCO (Chinese), CMA CGM (French, with an association with COSCO), and Hapag-Lloyd (German). The existence of fewer and fewer companies restricts competition and can affect service. As noted in an earlier section, UNCTAD contends that too few container-shipping companies remain to ensure adequate competition.¹²⁶

To make matters worse, the companies noted above operate within only three shipping alliances, which also include smaller companies. These shipping alliances are essentially cartels, thereby further restricting competition. These alliances—the 2M Alliance, the Ocean Alliance, and THE Alliance—together control 91 percent of global container shipping.¹²⁷ The large numbers of megacontainerships built over the past few years or on order have created overcapacity that will linger for many years. This has resulted, and for the foreseeable future will continue to result, in lower freight rates, which could force other companies out of business, spurring even more consolidation in the industry.¹²⁸ The largest of the container-ship operators, Maersk, even has suggested that severe competition will result in only three large companies carrying the vast majority of global trade in containers—no doubt with China’s COSCO being one of those three, if not number one.¹²⁹

The presence of fewer and fewer companies in any industry tends to result in higher costs to consumers and poorer service. As COSCO takes more control over the world’s container shipping, the Chinese government will gain more and more political leverage over countries that rely on its container-shipping services and port ownership and operation for their international trade. Economic theory suggests that if there are too few companies in an industry, such that service and pricing affect consumers adversely, new companies will form to enter the industry, improve competition, and positively affect costs and service.

Unfortunately, this will not happen in the ocean shipping industry—unless host governments subsidize the new companies. Entering the global shipping industry, particularly container shipping, requires billions of dollars and many years to build vessels, establish service, and obtain port and intermodal connections. It would take years to receive positive returns on investment, and the likelihood of positive returns would be questionable in any case. In other words, the likelihood of attracting investors to form new container-shipping companies is poor, given the economics and time considerations involved.

Still another concern is the current profit margins in container shipping. One of the reasons the industry has consolidated is that in trying to compete and in building large fleets of megacontainerships, freight rates have been driven down, which has pushed companies and investors out of the industry, fueling ongoing mergers and acquisitions that have reduced the number of companies drastically. Naturally, investors are motivated by profits, and if profits are lacking there is an

understandable desire to sell unprofitable assets and move on to greener pastures. With the power of subsidies and other forms of government financing as well as favorable legislation and policy assistance, Chinese SOEs in shipping and the maritime industry at large can weather financial storms and economic downturns. They further have the funding and capability to buy out private-sector companies during economic downturns. Yes, Chinese SOEs, like private-sector companies, are motivated by profit, but they also are motivated by Chinese government policy and political ambitions.

This all makes for a potentially dangerous situation as far as the global container-shipping industry is concerned. For example, A.P. Moller / Maersk is a public company owned largely by the Maersk family and other investors; MSC is completely privately owned, by a Swiss family; and CMA CGM is a public company owned by investors, as is Hapag-Lloyd. What will happen if global container rates, already depressed, reach a point at which shipping families and investors grow tired of poor profit margins and decide to withdraw from the business to put their funds into more-profitable ventures? In December 2018, Moody's cut Maersk's credit rating—already not the best—from Baa2 to Baa3, “which is at the bottom of the investment grade bond rating.”¹³⁰ In the fall of 2019, CMA CGM reported a second straight quarterly loss and, as was noted earlier, previously had sold 49 percent of its global port-operations entity, Terminal Link, to a Chinese company to reduce its debt. (There are no data on the second-largest container-shipping company, MSC, because it is entirely privately owned by a Swiss family.) In total, container shipping worldwide is on shaky ground, and further consolidation is likely. This author speculates that the Chinese government, through COSCO and other Chinese companies, will be more than happy to purchase any containership companies that fail. This happened as recently as 2017, when COSCO purchased the 150-year-old OOCL. So further consolidation in the container-shipping industry is possible, with China benefiting and COSCO taking even more dominant control of the global industry, which will result in greater leverage, political and otherwise, for the Chinese government.

Throughout, this article has referred numerous times to how the Chinese government subsidizes the country's maritime industries in every sector, and the degree to which it does so. This is despite the fact that in 2001 China became a member of the World Trade Organization (WTO). WTO rules expressly prohibit government subsidies.¹³¹ In the maritime sector, the Chinese simply ignore these WTO rules, and apparently the rest of the world acquiesces. One Harvard study indicated that in the shipbuilding industry alone China subsidized shipyard costs by between 13 and 20 percent from 2006 through 2016.¹³² It is clear that vast Chinese government funding has been provided to ocean-shipping giant COSCO as well. Given the implied acceptance of this by the rest of the world

and on the basis of past performance, there is no reason to expect the Chinese to stop subsidizing their maritime industries. One might argue that Chinese government subsidies of the country's maritime industry benefit other nations and people by providing lower-cost shipping, but subsidies distort the market and ultimately can result in the creation of oligopolies or even monopolies, which then can dictate service and costs, and in the case of China can exert political influence as well.

While China merely is poised to dominate the world's container shipping, it already dominates shipbuilding and global port ownership and operation. For decades, the top three shipbuilding countries in the world have been Japan, Korea, and China. Over 40 percent of the world's commercial ships now are built in China, and this percentage is growing as shipyards in other countries no longer can compete and so cease to operate.¹³³ China is the global leader in ship finance by providing funds for international shipping companies seeking to buy and build ships, particularly in Chinese shipyards.¹³⁴ This means that, although China may not own or operate large numbers of the world's commercial ships, it has influence, if not control, over more than just Chinese-owned ships, because it holds the mortgages on a major percentage of ships owned or operated by companies throughout the world. In 2017, for example, Chinese SOE banks provided ship-construction loans of over twenty billion dollars, primarily for construction in Chinese shipyards. Chinese strategic plans call for China to increase its leadership in ship-construction financing in the decades ahead.¹³⁵

From a military point of view, in 2015 the Chinese government issued new guidelines to Chinese shipping companies and shipyards, *Technical Standards for New Civilian Ships to Implement National Defense Requirements*. These guidelines lay out construction and equipment requirements to ensure that Chinese ships can support the forces of the People's Liberation Army, including the People's Liberation Army Navy (PLAN). These guidelines pertain to containerships, RO/RO vessels, bulk ships, and general-cargo ships.¹³⁶ These measures will give China—as the number one shipowner in the world, with thousands of ships under its control—unparalleled strategic sealift capabilities, if not greater overt military power.

Also a matter of concern is the possibility that ports that China constructs or operates under a BRI initiative ultimately may be used by its military, particularly the PLAN. The Chinese already have constructed and are using a PLAN base in Djibouti. In July 2019, the Chinese defense minister commented that “China is willing to deepen military exchanges and cooperation with the Caribbean countries and Pacific island countries under the framework of OBOR [BRI].” Chinese laws compel Chinese companies and SOEs to comply with requests and demands from Chinese security and intelligence organizations and the military. This enables these agencies to have global and easy access to intelligence in

the sixty-eight countries receiving BRI funding and throughout the thousands of other maritime and BRI projects. Chinese intelligence agencies will benefit further as BRI funds are made available to install Huawei 5G equipment in BRI ports and terminals throughout the world.¹³⁷ When COSCO gained ownership and control in the Greek port of Piraeus, for example, the company replaced the network infrastructure with all-Huawei equipment.¹³⁸

Senior U.S. military personnel and members of Congress have raised the concern that Chinese dominance in the port industry around the world ultimately could restrict access to critical ports the U.S. Navy needs. Chinese intelligence agencies' obvious penetration into these ports will affect U.S. military interests and security adversely.¹³⁹ Might China, through its BRI funding or through bribes, demand that foreign governments deny access to the U.S. military? It is a very real possibility. Djibouti, for example, has been a recipient of BRI funding, and China holds the majority of Djibouti's debt. As noted, the country now has a PLAN military base. Djibouti also happens to be an important logistics hub for the U.S. Navy and the U.S. Central Command. Might the Djiboutian government restrict or deny USN access to this base as a result of Chinese influence, funding, or bribes?¹⁴⁰ Might this same tactic be used in other regions of the world where the U.S. Navy and other elements of the U.S. military operate?

In 2015, Michael P. Pillsbury, the director of the Center on Chinese Strategy at the Hudson Institute, authored a book, *The Hundred-Year Marathon: China's Secret Strategy to Replace America as the Global Superpower*. The title supplies the book's thesis. The author is not only a China expert but a fluent speaker and writer of Mandarin, which gives him particular insights into what the Chinese really are thinking. As he frequently notes in the book, the Chinese often say one thing in an English text but something completely different in the Chinese version of the same text. With this approach, the Chinese often are able to fool Western scholars, journalists, and political leaders who do not read and write Mandarin about what their true motives are. In fact, Pillsbury notes that one of the main strategies the Chinese have used throughout their history has been to deceive others about their true intentions. The ancient Chinese military thinker Sun-tzu, for example, emphasized the importance of deception more than any other military doctrine.¹⁴¹

Yet as the Chinese have become the world leader in all aspects of the global maritime industry, including ship ownership, port and terminal ownership and operations, shipbuilding, ship finance, and maritime education, they have demonstrated plainly their intention to use the maritime industry to further the strategic, economic, and political goals of the PRC. Dominance in the maritime industry, along with concurrent multitrillion-dollar efforts through the BRI,

will give China truly unparalleled power. The Chinese clearly are trying to sell a positive message—that these efforts are designed “to kindle a new era of globalization, a golden age of commerce that will benefit all. . . . As Western countries move backwards by erecting walls, China is contriving to build bridges, both literal and metaphorical.”¹⁴² And to be sure, there are positive aspects to what the Chinese are doing. China’s decades-long dominance in manufacturing has provided the world with a plethora of consumer goods at moderate prices, which has raised the standard of living for people around the world. Not surprisingly, the Chinese are pursuing maritime ambitions as a source of revenue, trade, and jobs for the Chinese people as well. These alone are not nefarious actions. Still, huge Chinese maritime SOEs with access to massive government funds and subsidies and the protection of Chinese laws and policies give the Chinese government astonishing political leverage and control—on a scale potentially greater than anything seen in human history.

There are those in the EU and the United States who have expressed concerns over BRI and the global dominance of the Chinese maritime industry. But these voices are too few and too often essentially have been ignored, leaving a lack of action by Western governments. If the Chinese are not “secretly planning to replace the U.S. as the global superpower,” as Pillsbury suggests, they seemingly are attempting something very close to it. Their actions prove this, and the West’s inaction makes their success more possible every day. The time is long overdue for the United States to reinvigorate its maritime industries and challenge the Chinese in the same game by using the very same techniques the Chinese have used to gain dominance in the global maritime industry. The private-sector maritime industry cannot do this alone—the U.S. maritime industry simply cannot compete against the power of the Chinese state. The United States and allied governments must bring to bear substantial and sustained political action, policies, and financial support. To do anything less is to cede control of the world’s maritime industry and global supply chains to China, and perhaps to force the United States and its allies to enter their own “century of shame.”

NOTES

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129. Jared Vineyard, "2 Big Problems Ocean Freight Shipping Faces in 2019," *Universal Cargo*, 31 January 2019, universalcargo.com/.
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131. "Enforcement and Compliance," *International Trade Administration*, enforcement.trade.gov/.
132. *China's Maritime Silk Road Initiative* (Bartholomew statement), p. 25.
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134. "Top 10 in Ship Finance 2018," *Lloyd's List*, 6 December 2018, lloydslist.maritimeintelligence.informa.com/.
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136. Franz-Stefan Gady, "China Prepares Its 172,000 Civilian Ships for War," *The Diplomat*, 23 June 2015, thediplomat.com/.
137. *China's Maritime Silk Road Initiative* (Sbragia statement), pp. 14–15.
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139. *Ibid.*; *China's Maritime Silk Road Initiative* (Becker statement), p. 49.
140. *China's Maritime Silk Road Initiative* (Becker statement), p. 53.
141. Michael Pillsbury, *The Hundred-Year Marathon: China's Secret Strategy to Replace America as the Global Superpower* (2015; New York: St. Martin's, 2016), p. 11 and passim.
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EXHIBIT 8

Pier Competitor

Isaac B. Kardon and
Wendy Leutert

China's Power Position in Global Ports

On August 16, 2019, the People's Liberation Army Navy (PLAN) Type-052C destroyer *Xi'an* steamed into Egypt's main port of Alexandria for a four-day technical stop.¹ The Chinese warship berthed at a terminal that is operated and majority (over 80 percent) owned by two Chinese firms: the privately owned, Hong Kong-based Hutchison Ports, and the state-owned Shenzhen Yantai Port Group. With a People's Republic of China (PRC) flag flying over the terminal, the Chinese sailors received a warm welcome from the PRC ambassador to Egypt, a throng of PRC citizens, and the Egyptian Navy commander of the adjacent Alexandria naval base. The PLAN destroyer then underwent specialized repairs at the large dry dock on site, loaded supplies and equipment, and replenished its fuel and stores.²

Operating as part of the 32nd PLAN task force in the region since 2009, *Xi'an's* port call might appear entirely unremarkable: a routine episode for a navy that now operates regularly across the eastern Mediterranean and northern Indian Ocean region.³ Yet it is also a conspicuous display of the growing

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1. Embassy of the People's Republic of China in the Arab Republic of Egypt, "Zhongguo haijun xi'an jian dida aiji yalishanda gang" [Chinese navy ship *Xi'an* arrived in Alexandria, Egypt], *Xinhua she* [Xinhua News Agency], August 18, 2019, <http://eg.china-embassy.org/chn/dsxx/dshd/t1689617.htm>.

2. *Ibid.*

3. As of February 2022, the PLAN has dispatched forty such task forces to the region. Liu Shangjing, "Zhongguo haijun di 40 pi huhang biandui zhengshi danfu Yadingwan huhang renwu" [China's 40th escort task force officially undertakes escort mission in the Gulf of Aden], *Jiefangjun bao* [Liberation Army Daily], February 9, 2022, http://www.mod.gov.cn/action/2022-02/09/content_4904493.htm. These counter-piracy escorts are only one of the PLAN's expanding mission sets. The PRC Ministry of Defense has publicized naval task group visits to 138 ports in 94 countries since the first PLAN overseas port call in 1985. PLA Maritime Affairs Propaganda Bureau, "Haijun fabu zuixin xingxiang xuanchuanpian 'zhongguo haijun heping lilian'" [Navy re-

sophistication and scope of Chinese military operations abroad—achieved without a network of overseas bases and allies.⁴ Rather than calling at China’s sole overseas military base at Djibouti, on the other end of the Suez Canal and Red Sea, *Xi’an* used repair facilities at Alexandria to sustain its operations.⁵ Like other blue water navies, the PLAN depends on foreign commercial ports for logistics and husbanding services that keep its ships afloat and crews supplied, rested, and combat-ready.⁶ Yet unlike other navies, the PLAN enjoys privileged access to dual-use facilities that Chinese firms own and operate overseas.⁷

What are the international security implications of China’s global port expansion? We argue that China’s leveraging of PRC firms’ transnational commercial port network—most evident in the PLAN’s use of commercial ports for military logistics and intelligence functions—constitutes an underappreciated but consequential form of state power projection. We investigate this phenomenon by conducting the first systematic empirical study of PRC firms’

leases latest image-building film ‘Chinese navy force for peace’, *Ba yi dianshi* [China Military TV], April 22, 2019, http://tv.81.cn/sytj-tupian/2019-04/22/content_9484915.htm.

4. In this instance, the *Xi’an* destroyer was returning from exercises with the Russian Navy in the Baltic Sea and drew international scrutiny for its transit through territorial waters in the English Channel. Royal Navy News, “Royal Navy Shadows Chinese Destroyer through Strait of Dover,” *Maritime Executive*, August 6, 2019, <https://www.maritime-executive.com/features/royal-navy-shadows-chinese-destroyer-through-strait-of-dover>.

5. The Soviet Union originally established sophisticated naval repair facilities at Alexandria for their naval operations in the Mediterranean in the late 1960s and 1970s. Barry M. Blechman and Robert G. Weinland, “Why Coaling Stations Are Necessary in the Nuclear Age,” *International Security*, Vol. 2, No. 1 (Summer 1977), pp. 96–97, <https://doi.org/10.2307/2538661>.

6. Husbanding services refer to the various services rendered to ships and their crews in port, including tugboats, fuel, electrical power, repairs, parts and supplies, and food and water.

7. Although we refer to overseas port terminals “owned and operated” by PRC firms, there are sixteen ports for which the PRC firm holds equity in the lease or concession but has no role in operations because a non-PRC firm holds the operating lease. These are the terminals in which China Merchants Port owns a minority stake in Terminal Link, which is 51 percent owned by the French transport firm CMA CGM. The terms of China Merchants Port’s stake grant it only board representation and no role in operating the terminals in which it holds equity interest. See *Preliminary Offering Memorandum* (Hong Kong: China Merchants Port Holdings Company Limited, 2018), <https://secure.fundsupermart.com/fsm/bond/relatedBondDocument/1126/CMHI%20OC.pdf>.

China Merchants Port/Terminal Link also owns seven other terminals, but there are other PRC firms who own and operate other terminals at those ports, and so they can be accurately considered PRC firm “owned and operated” ports. For the sake of brevity and readability, “Chinese/PRC firms’ port terminals” (and variations thereof) is used hereafter. This term refers to the following more complex reality: Chinese firms hold an equity stake in the lease or concession on at least one terminal at ninety-six foreign ports; the Chinese firm is also the facility operator—that is, the firm’s personnel (typically as part of a subsidiary or a joint venture with another firm or host government) manage day-to-day terminal activities. The complexity of owner-operator distinctions requires industry reporting to make certain methodological choices about what counts as “ownership” or “operations.” We follow the definitions employed in standard industry reporting by Drewry Research. See Eleanor Hadland, ed., *Global Container Terminal Operators: Annual Review and Forecast*, Annual Report 2021/22 (London: Drewry Maritime Research, 2021), pp. 278–279.

overseas port assets and how they are utilized.⁸ Specifically, we map Chinese firms' global "port-folios," investigate their ties to the Chinese Communist Party (CCP) and the state in China (the Party-state),⁹ and analyze the technical and functional characteristics of their port assets as well as related PLAN activities. We find that China's global port expansion already enables vital military functions.

Demonstrated military uses aside, commercial cargo transport remains the primary function of PRC firms' port terminals at home and abroad. At least 90 percent of China's trade is seaborne, which significantly exceeds the global average of 80 percent.¹⁰ As the world's leading trading nation, ports in China are vital nodes in international trade and transport networks.¹¹ They are the origins, destinations, or transshipment points for immense volumes of global trade.¹² Modern port terminals are necessary conduits for China's vast imports of energy, raw materials, and advanced technologies, and they are its principal link to global export markets. Coastal China is home to eight of the world's top ten ports by total cargo tonnage and seven of the ten highest throughput container ports.¹³ In addition, China's huge domestic port sector has the capi-

8. Some empirical studies of Chinese firms' overseas port presence combine port construction and investment projects together for analysis, while others focus only on a geographically defined subset of projects. Chen Peiran, Wang Chengjin, and Liu Weidong, "Zhongguo haiwai gangkou touzi geju de kongjian yanhua ji qi jili" [Spatial evolution and mechanisms of China's overseas port investment patterns], *Dili kexue jinzhan* [Advances in Geographical Science], Vol. 38, No. 7 (2019), pp. 973–987; and Li Yanmei et al., "Zhongguo zai haiwai jianshe de gangkou xiangmu shuju fenxi" [Data analysis of China's overseas port projects], *Quanguo bianhua shuju xuebao* [Journal of Global Change Data and Discovery], Vol. 3, No. 3 (2019), pp. 234–243.

9. "Party-state" refers to the Chinese state as an entity comprised of both government bodies and the organs of the ruling CCP. For a careful discussion of this term, see Vivienne Shue, "Party-state, Nation, Empire: Rethinking the Grammar of Chinese Governance," *Journal of Chinese Governance*, Vol. 3, No. 3 (2018), pp. 268–291, <https://doi.org/10.1080/23812346.2018.1488495>.

10. Xi Jinping cited the figure of 90 percent in an address to a port industry conference in China in 2017. "Xi Jinping zong shuji guanxin gangkou fazhan jishi" [General Secretary Xi Jinping reviews China's record of port development], *Xinhua she*, July 5, 2017, <http://news.cctv.com/2017/07/05/ARTIsVj2xlPdnLiLk8p69e9j170705.shtml>. Some PLAN analysts calculate that as much as 97 percent of China's trade is seaborne. Hu Dongying, Huang Rui, and Cai Guangyou, "Tuijin qianting bingli zouxiang yuanyang de ji dian sikao" [Several thoughts on advancing the submarine force to distant seas], *Jianchuan dianzi gongcheng* [Ship Electronic Engineering], No. 1 (2017), p. 1. The UN estimates that 80 percent of overall global trade volume is seaborne. UN Conference on Trade and Development [UNCTAD], *Review of Maritime Transport 2019*, UNCTAD/RMT/2019/Corr.1 (New York: UNCTAD, 2019), p. 4.

11. For example, over 30 percent of global container throughput passes through ports in mainland China. See Hadland, *Global Container Terminal Operators*, p. 20.

12. Ports in China and Chinese carriers dominate most international metrics for maritime transport. For example, the PRC has ranked first in the "liner shipping connectivity index," which "indicates a country's integration level into global liner shipping networks" since the start of data collection in 2006. See "Liner Shipping Connectivity Index, Quarterly," December 16, 2021, Maritime Transport folder, Data Center, UNCTADstat, <https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=92>.

13. "Sea-web Ports," *IHS Markit*, accessed August–September 2021, <https://ihsmarkit.com/>

tal, technical expertise, and cargo volumes to build out ports and transport networks overseas.¹⁴ China's top leader Xi Jinping touts the country's trade links with over 600 international ports.¹⁵ Chinese firms themselves also own/operate¹⁶ one or more terminals at ninety-six foreign ports, thirty-six of which are among the world's top one hundred by container throughput. Another twenty-five of these top one hundred are on the Chinese mainland, establishing a PRC nexus for some 61 percent of the world's leading container ports.

China's leadership actively supports its companies' expansion into global port assets. The PRC government has long used policy incentives and material support to facilitate domestic firms' acquisition, operation, and development of overseas infrastructure. These efforts began at the central level in 1999 with the "going out" policy, continued with targeted industrial plans during the first decade of the twenty-first century,¹⁷ and have accelerated since the launch of the Belt and Road Initiative in 2013.¹⁸ In 2015, a central-level policy document emphasized that "facilities connectivity is a priority area for implementing the [Belt and Road] Initiative. . . . With regard to transport infrastructure construction, we should focus on key passageways, junctions and projects."¹⁹ Ports facilitate Chinese commerce in partner countries by providing the physical platforms to increase trade and investment ties. PRC firms have therefore

newsletter/maritime-information/innovations-vol3-2012/sea-web-ports.html; and "One Hundred Ports 2021," Lloyd's List, *Informa UK*, <https://lloydslist.maritimeintelligence.informa.com/one-hundred-container-ports-2021>.

14. Jihong Chen et al., "Overseas Port Investment Policy for China's Central and Local Governments in the Belt and Road Initiative," *Journal of Contemporary China*, Vol. 28, No. 116 (2019), pp. 196–215, <https://doi.org/10.1080/10670564.2018.1511392>.

15. "Xi Jinping zong shuji guanxin gangkou fazhan jishi," July 5, 2017.

16. "One Hundred Ports 2021"; Isaac B. Kardon and Wendy Leutert, "PRC Firm-Owned/Operated Port Terminals Worldwide," 2022, on file with authors. For more details about the authors' dataset, see the online appendix. This study's data include only port terminals owned and operated by PRC companies. Chinese company contracting to build or upgrade port facilities is notable as part of the overall international maritime transport network, but such construction projects are beyond the scope of this study.

17. For example, the PRC's 11th Five-Year Plan in 2006 called for "encouraging enterprises to participate in the construction of overseas basic infrastructure, improving the level of project contracting, and steadily developing labor cooperation." "Zhonghua renmin gongheguo guomin jingji he shehui fazhan di shiyi ge wu nian guihua gangyao" [People's Republic of China national economic and social development eleventh five-year plan outline], *Xinhua she*, March 16, 2006, http://www.gov.cn/ztl/2006-03/16/content_228841.htm.

18. For the specifically maritime component of the Belt and Road Initiative program, see Christopher Len, "China's 21st Century Maritime Silk Road Initiative, Energy Security and SLOC Access," *Maritime Affairs: Journal of the National Maritime Foundation of India*, Vol. 11, No. 1 (2015), pp. 1–18, <https://doi.org/10.1080/09733159.2015.1025535>.

19. National Development and Reform Commission, Ministry of Foreign Affairs, and Ministry of Commerce, "Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road," *Xinhua she*, March 28, 2015, <https://www.mfa.gov.cn/ce/cede//det/zt/yidaiyilude/t1250293.htm>.

established deep-water ports, hinterland transport networks, and inland resource extraction facilities to advance China's program for economic development, both at home and abroad.²⁰

Today, China's growing overseas interests face a higher probability of conflict threatening them. In the post-Cold War era, the relatively open and secure global economic system initially made it unnecessary for the People's Liberation Army (PLA) to emulate earlier rising powers' attempts to force open foreign markets or seize resources overseas. But this purported Pax Americana now appears more risky than rewarding to China as "great power competition" with the United States intensifies.²¹ Chinese leaders now perceive dependence on U.S. military power to ensure their country's maritime transport, energy supplies, and overseas market access as a profound strategic vulnerability.²² Meanwhile, growing numbers of Chinese citizens and assets abroad increase the country's "attack surface," exposing China to greater risk of harm from natural disaster, political disruption, or hostile foreign action.²³ Real and perceived security threats to these overseas interests expand demand for PLA protection, which China has duly authorized and deployed.²⁴ As one

20. For discussion of the model of integrated transport and logistics, see Peter A. Dutton, Isaac B. Kardon, and Conor M. Kennedy, *China Maritime Report No. 6: Djibouti: China's First Overseas Strategic Strongpoint* (Newport, R.I.: China Maritime Studies Institute [CMSI], U.S. Naval War College, (April 2020), <https://digital-commons.usnwc.edu/cmsi-maritime-reports/6/>; and Isaac Kardon, "Pier Competitor: Testimony on China's Global Ports," *Naval War College Review*, Vol. 74, No. 1 (Winter 2021), pp. 128–152, <https://digital-commons.usnwc.edu/nwc-review/vol74/iss1/11>.

21. China's ability to "free ride" in a relatively secure and open world order is in jeopardy as the United States and China become more overtly antagonistic. For analyses of this process, see Jessica Chen Weiss and Jeremy L. Wallace, "Domestic Politics, China's Rise, and the Future of the Liberal International Order," *International Organization*, Vol. 75, No. 2 (Spring 2021), pp. 635–644, <https://doi.org/10.1017/S002081832000048X>; and Evan A. Feigenbaum, "China's Challenge to *Pax Americana*," *Washington Quarterly*, Vol. 24, No. 3 (2001), pp. 31–43, <https://doi.org/10.1162/01636600152102188>.

22. PLA strategists consistently emphasize the PRC's vulnerability to U.S. maritime power. See Shou Xiaosong, ed., *Zhanlüe xue* [Science of military strategy] (Beijing: Junshi kexue chubanshe, 2013), p. 53.

23. Sheena Chestnut Greitens, Myunghee Lee, and Emir Yazici, "Counterterrorism and Preventive Repression: China's Changing Strategy in Xinjiang," *International Security*, Vol. 44, No. 3 (Winter 2019/20), p. 36, https://doi.org/10.1162/isec_a_00368.

24. China's 2015 Defense White Paper identifies "protecting overseas interests" as a "strategic task" for the PLA. State Council Information Office of the People's Republic of China [SCIO], *China's Military Strategy* (Beijing: SCIO, May 2015), http://english.www.gov.cn/archive/white_paper/2015/05/27/content_281475115610833.htm. For a 2021 amendment to national legislation that codified "protecting overseas interests" as a core mission of the PLA, see *Law of the People's Republic of China on National Defense 2020 Revision*, 13th National People's Cong., 24th sess., December 26, 2020, art. 22 (amendment effective January 1, 2021), <http://www.npc.gov.cn/englishnpc/c23934/202109/567129ffe3144ccb9ff358fed798b9e3.shtml>. On the development of this increasingly international mission-set, see Jennifer Rice and Erik Robb, *China Maritime Report No. 13: The Origins of "Near Seas Defense and Far Seas Protection"* (Newport, R.I.: CMSI, U.S. Naval War College, February 2021), <https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?article=1012&context=cmsi-maritime-reports>. See also Mathieu Duchâtel, Oliver Bräuner, and Zhou Hang, *Protecting*

prominent Chinese strategic analyst puts it: “Wherever Chinese interests go, our security boundary must also go.”²⁵ In practice, this means that when PRC firms “go out” to own or operate a major port terminal, the PLAN is responsible for securing both the terminal and the sea lines of communication (SLOCs) that convey trade between PRC firms and China.

The PLA has only one military base abroad, so it must find alternative ways to execute its mission of protecting China’s overseas interests. Commercial port facilities enable considerable military logistics and intelligence capabilities in peacetime. In addition, the global scale and distribution of PRC firms’ network of ports abroad establish a degree of Party-state control over China’s commercial and military supply chains—as well as those of other states. This network also allows the PLA to sustain its growing peacetime operations across the globe and closely monitor those of others.

In wartime scenarios, however, the military utility of PRC firms’ overseas ports is less certain. China’s lack of allies remains a major obstacle because a host state’s decision to permit military use of a port on its soil would almost certainly require it to assume a belligerent status in an international conflict.²⁶ If armed conflict were to occur, China may not have access to port facilities in states seeking to maintain neutrality. Beyond this political challenge, the technical limitations of most commercial ports further impede their military utility. Container terminals employ specialized handling equipment that is unsuitable for naval ships. Moreover, China would lack the hardened naval facilities, specialized parts, ordnance, equipment, and trained on-site personnel requisite for any complex or contested military operation.²⁷ Chinese firms’ port network thus produces a distinct but restricted form of power projection: enabling the

China’s Overseas Interests: The Slow Shift away from Non-interference, SIPRI Policy Paper No. 41 (Stockholm: Stockholm International Peace Research Institute, 2014). In contrast, Andrea Ghiselli suggests that Chinese firms have not generally invited increased security. Andrea Ghiselli, *Protecting China’s Interests Overseas: Securitization and Foreign Policy* (New York: Oxford University Press, 2021).

25. Zhang Wenmu, *Lun zhongguo haiquan* [On China’s sea power] (Beijing: Haiyang chubanshe, 2014), pp. 210–211.

26. The conditions for being “neutral” or “belligerent” in armed conflict are debatable. But as a general proposition, the use of national territory for military operations is sufficient to jeopardize a state’s neutrality and make it a potential target. See, for example, Charles Zorgbibe, “Sources of the Recognition of Belligerent Status,” *International Review of the Red Cross*, No. 192 (March 1977), pp. 111–123, <https://international-review.icrc.org/articles/sources-recognition-belligerent-status>; and Rob McLaughlin, “Whither Recognition of Belligerency?” *Articles of War*, Lieber Institute, September 17, 2020, <https://lieber.westpoint.edu/whither-recognition-of-belligerency/>.

27. For a description of the various functions that a base can provide, see Blechman and Weinland, “Why Coaling Stations Are Necessary,” pp. 89–91. They list “replenishment of consumables,” “intelligence and consumables,” “repairs,” and “direct combat support” as the basic support provided by a shore facility for a fleet. The last is the most problematic at commercial facilities.

PLA to operate with growing scope and scale in peacetime, but providing only limited combat support in wartime.

Our findings advance existing research on the identification and measurement of sources of national power. International security scholars have traditionally considered possession of offensive military capabilities as a key criterion for great power classification.²⁸ Although overseas bases may be sufficient for a state to project offensive military power overseas, we contend that they are not the sole index of state power projection capabilities. A more comprehensive assessment of power projection must consider a state's capacity to execute military operations overseas from any platform, including from a network of commercial facilities with dual-use capacity that may be employed periodically (rather than continuously, like a dedicated base). Indeed, the weapons systems, command and control infrastructure and personnel, force protection capabilities, and other specialized features of a military base are only necessary for combat. Logistics and intelligence are foundational missions for military power that may be achieved through a globally scaled and distributed network of less specialized facilities, like commercial port terminals.

This paper proceeds as follows. First, we amend standard conceptualizations of power projection centered on overseas military bases by highlighting a state's potential ability to control and direct its companies' transnational commercial assets. Next, we present original data on PRC firms' overseas port assets, with a focus on the portfolios of the three dominant players: China Ocean Shipping Company (COSCO), China Merchants Group, and CK Hutchison Holdings Ltd. We then outline organizational and legal mechanisms of Chinese Party-state influence over firm assets and operations abroad. Finally, we assess the security consequences of the actual and potential military use of PRC firms' port-folios, concluding with a discussion of policy implications and future research avenues.

Alternative Modes of Power Projection

States have traditionally projected and sustained military power using overseas bases, typically sited in colonial possessions or allied territories.²⁹ But states can also project power abroad through their firms' overseas commercial

28. John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York: W.W. Norton, 2001), pp. 30–31.

29. Robert E. Harkavy, "Thinking about Basing," *Naval War College Review*, Vol. 58, No. 3 (2005), pp. 1–31, <https://digital-commons.usnwc.edu/nwc-review/vol58/iss3/2>.

portfolios. Using organizational and legal mechanisms, states can direct, mobilize, reorient, or repurpose their companies' international assets for strategic purposes. States can project power directly via military utilization of these assets, or indirectly by exploiting them to blunt other actors' economic activities or military power.³⁰ States can further amplify these benefits by controlling and coordinating multiple firms' assets. Although power projection relies on the attributes of individual assets, the emergent network's properties enable states to generate and sustain such power.

The growing literature on "weaponized interdependence" posits that states can exploit advantageous positions in globalized economic networks to gain coercive influence over others.³¹ For a state to "weaponize" its advantages in any particular sector, the structure of the network must concentrate activity into one or a few central nodes within its jurisdiction or control.³² The United States is, unsurprisingly, the main contemporary user (and abuser) of this power, benefiting from its central position in global financial networks and key technologies such as the Internet.³³

States such as China and Russia may also be able to "exploit their position in global networks to challenge U.S. dominance."³⁴ Yet assessing their ability to do so demands deeper consideration of a wider range of networks. In particular, the hypothesized advantages of centrality (i.e., enhanced abilities to monitor, control, and coerce) do not readily accrue in the maritime transport sector, in which critical network nodes (ports) and ties (shipping lines) are globally dispersed.³⁵ States host major ports largely because of maritime geography (e.g., Panama, Singapore, Djibouti), resource endowments (e.g., the

30. States use navies both to project offensive power and to stymie that of others, as well as to protect their own maritime commerce and degrade that of others. See Bernard Brodie, *A Layman's Guide to Naval Strategy*, 2nd ed. (Princeton, N.J.: Princeton University Press, 1943), pp. 84–85.

31. Henry Farrell and Abraham L. Newman, "Weaponized Interdependence: How Global Economic Networks Shape State Coercion," *International Security*, Vol. 44, No. 1 (Summer 2019), pp. 42–79, https://doi.org/10.1162/isec_a_00351; and Daniel W. Drezner, Henry Farrell, and Abraham L. Newman, eds., *The Uses and Abuses of Weaponized Interdependence* (Washington, D.C.: Brookings Institution Press, 2021).

32. Farrell and Newman, "Weaponized Interdependence," pp. 51–53.

33. See *ibid.*, pp. 42–79, on the U.S. ability to "weaponize" the SWIFT banking system and ICANN internet registry. For an instance of non-U.S. weaponized interdependence, see Adam Segal, "Huawei, 5G, and Weaponized Interdependence," in Drezner, Farrell, and Newman, *The Uses and Abuses of Weaponized Interdependence*, pp. 149–165. Michael Mastanduno observes that "only the strongest states enjoy the opportunity to weaponize interdependence." Michael Mastanduno, "Hegemony and Fear: The National Security Determinants of Weaponized Interdependence," in Drezner, Farrell, and Newman, *The Uses and Abuses of Weaponized Interdependence*, p. 67.

34. Stacie E. Goddard, "The Road to Revisionism: How Interdependence Gives Revisionists Weapons for Change," in Drezner, Farrell, and Newman, *The Uses and Abuses of Weaponized Interdependence*, p. 85.

35. For a description of the energy maritime transportation network and an illustration of the physical obstacles inherent in interrupting energy shipments, which may reroute or change desti-

Persian Gulf, northern Australia), or hinterland markets (e.g., Rotterdam, Los Angeles).³⁶ Chinese companies, however, have achieved a distinctive kind of centrality in this network by owning and operating terminals at multiple key nodes across the world's maritime routes. Whether and how this highly distributed "central" position can be effectively weaponized against other states will depend on China's motives and objectives, which we examine in the next section.

In general, three types of conditions are necessary for a state to reliably project power via its domestic firms' overseas assets: material, political, and geostrategic. First, from a basic material standpoint, a state must possess companies that have transnational networks of complementary assets. Furthermore, its companies must be able to maintain and exercise operational control, at least temporarily, over their assets abroad.³⁷ Although this does not require sole or majority ownership, a substantial equity position is typically associated with operational control. In addition, these material assets must possess some dual-use capability. Ports are intrinsically useful for merchant and naval ships alike because of their links to networks of communications, transport, and energy infrastructure.³⁸ Yet commercial facilities vary in their ability to support combat operations: some do not have requisite water depths or pier lengths, others lack specialized repair facilities, fuels, parts, and personnel, while unfavorable geography limits still others. Not all individual port terminals must be able to support the requirements of all vessels, but the network as a whole must be able to furnish suitable ports of call for transporting, equipping, and informing armed forces in a given area of operations.

Second, the home state must be able to significantly influence its firms' overseas operations in order to project power using company assets. Whether firms are actually subject to influence depends on organizational and legal factors in their home countries. For example, power projection will fail if firms can reliably refuse home state entreaties and asset appropriation. If, however, the

nation at any point, see Emily Meierding, "Weaponizing Energy Interdependence," in Drezner, Farrell, and Newman, *The Uses and Abuses of Weaponized Interdependence*, pp. 169–184.

36. Jürgen Sorgenfrei, *Port Business*, 2nd ed. (Berlin: De Gruyter, 2018).

37. This operational control requirement leads us to omit consideration of the specific conditions in host or target states that may make it impossible for a foreign state's military to utilize assets within that state. Only those states that have allowed a Chinese firm to own or operate critical assets within their countries are included among the cases that we consider. Certain host states may have strong public control over port assets that allows them to regulate and modify how foreign actors use these ports, while other states may seize foreign actors' assets if certain legal conditions are not met or during crises. Such conditions make portfolio power projection difficult, if not impossible.

38. For a discussion of overlapping networks in the energy, transport, and finance sectors, see Meierding, "Weaponizing Energy Interdependence," pp. 172–180. Each sector manifests particular network structures with varying susceptibility to strategic use by state actors.

home state can override company objections by appealing to legal, institutional, organizational, political, or other mandates or norms, there is scope for such control. Although state influence on specific corporate decisions is difficult to observe directly, laws and regulations formally authorizing intervention in firm management, strategy, or operations can provide strong indirect evidence of home state capacity to control company operations and assets abroad.

Host state support, acquiescence, or opposition also conditions the potential for power projection involving overseas commercial assets. Possible uses of these assets depend on the agreed terms of leases, concessions, and contracts—and the host state’s capacity and willingness to enforce them. These quantities vary considerably across jurisdictions, but a foreign firm’s ownership and operation of a commercial asset generally grant it substantial autonomy over how the asset is used. Host state conditions become far more salient in conflict scenarios, which prompt the sovereign decision of whether to permit a foreign state’s military on host state territory. Such contingencies must be analyzed in the context of specific country dyads. This study examines projection from a multilateral perspective under peacetime conditions rather than potential wartime responses by the host state.

Third, the effectiveness of power projection involving any network of commercial assets depends on geostrategic conditions. Foremost among them is a state’s perception of its own interests in projecting power within a given region. Some states are unlikely to pursue military objectives, even if they have a transnational network of commercial assets that could be so employed. A state that does not perceive fundamental security threats to its overseas interests has little incentive to “weaponize” its position. For that small group of strong states with significant security interests under potential threat and military capabilities extending beyond their own regions, the geographic location of their commercial port assets affects whether and where they project power.

For ports, this means that proximity to strategically important resources, sea lanes, maritime chokepoints, markets, and possible conflict sites will dictate the effectiveness of power projection (see table 1).³⁹ Not all individual ports need to be located strategically for them to have a strategic effect in concert. Still, at least some combination of regional assets must afford ready access to a contested arena for the network to support meaningful power projection. For example, for most military operations of sufficient complexity, one or more of

39. For an extensive analysis by a leading PLA author on maritime chokepoints and their strategic importance, see Liang Fang, *Haishang zhanlüe tongdao lun* [On maritime strategic passages] (Beijing: Shishi chubanshe, 2011).

Table 1. Factors Affecting State Power Projection from Overseas Commercial Ports

Material	Political	Geostrategic
transnational network of port assets	home state influence over firms via state ownership and other organizational and legal mechanisms	location
port infrastructure suitable for military operations	host state support	regional security environment

the regional ports must have a proximate airfield, specialized fuels and parts, dry dock facilities, roll-on/roll-off (RO-RO) piers suitable for military vehicles and equipment, and other technical characteristics.⁴⁰ Such requirements vary by region and strategic contingency.⁴¹ Further afield, a more robust array of facilities are required for any substantial military power to be generated and sustained.⁴²

Assessing China's Power Position in Global Ports

This section empirically evaluates PRC firms' overseas port asset holdings and their attributes. Specifically, we examine the ports' geography, operational control, and physical capacity.

PRC FIRMS' INTERNATIONAL PORT-FOLIOS AND POWER PROJECTION

China's leading position in the global port industry generates considerable capability for power projection. PRC firms exercise continuous control over a

40. Developing port facilities that are suitable for potential military use involves installing or upgrading equipment or expanding capacity in port facilities. Specifically, such upgrades and expansions include dredging deeper approach channels and berths, expanding and reinforcing piers and quays, constructing warehousing and medical facilities, reinforcing roll-on/roll-off (RO-RO) platforms and port road networks, and other improvements that meet military standards (especially pertaining to supply and distribution of petroleum, oil, and lubricants).

41. For example, on China's strategic periphery (within the so-called First Island Chain and around its land boundaries), commercial facilities need not provide much military capacity because of the proximity of the mainland and its many other modes of power projection in the vicinity. For a detailed review of some land-based capabilities, see Stephen Biddle and Ivan Oelrich, "Future Warfare in the Western Pacific: Chinese Antiaccess/Area Denial, U.S. AirSea Battle, and Command of the Commons in East Asia," *International Security*, Vol. 41, No. 1 (Summer 2016), pp. 7–48, https://doi.org/10.1162/ISEC_a_00249.

42. The single PLA base in Djibouti, for instance, is of only limited utility for supporting complex or contested operations. See Dutton, Kardon, and Kennedy, *China Maritime Report No. 6*. See also Susanne Kamerling and Frans-Paul Van Der Putten, "An Overseas Naval Presence without Overseas Bases: China's Counter-piracy Operation in the Gulf of Aden," *Journal of Current Chinese Affairs*, Vol. 40, No. 4 (2011), pp. 119–146, <https://doi.org/10.1177%2F186810261104000405>.

vast transnational network of port assets.⁴³ The Chinese Party-state can use organizational and legal mechanisms to exert significant influence over its firms' overseas operations and assets. A handful of Chinese firms, the majority of which are state-owned, hold most foreign port assets; this also facilitates state coordination. Furthermore, Chinese firms' international port facilities possess significant strategic value and dual-use functions that could help mitigate perceived security threats to Chinese interests overseas. In the next sections, we examine the characteristics of PRC firms' network of international port assets and analyze the types and degrees of power projection that it supports.

EMPIRICAL STRATEGY AND DATA

To assess the security implications of PRC companies' overseas port-folios, we employ a three-part empirical strategy.⁴⁴ First, we map every ocean port outside of China in which a Chinese firm owns or operates one or more terminals.⁴⁵ We identify ninety-six ports in fifty-three countries that meet these criteria and analyze their geographic distribution, ownership, and operational characteristics.⁴⁶ Next, we investigate the leading PRC firms' ties to the CCP and the state bureaucracy it directs (the "Party-state"). We do this by analyzing defined organizational and legal mechanisms of influence extending from the Party-state to firms. Finally, we examine the actual and desired uses of this port network—and its limitations—focusing on observed functions and technical characteristics of the terminals themselves, as well as the international security implications of the broader port network.

Our empirical analysis employs hand-coded original data collected primarily from industry and military sources. Industry sources include IHS Markit's "Seaweb," Drewry's "Global Container Terminal Operators Annual Review

43. As of March 2022, there have been no reported cases in which a foreign government has nationalized port assets operated by a Chinese firm. It is possible that China could seize assets from foreign governments as a form of debt repayment. One such potential case is the Port of Mombasa in Kenya, which was reportedly collateralized against a \$2.3 billion loan for the Standard Gauge Railway, linking Nairobi and Mombasa, with a contract waiver specifying that the port would not be protected by Kenya's sovereign immunity. "Report: Kenya Risks Losing Port of Mombasa to China," *Maritime Executive*, December 20, 2018, <https://www.maritime-executive.com/article/kenya-risks-losing-port-of-mombasa-to-china>.

44. Our observations of PLA capacity to utilize corporate assets for military purposes are necessarily limited to openly reported activities during peacetime.

45. We exclude inland river ports because these are generally part of secondary feeder networks to ocean ports that are the key nodes for global trade.

46. Chinese firms have participated in engineering and procurement contracts in several hundred other ports around the world. These activities (typically construction, dredging, and installation of port machinery) do not confer any type of control over the operations of the port and are excluded from our analysis.

Table 2. Potential Military Utility of Individual Ports

	Geography	Operational Control	Physical Capacity	Examples
Low utility	not proximate to chokepoints, strategic sea lines of communication, or conflict areas	minority ownership, little or no role in operations	unable to support PLA surface vessels	Marseille-Fos, France
Medium utility	proximate to strategic sea lines of communication and/or conflict areas	majority ownership; operational role	can support some PLA surface vessels	Dar es Salaam, Tanzania
High utility	within 480 nautical miles of maritime chokepoint, proximate to strategic sea lines of communication and/or conflict areas	sole owner and operator	can support largest PLA surface vessels	Gwadar, Pakistan

and Forecast," Lloyd's List, port companies' annual reports and disclosures to securities exchanges, and author discussions with industry executives, naval officers, and intelligence analysts conducted between 2018 and 2021. We draw extensively on Chinese-language military, industry, and academic writing, including official planning documents and doctrinal and technical publications from the PLA Academy of Military Sciences, PLA National Defense University, and the PLA Transportation Academy. We also use a database on Chinese military diplomacy compiled by the U.S. National Defense University.⁴⁷ This study's combination of industry and military data with Chinese-language sources provides the most complete empirical account to date of PRC firms' overseas port operations, and PLA utilization of those facilities.⁴⁸

Although our unit of analysis is networked portfolios rather than individual ports, we develop a basic framework for categorizing ports therein according to their potential military utility. This typology is based on three key factors: geography, operational control, and physical capacity (see table 2). We categorize a port's overall strategic value as low, medium, or high. For geography, we assess the strategic importance of the port's location by measuring its proximity to critical maritime chokepoints, China's strategic SLOCs, and areas of in-

47. Center for the Study of Chinese Military Affairs, Chinese Military Diplomacy Database version 3.0 (Washington, D.C.: National Defense University, June 22, 2020).

48. The online appendix presents key data on which this paper's analysis is based. The master database is on file with the authors. It is not appended in full because it includes proprietary information from commercial vendors.

stability or militarized conflict that may place Chinese assets and citizens at risk. For operational control, we consider whether a firm is the minority or majority owner of the port asset, as well as whether there are other non-PRC firms operating separate terminals at the same port. For physical capacity, we evaluate the suitability of the port's infrastructure to support various types of military vessels and operations.

GEOGRAPHY

PRC firms' port assets abroad are concentrated close to major resource areas and export markets (see figure 1). The geographic distribution of these ports reflects integrated commercial and strategic objectives. There is little meaningful distinction between "commercial" and "strategic" port locations: the economic importance of resources and markets creates a military imperative to secure access to them. Protecting China's overseas economic interests has been an explicit PLA mission since 2004, and it became one of its eight "strategic tasks" in 2015.⁴⁹

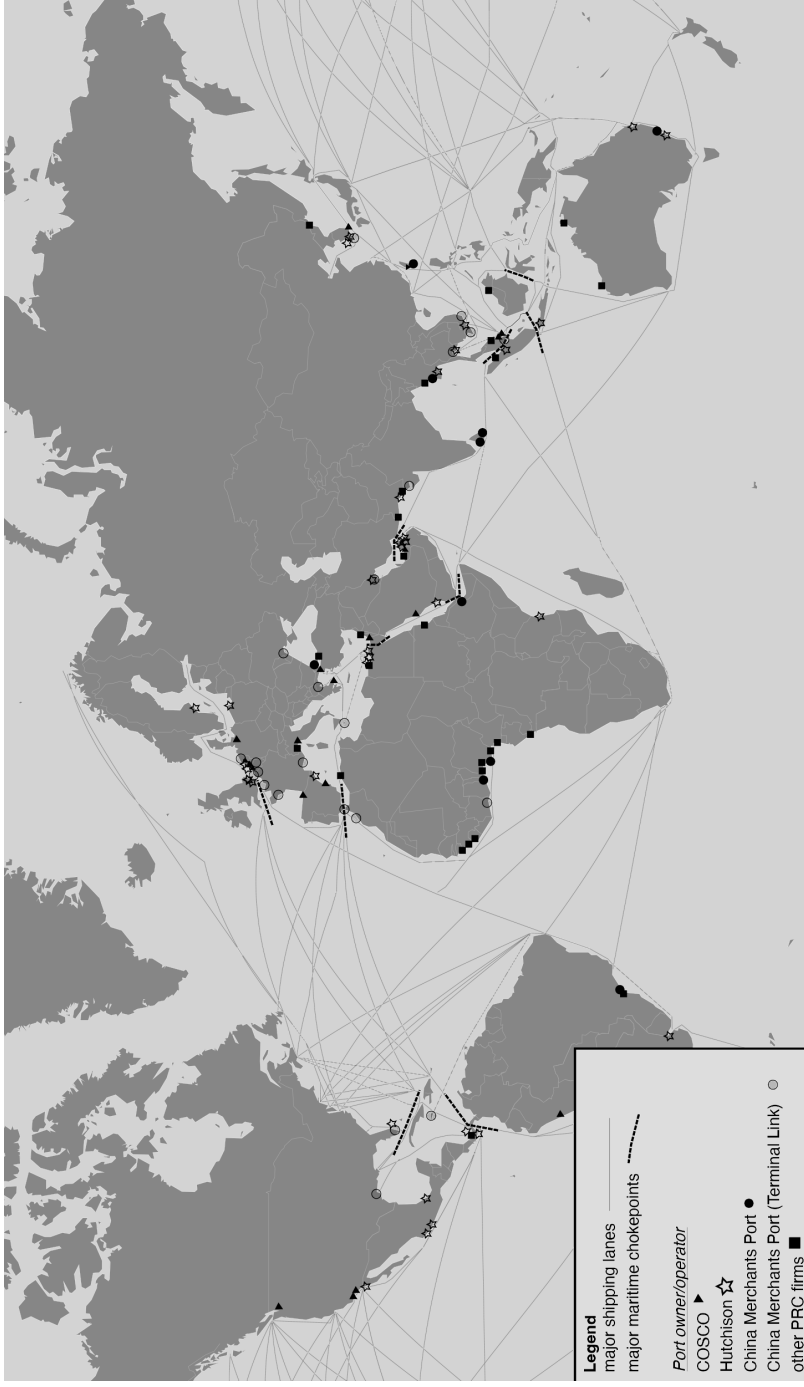
Given the global distribution of major resource areas and markets, the regional locations of PRC firms' port terminals are geographically balanced across the world. The largest cluster outside Asia is in Europe, China's largest export market, with PRC firm positions at twenty-two ports that are located primarily in the north and west of the continent. There are also significant and growing PRC company port holdings on every oceanic coastline and on every continent except Antarctica.

The practical geography of maritime transport tells a different story than this seemingly uniform regional distribution. Nearly half of Chinese firms' ports (forty-five of ninety-six) are located along the maritime superhighway that connects coastal China to critical natural resources, major export markets, and high-technology imports (see figure 2).⁵⁰ This SLOC runs from coastal China through the South China Sea and Malacca Straits, across the northern Indian Ocean, then splits into two routes. One route runs north through the Arabian Sea and into the Strait of Hormuz and the Persian Gulf, where over

49. These missions began with the 2004 "New Historic Missions" that included international components for the first time in PLA doctrine. The 2015 PRC Defense White Paper further articulates an "open seas protection" mission that codified the PLAN's central role in protecting overseas economic interests. SCIO, "Section IV: Building and Development of China's Armed Forces," in *China's Military Strategy*. On the development of this increasingly international mission set, see Rice and Robb, *China Maritime Report No. 13*.

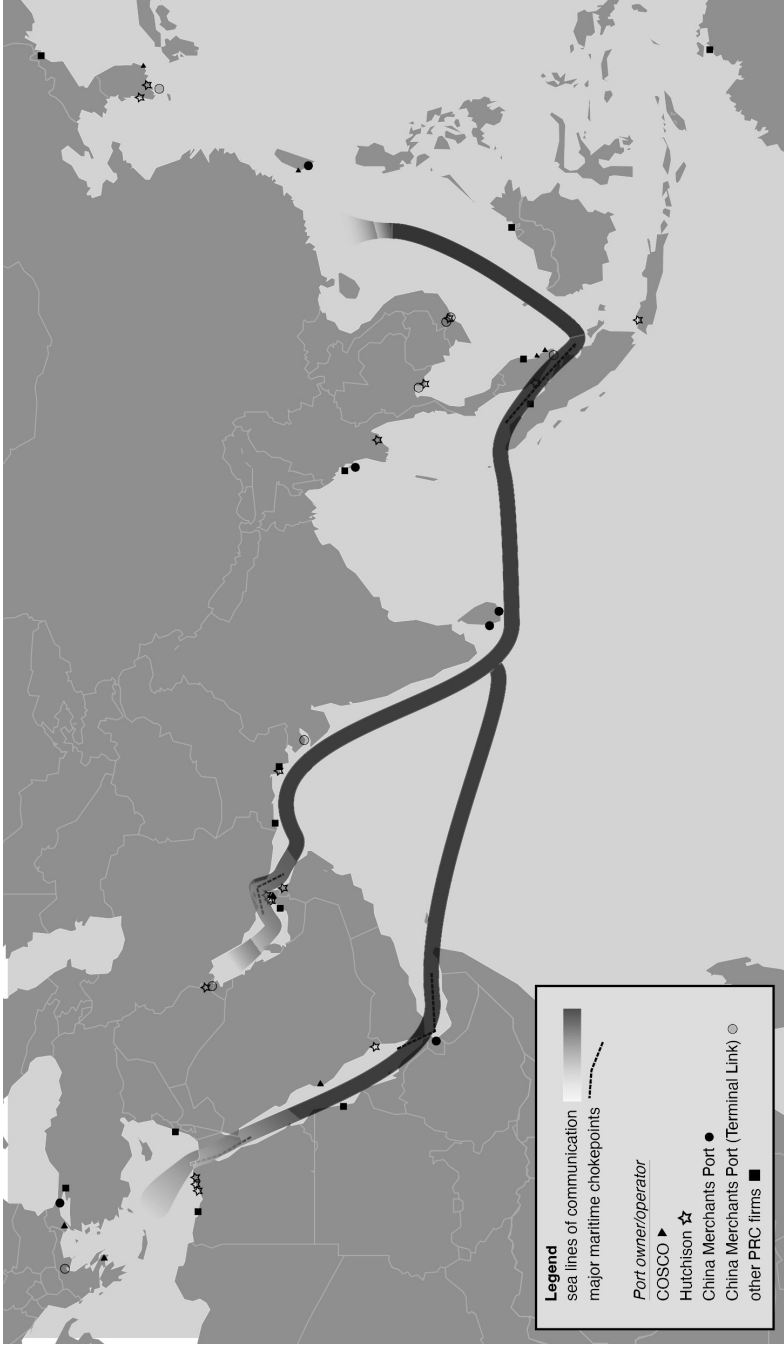
50. PLAN analysts calculate that approximately 80 percent of China's imported oil transits the Malacca Straits. Hu, Huang, and Cai, "Tuijin qianting bingli zouxiang yuanyang de ji dian sikao," p. 1.

Figure 1. Chinese Companies' Global Port Positions



SOURCES: Kardon and Leuter, "PRC Firm-Owned/Operated Port Terminals Worldwide"; "Mapcreator" (Eindhoven, Netherlands: Mapcreator) <https://mapcreator.io/>; and OpenStreetMap contributors, "OpenStreetMap," <https://www.openstreetmap.org>.

Figure 2. China's "Maritime Lifeline" Sea Lines of Communication



SOURCES: Kardon and Leutert, "PRC Firm-Owned/Operated Port Terminals Worldwide"; "Mapcreator"; and OpenStreetMap contributors, "OpenStreetMap."

40 percent of China's imported petroleum originates.⁵¹ The second route branches west to the developing economies of Africa and that continent's vast oil and mineral wealth. It passes the sole PLA overseas base in Djibouti at the entrance to the Bab al-Mandeb Strait and continues north through the Suez Canal and into the Mediterranean, where PRC firms have established several hub ports connecting China to Europe.⁵²

PLAN analysts describe this main east–west SLOC as the PRC's "maritime lifeline"; securing China's maritime activity and supply lines along it is the navy's existential task (see figure 2).⁵³ Two-thirds of the terminals that PRC firms have acquired since 2015 are located along this route, and more are under active negotiation in East Africa and the Persian Gulf (see table A in the online appendix for a list of PRC firms' overseas port assets over time).⁵⁴

PRC firms' port assets are further clustered near vital "maritime chokepoints," the small number of narrow straits and canals that connect major bodies of water, and through which large volumes of shipping necessarily traverse.⁵⁵ Of China's overseas port projects, 55 percent are within 480 nautical

51. The Chinese oil import figure (40.9 percent) comes from researchers at Dalian Maritime University under grants from the PRC State Council (Ministry of Natural Resources and Ministry of Education), Liaoning Province, and the Chinese Communist Party (Central Party Grant for Basic Research). Wang Shuang, Lu Jing, Li Jing, "Guada'er gang tonghang hou de zhongguo jinkou yuanyou haiyun lujing xuanze yanjiu" [Research on the selection of routes for maritime transportation of imported crude oil from Gwadar port to China], *Zhongguo ruan kexue* [China Soft Sciences], No. 5 (2018), p. 21. According to the U.S. Energy Information Administration, oil exports passing through the Strait of Hormuz average 21 million barrels per day, accounting for one-third of globally traded oil. Justine Barden, "The Strait of Hormuz Is the World's Most Important Oil Transit Chokepoint," *Today in Energy*, U.S. Energy Information Administration, June 20, 2019, <https://www.eia.gov/todayinenergy/detail.php?id=39932>.

52. European External Action Service, *EU-China Relations Factsheet* (Brussels: European Union, June 2020), https://eeas.europa.eu/sites/default/files/eu-china_factsheet_06_2020_0.pdf. China's Eastern Mediterranean hubs include the Piraeus, Greece, megaproject and major terminals in Israel, Turkey, Malta, and Italy. Transshipment to and from the Mediterranean is supported by six PRC companies' port facilities in and around the Suez Canal in Egypt and Saudi Arabia (see online appendix A).

53. Many PLA writings refer to the "lifeline" designation for this particular SLOC. See, for example, Hu, Huang, and Cai, "Tuijin qianting bingli zouxiang yuanyang de ji dian sikao," p. 2; and Feng Liang, Du Bo, and Chen Guohua, "Chuangzaoxing kuozhan guoji gonggong haiyu liyi de zhanlue sikao" [Strategic consideration of the creative expansion of maritime interests on the high seas], *Taipingyang Xuebao* [Pacific Journal], Vol. 22, No. 6 (2014), pp. 89–98.

54. Possible new terminal projects for PRC firms in the region include Bagamoyo (Tanzania), Jask (Iran), and Duqm (Oman)—all are located near the Straits of Hormuz and Bab al-Mandeb.

55. Chokepoints are strategically important because any disruption in or near them can halt or impede commercial vessels, thereby increasing the costs and transit times for cargo, including for critical commodities like hydrocarbons and minerals. Chokepoints may also impede the flow and positioning of naval forces. A chokepoint is thus a point of vulnerability to the possible interdiction of vital cargoes and vessels, even if maritime geography ensures that almost every chokepoint can be circumvented by sailing on a longer route. There is no authoritative list of which maritime chokepoints are the most significant, although a consensus is growing in China's expert communities. For instance, Liang Fang analyzes the Malacca Straits (and nearby Sunda and Lombok

miles (i.e., one day steaming at 20 knots) of major chokepoints.⁵⁶ Among the ports along the PRC's main SLOC, however, an even more significant geo-strategic concentration is evident. Two-thirds (thirty of forty-five) of these ports are within operational range of the chokepoints between Europe and China's eastern seaboard: the Malacca Straits (through which 80 percent of China's imported oil transits),⁵⁷ the Strait of Hormuz, the Bab al-Mandeb Strait, and the Suez Canal. Each port thus represents a potential vulnerability to interdiction or disruption of vital cargoes and vessels—though, importantly, maritime geography ensures that any chokepoint can be circumvented by sailing on a longer route.⁵⁸ The positions of Chinese firms' commercial facilities in this network plausibly mitigate interdiction or disruption risks, providing more robust access to a wider range of transshipment points, and furnishing an array of ports with potential for power projection.

OPERATIONAL CONTROL

Operational control sufficient for power projection derives from the domestic ownership structure of a given firm and its ownership stakes in overseas port assets (see online appendix table B). Direct state ownership is one key means of Party-state influence.⁵⁹ Approximately two-thirds of Chinese compa-

Straits), the Strait of Hormuz, the Strait of Gibraltar, the Suez Canal, the Panama Canal, the Bab al-Mandeb Strait, and Black Sea/Turkish Straits as the principal "strategic maritime corridors." Fang, *Haishang zhanlüe tongdao lun*; and Liang Fang, "Meiguo kongzhi haishang zhanlüe tongdao de lilun shijian yu qishi" [Theory and practice of U.S. control of maritime strategic passages and lessons for China], *Zhongguo haiyang daxue xuebao* [Journal of Ocean University of China], No. 5 (2019), pp. 39–46.

56. We measure the distance from the port to the nearest point in the strait or canal and code those within 480 nautical miles (i.e., one day steaming at 20 knots) as being "proximate" to the chokepoint. Some PLA engineers who analyze fuel requirements for "far seas" operations use 600 nautical miles as the maneuver space of a warship or taskforce. Wei Zhenkun et al., "Jianting biandui yuanyang zuozhan youliao baozhang liliang bushu" [Deployment of petroleum, oil, and lubricant support forces for warship formations conducting distant ocean operations], *Junshi jiaotong xueyuan xuebao* [Journal of Military Transportation Academy], Vol. 22, No. 4 (April 2020), pp. 53–56.

57. Hu, Huang, and Cai, "Tuijin qianting bingli zouxiang yuanyang de ji dian sikao," p. 2.

58. This characteristic of maritime transport networks provides further reason to distinguish it from the "chokepoint" effects described in the literature on "weaponized interdependence."

59. State ownership does not always directly indicate greater company responsiveness to Party-state policies and priorities, but it is one reasonable approximation. Empirical analysis of PRC firms' foreign direct investments (of which port projects are one instance) finds that state-owned firms are more likely to conform closely to official policy goals. See Randall W. Stone, Yu Wang, and Shu Yu, "Chinese Power and the State-Owned Enterprise," *International Organization*, Vol. 76, No. 1 (2022), pp. 229–250, <https://doi.org/10.1017/S0020818321000308>. State control over state-owned enterprises (SOEs) is not necessarily absolute, however, and privately owned firms may also be responsive to the state. As William Norris observes, "China's economic statecraft is not limited to the realm of state-owned firms . . . [and] even among Chinese state-owned enterprises, there are instances in which the state is not able to control the behavior of commercial actors." William J. Norris, *Chinese Economic Statecraft: Commercial Actors, Grand Strategy, and State*

nies involved in overseas port operations and investments are state-owned enterprises (SOEs). There are two main types of such firms: central SOEs and local SOEs.⁶⁰ Of Chinese firms' ninety-six ports abroad, SOEs have operational roles or ownership stakes in sixty-five of them (68 percent). The vast majority of these projects involve a central SOE; only eight solely involve local SOEs. The remaining 32 percent of PRC companies' overseas ports feature only privately owned PRC firms, though their non-SOE status does not diminish other mechanisms of Party-state influence over their assets and activities.

Chinese firms hold majority ownership in the concessions for most of the international terminals in which they have equity stakes. A Chinese firm is the majority shareholder in at least one terminal at fifty-nine of the ninety-six ports (61 percent). Variation in terminal ownership is important because it affects the level of firm influence over port development and, typically, management of port operations. All else being equal, the larger the ownership stake, the greater the firm's discretion to divert some commercial space toward developing, utilizing, and maintaining facilities that are suitable for PLAN or other noncommercial uses.⁶¹

Ownership typically entails a management or technical role for the firm in facility operations. A Chinese firm is directly involved in operations at one or more terminals in eighty (83 percent) of the ninety-six ports. Sometimes this involvement comes as part of a joint venture, and sometimes a firm is a wholly owned entity incorporated in either the host state or China. Involvement in port terminal operations means PRC company employees exercise discretion over which vessels may call under which circumstances. They oversee cargo movements, transshipment, and storage, and they manage sophisticated trade and commercial data collection to handle cargoes and vessels. In general, the firm holding an operating lease or concession will have primary authority over

Control (Ithaca, N.Y.: Cornell University Press, 2016), pp. 2, 41. On mechanisms of state influence over SOEs and privately owned firms alike, see Curtis J. Milhaupt and Wentong Zheng, "Beyond Ownership: State Capitalism and the Chinese Firm," *Georgetown Law Journal*, Vol. 103, No. 3 (2015), pp. 665–722, <http://scholarship.law.ufl.edu/facultypub/696>.

60. Central SOEs refer to the ninety-seven nonfinancial companies owned by the central government and supervised by the State-Owned Assets Supervision and Administration Commission (SASAC), a special committee of the State Council. See "Yangqi minglu" [List of central SOEs], *State-owned Assets Supervision and Administration Commission of the State Council*, June 24, 2021, <http://www.sasac.gov.cn/n2588035/n2641579/n2641645/index.html>. Local SOEs are owned and administered by subnational governments. On the organizational structure of SOEs and their position in the Chinese administrative hierarchy, see Li-Wen Lin and Curtis J. Milhaupt, "We Are the (National) Champions: Understanding the Mechanisms of State Capitalism in China," *Stanford Law Review*, Vol. 65, No. 4 (April 2013), pp. 697–759, <https://www.jstor.org/stable/23530170>.

61. Such discretion would be evident, for example, in contracting with another Chinese firm to build a major airfield or road and rail links nearby or by maintaining specialized dry docks or warehousing.

the use of terminal space and equipment.⁶² Greater PRC firm operational control thus supports greater potential for military use of commercial terminals. The conditions of highest operational control occur when the PRC firm is the only operator at the port facility, which is the case at twenty-nine (30 percent) of the ninety-six ports.⁶³ If no other firms are present at the entire port facility, the operator enjoys substantial discretion to use the piers, warehousing, and port equipment according to its preferences. While the commercial desirability of majority ownership and sole operation may vary depending on a firm's financial and technical conditions, such positions provide higher levels of operational control that are more useful militarily.

The major PRC firms own and operate networks of port terminals (see table B in the online appendix). This networked quality is crucial for both commercial flows and the overall strategic value of these facilities. Coordination among multiple ports can sustain military operations across a given area. Such coordination is more readily achieved within a single company, which can directly manage port calls, pier space, warehousing, and other services across its terminal portfolio. Only three Chinese firms account for most of the country's overseas ports: COSCO Shipping Ports, China Merchants Port (CMPort), and Hutchison Ports (Hutchison). These large firms, each a subsidiary of a larger enterprise group, own and operate one or more terminals at seventy-eight (81 percent) of the ninety-six PRC company ports.⁶⁴ Each firm ranks among the world's leading terminal operators,⁶⁵ and each holds a port-portfolio that forms a global network in its own right. Additionally, each is integrated into its parent conglomerate's assets and operations in merchant shipping, shipbuilding, ship and container leasing, finance, maritime insurance, and other industries rele-

62. Sorgenfrei, *Port Business*, pp. 243–333.

63. Because non-PRC firms do not operate any terminals in these instances, this “whole port” operational role grants still further autonomy for the Chinese company to utilize port assets for commercial purposes, or to facilitate PLA or other official uses.

64. See online appendix table B. Of the ninety-six ports, we count each port only once, even if multiple Chinese firms own and operate (either separately or in partnership) individual terminals within a single larger port complex. For example, CMPort and COSCO operate one or more separate terminals in seven ports (Ambarli, Antwerp, Busan, Kaohsiung, Rotterdam, Singapore, and Zeebrugge).

65. COSCO and Hutchison were ranked first and second in 2017 and 2018, respectively, in overall container throughput, and CMPort was ranked seventh, despite initiating its overseas operations only in 2010. In equity-adjusted throughput volumes (i.e., accounting for the proportion of the terminal owned by the firm), Hutchison ranked second, COSCO was third, and CMPort was sixth. In 2019 and 2020, COSCO was first in overall container throughput, Hutchison was fourth, and CMPort was seventh. In equity-adjusted terms, CMPort was second, COSCO was third, and Hutchison was fifth. See Neil Davidson, ed., *Global Container Terminal Operators: Annual Review and Forecast*, Annual Report 2019 (London: Drewry Maritime Research, 2019), pp. 16–27; and Hadland, *Global Container Terminal Operators*, pp. 70–79.

vant to maritime trade and transport.⁶⁶ Such vertical integration decreases the transaction costs and increases the managerial effectiveness of Party-state utilization or direction of firm assets. Notably, both COSCO and CMPort each hold substantial equity stakes in most of the local SOEs that own and operate ports abroad.⁶⁷ This ownership effectively expands each of their portfolios and confers an additional degree of influence over the operations of a still wider network of international port assets.

Yet PRC firms' operational control of overseas port assets varies depending on the host state's jurisdiction. The particular provisions of a port concession stipulate varied permissible facility uses, lease terms and conditions, joint venture partner roles, public or private status of the local port authority, and harbor security arrangements.⁶⁸ These technical factors are also subject to China's broader bilateral diplomatic and economic relations with the host state. Across jurisdictions, however, a terminal operator will generally have discretion to grant access for naval vessels seeking to call and to determine priorities for warehousing and storage, fuel and bunkering, and utilization of dry dock, medical, power, and other terminal facilities.⁶⁹

PHYSICAL CAPACITY

Specific shore facilities are required for a commercial port to be used for military purposes. In general, civil port infrastructure can fulfill limited, routine military demands for refueling and resupplying naval vessels with food, water, and basic goods readily available through commercial husbanding services. Some ports have dry dock and shipyard facilities that enable more complex ship repairs and maintenance. According to PLA logistics officers, however, more significant military use would require "combat-ready terminals" that feature RO-RO berths built at a higher standard than those used for passenger automobiles,⁷⁰ a minimum 10-meter berth depth, assembly sites and

66. Christopher J. McMahon, "The Middle Kingdom Returns to the Sea, While America Turns Its Back—How China Came to Dominate the Global Maritime Industry, and the Implications for the World," *Naval War College Review*, Vol. 74, No. 2 (Spring 2021), <https://digital-commons.usnwc.edu/nwc-review/vol74/iss2/7/>; and Jude Blanchette et al., *Hidden Harbors: China's State-Backed Shipping Industry* (Washington, D.C.: Center for Strategic and International Studies, July 2020).

67. COSCO holds 20 percent of Qingdao Port International Company, 11 percent of Beibu Gulf Port Company, and 15 percent of the Shanghai International Port Group (SIPG)—China's leading domestic port operator, which in 2021 began operating its first international port in Haifa, Israel. CMPort has 27 percent shareholding in SIPG, 27 percent in Modern Terminals Limited (a privately owned Hong Kong firm), 51 percent of Liaoning Port Group, 5 percent of Ningbo Zhoushan Port Company, and 2.4 percent of Qingdao Port International. Hadland, *Global Container Terminal Operators*, pp. 106–125.

68. Port concession documents are not publicly disclosed.

69. Sorgenfrei, *Port Business*, pp. 243–333.

70. RO-RO berths that are unsuitable for heavy wheeled and tracked equipment will need to own and configure heavy-duty loading and unloading machinery that meets military specifications.

storage facilities greater than 120,000 square meters, cold chain storage for overseas replenishment, and high-quality service roads that can bear heavy equipment.⁷¹ Nearby airfields are also highly desirable to rapidly move personnel and equipment (even if at greater expense and smaller scale) in order to support military operations. We are unable to analyze all these requirements because publicly available data about them are limited. But it is evident that the full panoply of optimal military facilities is not available at the majority of PRC firms' port terminals.

Party-state direction and subsidies are necessary for enterprises to properly construct ports, even domestic ones, that can support intensive military use.⁷² Firms' independent demand for more exacting and expensive military specifications is low because commercial vessels and cargoes have different requirements.⁷³ China's ongoing civil-military integration program, detailed in the following section, includes efforts to build and maintain commercial ports to military specifications.⁷⁴ Strong demand for pier space and other terminal facilities makes it unlikely that the Chinese military will regularly use the busiest commercial ports.⁷⁵

Even ports without dedicated military facilities have commercial infrastructure that make their occasional military use possible or desirable. Examples include approach channel and berthing space of the specific dimensions that major PLA surface vessels need to safely navigate to and berth at the port. The PLAN's largest commissioned ship, the *Shandong* aircraft carrier, requires a

71. Zhang Jing, Zhang Zhihui, and Zhou Jiangshou, "Zhong mei gangkou jianshe guan che guofang yaoqiu duibiao fenxi" [Benchmarking analysis of China and America in implementation of national defense requirements in port construction], *Junshi jiaotong xueyuan xuebao* [Journal of Military Transportation Academy], Vol. 21, No. 4 (April 2019), pp. 32–36.

72. For a detailed discussion of Party-state efforts to enable the PLA's use of domestic civil transport capacity, see Conor M. Kennedy, *China Maritime Report No. 4: Civil Transport in PLA Power Projection* (Newport, R.I.: CMSI, U.S. Naval War College, December 2019), <https://digital-commons.usnwc.edu/cmsi-maritime-reports/4>.

73. Zhang J., Zhang Z., and Zhou, "Zhong mei gangkou jianshe guan che guofang yaoqiu duibiao fenxi," pp. 33–35.

74. These specifications include pier length, approach depth, berth draft, hardened facilities, heavy loading/unloading equipment, dry dock, munitions storage, medical facilities, reinforced RO-RO and roads, and a proximate airstrip of at least 3 kilometers. See Luo Xiang et al., "Minyong gangkou jianshe guan che guofang yaoqiu gongzuo yanjiu" [Research on the implementation of national defense requirements in the construction of civil ports], *Junshi jiaotong xueyuan xuebao* [Journal of Military Transportation Academy], Vol. 15, No. 11 (November 2013), pp. 6–10; Gu Yuyuan, Wang Ruiqi, and Li Zhiqiang, "Gangkou wuliu junmin ronghe tixi goujian yanjiu" [Research on building civil-military integration systems in port logistics], *Tantao yu yanjiu* [Discussion and Research], No. 10 (2018), pp. 105–107; and Zhang J., Zhang Z., and Zhou, "Zhong mei gangkou jianshe guan che guofang yaoqiu duibiao fenxi," pp. 35–36.

75. Among the major international terminal operators, COSCO and CMPort have the highest rates of average terminal utilization levels across their portfolios. Davidson, *Global Container Terminal Operators*, p. 40.

minimum of 315 meters length and 9.1 meters draft to berth at a given port.⁷⁶ According to our data, eighty-three (86 percent) of the ninety-six Chinese firm port terminals abroad meet this basic physical requirement. At other facilities that lack adequate pier space or safe approaches, anchoring a large vessel offshore and servicing it with smaller boats is possible, albeit inefficient and unsuitable for combat scenarios. Most commercial ports have latent potential to provide at least basic services to the entire PLAN fleet because of the large size of modern container and tanker vessels; however, the equipment used for these specialized commercial vessels is of less utility to warships. Nevertheless, some combination of several ports in a given area of operations is typically sufficient to fulfill most peacetime military requirements.

Organizational and Legal Mechanisms of State Influence

The Chinese Party-state's capacity to utilize PRC firms' commercial assets for military purposes is controversial and difficult to assess given a lack of reliable public information.⁷⁷ Considering both formal and informal mechanisms by which such influence could occur, our analysis reveals a Party-state that retains singular control over the political-legal system and manages key levers of the economy to promote strategic goals. We identify multiple organizational and legal mechanisms by which China may coordinate or coerce its firms to serve state directives. But we cannot definitively conclude that the Party-state directed Chinese companies to acquire commercial port assets with the express intention of using them for military purposes. Notably, PRC firms' expansion into port assets abroad preceded a number of the organizational and legal mechanisms that formally enable their dual use (see below and online appendix table A). This sequence supports a provisional assessment that centrally initiated efforts to extract military utility from PRC companies' overseas port terminals are secondary to the largely commercial drivers of their initial acquisition.

At the organizational level, the Party-state can exercise influence over firms

76. "Aircraft carriers—China, Type 001 and Type 002 (Modified Project 1143.6) (Modified Kuznetsov/Orel) classes (CVGM)," *Jane's Fighting Ships*, updated February 1, 2022. See also U.S. Office of Naval Intelligence [ONI], "China People's Liberation Army Navy (PLAN), Coast Guard, and Government Maritime Forces: 2019–2020 Recognition and Identification Guide" (Washington, D.C.: ONI, October 2019), https://www.oni.navy.mil/Portals/12/Intel%20agencies/China_Media/2020_China_Recce_Poster_UNCLAS.jpg?ver=2020-02-19-081430-327.

77. See, for example, ongoing efforts by the United States and other states to restrict the Chinese firm Huawei's involvement in telecommunications given concerns about Party-state surveillance through Huawei equipment. Michael R. Pompeo, "The United States Further Restricts Huawei Access to U.S. Technology," Press Statement, U.S. Department of State, August 17, 2020, <https://www.state.gov/the-united-states-further-restricts-huawei-access-to-u-s-technology/>.

and their assets through state ownership. SOEs are responsive to the state's direction because it is their shareholder. Although the state can influence both privately owned and state-owned firms through mechanisms such as government subsidies, extra-legal control, and executives' membership in political bodies, ownership remains a powerful lever of Party-state control. Ownership is an especially significant factor because Chinese firms' overseas port assets are heavily concentrated in the port-portfolios of only three massive conglomerates, two of which are state-owned.

Of these "big three," the central government owns both COSCO Shipping Group and China Merchants Group, the parent companies of CMPort and COSCO Shipping Ports. Of the two, COSCO is subject to greater Party-state influence because it is located in mainland China and belongs to a strategic industry that the government has designated for absolute state control.⁷⁸ COSCO's origin as a unit of the PRC Ministry of Transportation, with a monopoly on Chinese domestic and international shipping, further embeds it in the state's bureaucracy.⁷⁹ By comparison, the Hong Kong-based China Merchants Group is also centrally owned, but it is a step removed from direct state control.⁸⁰ Hutchison, a privately owned enterprise also based in Hong Kong, exists even further down the spectrum of state ownership and control. All things being equal, the COSCO commercial network is the most easily leveraged for military power projection, though each of these three large firms own and operate some networked assets that satisfy all criteria.⁸¹

Executive appointment authority is another organizational mechanism of

78. "Guozhiwei: guoyou jingji ying baochi dui qi ge hangye de juegui kongzhi" [SASAC: State-owned economy should maintain absolute control over seven industries], *Xinhua she*, December 18, 2006, http://www.gov.cn/jrzq/2006-12/18/content_472256.htm. COSCO's principal business is shipping, which is among the seven industries designated in this PRC central government program.

79. Yu Zheng and Chris Smith, "New Voyages in Search of Treasure: China Ocean Shipping Company (COSCO) in Europe," in Jan Drahokoupil, ed., *Chinese Investment in Europe: Corporate Strategies and Labor Relations* (Brussels: European Trade Union Institute, 2017), p. 234. The firm gradually restructured in the 1980s and became the COSCO Group in 1993.

80. SASAC has a separate internal classification for Hong Kong-based central SOEs, indicating the different status of these firms. SASAC, *Zhongyang qiye jingying yeji kaohe zhanxing banfa fudao jiangzuo* [Guiding lectures on temporary measures for performance evaluation of central enterprises] (Beijing: Jingji kexue chubanshe, 2003).

81. Our analysis of PLAN port calls supports this assessment because the Chinese Navy has visited ten COSCO terminals (50 percent of the firm's overseas portfolio) compared to only eight terminals each for both CMPort (25 percent of portfolio) and Hutchison (22 percent of portfolio). The particulars of each port call are not available, so it is possible that PLAN vessels made port calls at non-Chinese terminals at a given port. Some news reporting, however, included photographs that clearly show PLAN vessels' port calls at COSCO facilities. See, for example, Chen Fawen, Li Yinchuan, and Wang Guanbiao, "Haijun di 33 pi huhang bianwei fangwen alabo lianhe quizhangguo" [33rd navy escort task force visits United Arab Emirates], *Haijun xinwen* [Naval News], February 4, 2020, http://www.81.cn/hj/2020-02/04/content_9731359.htm.

state influence. The logic is simple: control the leader, control the firm. In some enterprises, such as Hutchison, executive appointment authority is market-oriented, and boards of directors select executives without formal state participation in nominations, appointments, or approvals. For other firms, such as Chinese central SOEs, the state and/or Party organs can exert “personnel power” through their authority to select, assess, transfer, and remove top company leaders.⁸² These executives are themselves government officials and members of the political elite. For both COSCO and China Merchants Group—the parent companies of COSCO Shipping Ports and CMPort, respectively—the Central Organization Department of the CCP exercises appointment authority for the top executive positions (i.e., board chair, Party secretary, and general manager).⁸³

Joint and concurrent appointments further facilitate the state’s organizational influence over firms. Joint appointments occur when an individual holds top managerial and Party leadership positions simultaneously.⁸⁴ The vesting of decision-making authority in a single person shortens the chain of command between the Party-state and PRC firms and decreases firm-level veto points to state directives. When joint appointments link top managerial and Party positions, they further blur the line between business and political affairs. Joint appointments can limit managerial independence by incentivizing managers to be more responsive to political priorities. Concurrent appointments, which occur when a company executive simultaneously holds positions in external political bodies, can also enable state influence.⁸⁵

Party committees are another way for the Party-state to influence a company’s decision-making and behavior. The CCP constitution requires any organization in China with more than three full Party members to form a Party committee. Inside companies, Party committees exist at every level, from the parent company down to subsidiaries.⁸⁶ Party committees can shape corporate

82. Wendy Leutert and Samantha A. Vortherms, “Personnel Power: Governing State-Owned Enterprises,” *Business and Politics*, Vol 23, No. 3 (2021), pp. 419–437, <https://doi.org/10.1017/bap.2021.5>.

83. Wendy Leutert, “State-Owned Enterprises in Contemporary China,” in Luc Bernier, Massimo Florio, and Philippe Bance, eds., *The Routledge Handbook of State-Owned Enterprises* (New York: Routledge, 2020), pp. 201–212.

84. In China Merchants Group, for example, Li Jianhong is both the chairman and the Party secretary.

85. For instance, Victor Li is both the chairman of Hutchison and a member of the Standing Committee of the Chinese People’s Political Consultative Conference.

86. For example, there are 206 Party committees in COSCO—from the parent company to the subsidiaries—and 36,064 Party members among employees. “Dangjian gongzuo” [Party building work], *China COSCO Shipping Corporation Ltd.* (Beijing: COSCO, accessed February 10, 2022), <http://www.coscoshipping.com/col/col6863/index.html>. CMPort and its parent company China Merchants Group also have Party committees. As a privately owned Hong Kong-based company,

behavior through their authority to discuss “major” decisions—including important operational matters or those involving national security—before they go to the board of directors for final determination.⁸⁷ Under Xi Jinping, Party committees have assumed an expanded and formalized leadership role in corporate governance, including decision-making about international business.⁸⁸

Legally, China has enacted defense mobilization and transportation laws and regulations that directly authorize the use of privately held assets. PRC authorities have also acted to better integrate civilian assets in the transport sector into military planning by requiring Chinese firms to build and maintain infrastructure and workforces that can accommodate requests for military use. The National Defense Mobilization Law (“mobilization law”),⁸⁹ National Defense Transportation Law (“transportation law”),⁹⁰ and associated implementing regulations clearly express the Party-state’s intent to employ civilian assets for defense purposes.⁹¹

Hutchison does not appear to have a Party committee. See “About Us,” *CK Hutchison Holdings Ltd.*, accessed February 10, 2022, <https://www.ckh.com.hk/en/about/overview.php>.

87. This authority originated during the Jiang Zemin administration (1993–2002) with the concept of “three majors, one large,” which directed Party committees to participate in SOEs decision-making when it involved macro-level controls, national strategy, or national security (“three majors”), or if it touches on operational or managerial matters that are important or broad in scope (“one large”).

88. For example, the Xi administration has revised the Party constitution and directed state-owned enterprises to revise their corporate charters to codify the Party committees’ leadership role in corporate governance. Wendy Leutert, “Firm Control: Governing the State-Owned Economy Under Xi Jinping,” *China Perspectives*, Nos. 1–2 (2018), pp. 27–36, <https://journals.openedition.org/chin perspectives/7605>. On the overseas integration of party cells, see Daniel Koss, “Globalizing Leninist Institutions: Trends in Overseas Party Building,” *China Brief*, Vol. 21, No. 12 (2021), pp. 22–28, <https://jamestown.org/program/globalizing-leninist-institutions-trends-in-overseas-party-building/>.

89. The mobilization law guarantees fiscal reimbursement to central and local budgets (art. 6) and further promises untold “rewards for citizens and organizations that have made outstanding contributions in national defense mobilization” (art. 7). Certain key construction projects are to be built to military standards (art. 23), designated jointly by the State Council and the Central Military Commission (art. 22), with the benefit of “subsidies or other preferential policies” (art. 24). Although lower-level authorities implement the law, its mandate is clear: “any organization or individual has the obligation to accept the expropriation of civil resources in accordance with the law” (art. 55). The law further enumerates legal liabilities for failure to cooperate (arts. 68–71). *Zhonghua renmin gongheguo guofang dongyuan fa* [PRC National Defense Mobilization Law], Standing Committee, 11th National People’s Cong., 13th sess., February 26, 2010 (effective July 1, 2010), http://www.gov.cn/flfg/2010-02/26/content_1544415.htm.

90. *Zhonghua renmin gongheguo guofang jiaotong fa* [National Defense Transportation Law of the People’s Republic of China (hereafter PRC National Defense Transportation Law)], Standing Committee, 12th National People’s Cong., 22nd sess., September 3, 2016 (effective January 1, 2017), http://www.npc.gov.cn/zgrdw/npc/xinwen/2016-09/03/content_1996764.htm.

91. Departments at central and local levels promulgate implementing regulations and rules. One such set of rules directs party organs to “organize concentrated learning and exchanges” with transportation industry firms and to “strengthen the consciousness of defense transportation obligations” among enterprises and citizens. Central Military Commission and State Council, General Office, “Guanyu xuexi xuanchuan guanche ‘zhonghua renmin gongheguo guofang jiaotongfa de

The 2017 transportation law defines military and state authority to determine when and how civilian assets are employed for national defense. The legislation and its implementing regulations obligate Chinese companies to provide logistical support for PLA forces at home and abroad, directing “large and medium-sized transportation enterprises to organize the construction of strategic projection support forces [i.e., civilian ships and aircraft carrying personnel and supplies for the PLA], strengthen strategic power projection capabilities, and provide effective support for the rapid organization of long-distance and large-scale defense transportation.”⁹² The law mandates that “Chinese enterprises (and their overseas agencies) engaged in the international transportation business shall provide for the supply and support of ships, aircraft, vehicles, and personnel of China’s military operations.”⁹³ The law also stipulates mechanisms for PLA access and use of PRC firm assets in foreign jurisdictions.⁹⁴ Further, the law provides that “the military, if necessary, can station military representatives in relevant transportation enterprises.”⁹⁵ PLA personnel may therefore be embedded within PRC firms to coordinate firm-military interactions, manage PLA equipment and supplies on site, and even collect intelligence. While firms do not publicize such personnel appointments or uses of corporate assets, there are manifest legal grounds for such activities and a clear inferential basis for assuming direct, sustained PLA access to PRC firm networks.

The 2010 mobilization law establishes a system for state appropriation of civilian assets. The law “adheres to the principle of combining peace with war and combining military with civilians.”⁹⁶ This principle of integrating civilian and military functions and assets is to be implemented under the “unified leadership” of the CCP with the goal of “long-term preparation” and “orderly efficiency” in national defense mobilization. On a practical level, the law establishes a system for maintaining and transferring “strategic material reserves” from enterprises to the military, thus enabling state organs to task enterprises with storing, maintaining, and distributing military supplies at overseas facilities. Another provision stipulates that cooperating enterprises “shall enjoy

tongzhi” [Notice on studying, promoting, and implementing the “PRC National Defense Transportation Law”], No. 58, June 14, 2017, arts. 2–3.

92. PRC National Defense Transportation Law, art. 36. On how the PLA employs civilian assets, see Kennedy, *China Maritime Report No. 4*, pp. 4–12.

93. PRC National Defense Transportation Law, art. 38.

94. *Ibid.*, art. 38. The 2017 National Defense Transportation Law designates “state agencies stationed abroad” as responsible for coordinating with firms and “relevant state departments” to provide the “means of entry and exit of personnel, means of transportation, and goods required by Chinese enterprises” to support PLA operations.

95. *Ibid.*, art. 40.

96. *Ibid.*, art. 4.

subsidies or other preferential policies,” underscoring the material and political incentives (and disincentives) that the Party-state can apply to influence firm activities.

Other regulations and industry measures complement these pieces of national legislation. The Central Military Commission and the State Council issued standing defense mobilization regulations in 2003 expressly authorizing the utilization of civil transportation capacity. The State Council amended these regulations in 2011 and 2019 to include more detailed and actionable measures for military utilization of civilian port, airport, rail, and road facilities.⁹⁷ Civilian leaders must invoke these authorities, but the regulations contain no stipulations that permit enterprises to deny military requests, even in peacetime. Other long-standing legislation confirms this authority: “The State may, in light of the need of mobilization and according to law, requisition the equipment, installations, and means of transportation and other material of organizations and individuals.”⁹⁸

Even if PRC firms will not profit financially from allowing the military to use their scarce pier time, supplies, or warehouse space for noncommercial purposes, they are legally obliged to do so. The upshot of these legal measures is that “as long as there are Chinese companies, there will be a forward transportation support point for warships,” according to Deng Xianwu, captain of a PLAN amphibious transport dock vessel.⁹⁹ Whether enthusiastically or grudgingly, industry groups such as the China Port Association have proposed mechanisms by which the military can use port assets more efficiently.¹⁰⁰ Ac-

97. PRC State Council and PLA Central Military Commission, “Min Yongyunli guofang dongyuan tiaoli” [Civilian capacity defense mobilization regulations], No. 391, September 11, 2003, http://www.gov.cn/gongbao/content/2019/content_5468879.htm. The State Council adopted notable amendments in 2011 and 2019. PRC State Council, “Guowuyuan guanyu xiugai bufen xingzheng fagui de jue ding [Decision of the State Council on amending certain administrative regulations], No. 391, amended January 8, 2011, and March 2, 2019, http://www.gov.cn/zhengce/content/2019-03/18/content_5374723.htm. Specifically, the state is now obligated to “notify the units [firms] and individuals whose civil capacity is expropriated” and to compensate them for use of their assets (chap. 3, art. 30; and chap. 4, arts. 37–41).

98. PRC National People’s Congress, “PRC Law on National Defense,” March 14, 1997, art. 48, http://www.npc.gov.cn/zgrdw/englishnpc/Law/2007-12/11/content_1383547.htm.

99. This amphibious transport dock vessel moves vehicles, equipment, and personnel from ship to shore and is thus a key platform for potential PLA expeditionary operations. Gao Zhiwen, “Zhongguo zhanjian kao guowai gangkou shixian yi zhan shi fuwu, zhong qi bang da mang” [Chinese warships rely on foreign ports to provide one stop service, with major help from Chinese enterprises], *Zhongguo jun wang* [China Military Online], September 30, 2016, <http://mil.news.sina.com.cn/china/2016-10-01/doc-ixwkwzyh4035253.shtml>.

100. For example, Secretary General of the China Port Association, Ding Li, suggests a “Belt and Road national port liaison mechanism” (*Yidai yilu guojia gangkou lianluo jizhi*) joining Party, state, and military leaders in a committee to coordinate policy and promote security for Chinese company port terminals overseas. Ding Li, “Yi gangkou wei zhanlue zhidian shuxie 21 shiji haishang sichou zhi lu jianshe xin pianzhang” [Writing a new chapter in the construction of the 21st Cen-

According to PLA analysts, any Chinese military activities in foreign countries are predicated on strong civilian and commercial presence and cooperation: “We should place civil affairs and economics front and center. We must mix the military among civilians and use civilians to conceal the military.”¹⁰¹ Rather than raise international threat perceptions with overt shows of military presence, the PLA may opt to embed plainclothes personnel into PRC firms and use nominally commercial warehousing, communications, and other equipment to quietly meet military needs.

Recent organizational changes in the Chinese military better prepare PLA units to directly employ civilian assets. The ongoing national program of “military-civilian fusion” aims to fully integrate civilian technologies and assets into military modernization.¹⁰² The 2017 establishment of the Central Commission for Integrated Military and Civilian Development, a standing CCP body with authority and resources to direct commercial activity in this domain, is one example of several major organizational moves involving the PLA that are driving this integration. The PLA itself has also adopted a variety of organizational reforms to enable it to better “fuse” with civilian assets, such as the 2016 establishment of a National Defense Mobilization Department (“mobilization department”) and Logistics Support Department (“logistics department”).¹⁰³ Elevated to the central level, these commands better position

ture Maritime Silk Road with ports as strategic strongpoints], *Zhongguo gangkou* [China Ports], July 22, 2018, http://www.sohu.com/a/242651424_784079.

101. Liu Lin, “Yi dai yi lu yanxian zhanlüe zhidian yu junshi wajiao jianshe” [Strategic strongpoints along the Belt and Road and building military diplomacy], *Shijie zhishi* [World Knowledge], No. 17 (2017), p. 64.

102. Xi Jinping has identified “military-civil fusion” (*jun min ronghe*) as a political priority in a series of speeches. See, for example, “Xi Jinping: Jiakuai jianli jun min ronghe chuangxin tixi, wei wo jun jianshe tigong qianga keji zhicheng” [Xi Jinping: Speed up the construction of an innovative military-civil fusion system, provide a powerful science and technology base for the building of our military], *Qiushi* [Seeking Truth], March 12, 2018, http://www.qstheory.cn/2019-03/04/c_1124190255.htm. For analysis of this phenomenon, see Richard A. Bitzinger, “China’s Shift from Civil-Military Integration to Military-Civil Fusion,” *Asia Policy*, Vol. 16, No. 1 (January 2021), pp. 5–24, <https://doi.org/10.1353/asp.2021.0001>; and Alex Stone and Peter Wood, “China’s Military-Civil Fusion Strategy: A View from Chinese Strategists,” China Aerospace Studies Institute, Air University, June 15, 2020, <https://www.airuniversity.af.edu/CASI/Display/Article/2217101/chinas-military-civil-fusion-strategy/>.

103. Gao Zhiwen, “Junmin ronghe jiakuai tuijin zhanlüe tousong nengli jianshe” [Military and civilian integration accelerates the development of strategic delivery capabilities], *Jiefangjun bao* [PLA Daily], September 5, 2016, <http://military.people.com.cn/n1/2016/0905/c1011-28690748.html>; and Zhong Yuhao, “Yuan zong hou jun jiao yunshu bu fu buzhang bai zhongbin ren junwei houqin baozhang bu yunshu tousong juzhang” [Former deputy director of the Military General Logistics Transportation Department Bai Zhongbin appointed director of Central Military Commission Logistics Support Department Transport and Projection Department], *Pengbai xinwen* [Paper], September 5, 2016, https://www.thepaper.cn/newsDetail_forward_1524277. See also Joel Wuthnow and Phillip C. Saunders, “Chinese Military Reforms in the Age of Xi Jinping: Drivers, Challenges, and Implications,” *China Strategic Perspectives*, No. 10 (Washington, D.C.:

the PLA to formulate and implement “top-level design” of a coordinated system for developing and maintaining civilian assets for military use.¹⁰⁴ The upgraded logistics department has assumed greater leadership of domestic and overseas facilities management and international military engagement.¹⁰⁵ Recognizing the strengths of China’s commercial transport infrastructure, this new PLA department is “outsourcing logistical support to the civilian sector wherever operationally feasible.”¹⁰⁶ The defense mobilization regulations cited above authorize these military organizations to engage directly with enterprises to utilize their overseas assets under defined conditions. The small number of firms that own and operate most of China’s overseas port facilities simplifies the PLA’s organizational task of finding civilian capacity and integrating it into defense mobilization planning and military logistics.

Examples of crisis response in other issue areas affirm the Chinese Party-state’s ability to direct firm behavior. In 2015, Chinese leaders arrested extreme volatility on domestic stock exchanges in part by prohibiting SOEs from selling shares for six months.¹⁰⁷ In 2019, China directed SOEs to support social stability during protests in Hong Kong by boosting investment and strengthening control over assets there to increase employment and calm financial markets.¹⁰⁸ Most recently, Chinese leaders have leveraged SOEs to coordinate the national response to the COVID-19 pandemic by providing emergency relief, building hospitals, ensuring food supplies, developing treatments and vaccines, and coordinating the resumption of industrial production.¹⁰⁹ Given the key role of central SOEs, particularly in China’s defense industry and other

National Defense University Press, March 2017), <https://ndupress.ndu.edu/Portals/68/Documents/stratperspective/china/ChinaPerspectives-10.pdf>.

104. Fei Shiting, Zhang Junsheng, and Liu Guoshun, “Jiemi xin chengli de zhongyang junwei guofang dongyuan bu” [Demystifying the newly established CMC National Defense Mobilization Department], *Zhongguo qingnian bao* [China Youth Daily], January 29, 2016, http://zqb.cyoil.com/html/2016-01/29/nw.D110000zqgnb_20160129_1-06.htm; and Joel Wuthnow and Phillip C. Saunders, “Introduction: Chairman Xi Remakes the PLA,” in Phillip C. Saunders et al., eds., *Chairman Xi Remakes the PLA: Assessing Chinese Military Reforms* (Washington, D.C.: National Defense University Press, 2019), pp. 28–29.

105. LeighAnn Luce and Erin Richter, “Handling Logistics in a Reformed PLA: The Long March toward Joint Logistics,” in Saunders et al., eds., *Chairman Xi Remakes the PLA*, pp. 257–292.

106. *Ibid.*, p. 268. The PLA’s reliance on specific Chinese firms that operate numerous facilities across a global network differs from the U.S. practice of outsourcing, in which U.S. forces rely on a wide range of local contractors—typically foreign firms—to meet their material and logistical needs in foreign ports. The PLA relies on a small number of firms, particularly COSCO, thus enabling greater “fusion” of their operations.

107. *Guozhiwei caiqu youli cuoshi weihu gupiao shichang wending* [SASAC takes effective measures to safeguard stock market stability], SASAC, July 8, 2015, <http://www.sasac.gov.cn/n2588025/n2588119/c2670487/content.html>.

108. Keith Zhai, “Exclusive: China Prods State Firms to Boost Investment in Crisis-Hit Hong Kong—Sources,” Reuters, September 12, 2019, <https://www.reuters.com/article/us-hongkong-protests-soe-exclusive-idUKKCN1VY08C>.

109. *Yangqi zhan yi tujian* [Illustrated compendium of central SOEs’ war against the epidemic], SASAC, n.d., <http://www.sasac.gov.cn/n4470048/n13461446/n14326116/index.html>.

strategic sectors, the government would predictably turn to these firms during international security crises such as inter-state war, internal conflicts, or natural disasters.

Security Implications and Strategic Intentions

Chinese naval forces already employ PRC firms' port network abroad to project military power without the more costly and visible footprint of permanent bases. The PLAN regularly visits overseas ports, including Chinese company owned and operated facilities, and it conducts military exercises with a growing array of host states. The growing scope and sophistication of PLA operations abroad is a source of considerable concern for many foreign states, which interpret the PRC's ostensible efforts to "protect China's overseas interests" as a direct or indirect security threat. Whether or not China's emerging power projection is intended defensively, the security dilemma it generates risks spiraling tensions that are especially acute between the United States and China.¹¹⁰

INCREASED SCOPE AND INTENSITY OF GLOBAL MILITARY OPERATIONS

The PLAN's operations are swiftly expanding beyond the Indo-Pacific and into the Atlantic and polar regions.¹¹¹ Doing so without a network of bases, the force's logistics requirements depend on intensive use of commercial port facilities overseas. The PLAN has made one or more calls to refuel, resupply, and "show the flag" for diplomacy in at least one-third of PRC companies' overseas ports, 69 percent of which (twenty-two of thirty-two) hosted their first PLAN port call after 2012. In at least nine ports, PLAN warships have undergone significant repairs or maintenance for vessels and equipment by making a "technical stop."¹¹² All these technical stops have occurred since 2017 and only on the route from China across the Indian Ocean and into the Mediterranean—the PRC's "lifeline SLOC" (see figure 2 and online appendix table B). Given this trend toward more intensive use of commercial facilities and the active efforts to "fuse" the military with civilian capacity, this pat-

110. Thomas J. Christensen, "China, the U.S.-Japan Alliance, and the Security Dilemma in East Asia," *International Security*, Vol. 23, No. 4 (Spring 1999), pp. 49–80, <https://doi.org/10.1162/isec.23.4.49>; and Adam Breuer and Alastair Iain Johnston, "Memes, Narratives, and the Emergent U.S.-China Security Dilemma," *Cambridge Review of International Affairs*, Vol. 32, No. 4 (2019), pp. 429–455, <https://doi.org/10.1080/09557571.2019.1622083>.

111. Ryan D. Martinson, "Deciphering China's 'World-Class' Naval Ambitions," *Proceedings*, U.S. Naval Institute, August 2020, pp. 50–54.

112. These ports are Alexandria (Egypt), Colombo (Sri Lanka), Dar es Salaam (Tanzania), Port of Djibouti (Djibouti), Piraeus (Greece), Port Klang (Malaysia), Singapore, Tanjung Priok (Indonesia), and Valencia (Spain).

tern will likely expand to many of the other sixty-four ports for which there is no publicly documented PLA visit. Chinese military ships have already called in all but four of the fifty-three countries in which PRC companies' port assets are located. This pattern suggests that the presence of Chinese firms in a state's ports and logistics sector may increase the likelihood of a PLAN visit, even if PRC firms do not own or operate the specific terminal at which the ship calls.¹¹³

The operational routines developed during PLAN visits facilitate the use of PRC firms' commercial terminals overseas if future crises or conflicts erupt. Ever since the deputy chief of the PLAN Operations Department declared in 2010 that "Chinese enterprise facilities in overseas ports are the next step in building an overseas support system," the PLAN has increased its focus on these assets.¹¹⁴ Although few open sources discuss pier-side activities, Chinese media reports and official press releases confirm that naval vessels and personnel routinely visit PRC firm owned and operated ports and use their infrastructure to refuel, resupply, and conduct limited repairs. During such visits, PLA personnel interact with Chinese and local service providers, inspect facilities (including fuel, water, power, and airfield infrastructure), and build local knowledge and relationships. This interaction could aid PLA coordination of logistics and other needs during future overseas operations.

The PLA almost certainly collects intelligence and conducts surveillance from overseas commercial ports. Although open sources do not detail intelligence operations, terminal operators routinely document valuable and unique information about port facilities and activities.¹¹⁵ Chinese firms and state entities lead the development of sophisticated logistics data management systems for tracking ship routes, cargoes, and personnel.¹¹⁶ Some PLA analysts even

113. Those four countries with a PRC firm owned or operated terminal but without a documented PLAN visit are Jamaica, the Bahamas, Taiwan, and Iraq.

114. Wang Bin, "Huhang xingdong haiwai baozhang dian jianshe sikao" [Thoughts on the construction of overseas support points for escort operations], *Haijun zazhi* [Navy Magazine] No. 12 (2010), p. 2. Cited and translated in Conor Kennedy, "Strategic Strong Points and Chinese Naval Strategy," *China Brief*, Vol. 19, No. 6 (March 2019), <https://jamestown.org/program/strategic-strong-points-and-chinese-naval-strategy/>.

115. In routine business, terminal operators observe the callings of ships (including those of foreign navies), their fuel and matériel requirements, the contents of their cargoes, the names of personnel, and their origins and onward destinations. Depending on where dry docks and other facilities are located and how they are utilized, a terminal operator may also observe problems with foreign ships, including their repairs and maintenance. These and other potential observations all provide useful data for both commercial and military intelligence purposes.

116. The LOGINK platform "is a public logistics information service network led by the PRC Ministry of Transportation and the National Development and Reform Commission." "Guojia tong yunshu wuliu gonggong xinxi pingtai: pingtai gaikuang" [PRC national transportation logistics public information platform: platform overview], LOGINK, n.d., <http://www.logink.cn/col/col38/index.html>. LOGINK was recently accepted as an international standard and incorpo-

explicitly mention technical collection methods from commercial ports, indicating that such intelligence activities are likely already occurring.¹¹⁷ For instance, signals intelligence and other sensors or equipment may be discreetly placed in PRC firms' port terminals abroad, or PLA or intelligence personnel may be embedded in PRC firms' staff.

NEW OVERSEAS INTERESTS AND MILITARY MISSIONS

The PLA's growing intent and capability for power projection is unsurprising given the global scope of PRC economic and political interests. Officially, the "security of overseas interests concerning energy and resources, strategic sea lines of communication, as well as institutions, personnel and assets abroad" is an explicit "strategic task" for the PLA.¹¹⁸ According to China's 2019 Defense White Paper, the PLA is actively "developing overseas logistical facilities" to "address deficiencies in overseas operations and support" for contingencies including "overseas evacuation."¹¹⁹ Crises requiring the rapid rescue of Chinese citizens from dangerous locations provide one reason for an increased military presence overseas.¹²⁰ A lack of overseas bases, together with longstanding deficiencies in strategic lift capabilities to deliver PLA forces in time and at scale, constrain the PLA's capacity to conduct such operations effectively.¹²¹ These acknowledged shortfalls motivate Chinese military planners to

rated into several major ports, including those not owned or operated by Chinese firms. "China's LOGINK Inaugurated into IPCSA," *Port Technology*, December 10, 2019, <https://www.porttechnology.org/news/chinas-logink-inaugurated-into-ipcsa/>; and Daniel Michaels, "China's Growing Access to Global Shipping Data Worries U.S.," *Wall Street Journal*, December 20, 2021, <https://www.wsj.com/articles/chinas-growing-access-to-global-shipping-data-worries-u-s-11640001601>.

117. See, for example, Zheng Chongwei et al., "Jinglüe '21 shiji haishang sichou zhi lu': zonghe yingyong pingtai jianshe" [Strategically manage the 21st Century Maritime Silk Road: Comprehensive use of platform construction], *Haiyang kaifa yu guanli* [Maritime Development and Management], No. 2 (2017), pp. 52–57; and Zhu Dangming and Qin Daguo, "Haitian yiti zhanchang tongyong taishi tu goujian" [Construction of a sea and airspace battlefield situational map], *Zhuangbei xueyuan xuebao* [Journal of the PLA Equipment Academy], No. 2 (2017), pp. 46–51.

118. SCIO, *China's Military Strategy*.

119. SCIO, *China's National Defense in the New Era* (Beijing: SCIO, July 2019), p. 15, <http://www.chinadaily.com.cn/specials/whitepaperonnationaldefenseinnewera.pdf>.

120. Nathan Beauchamp-Mustafaga, "PLA Navy Used for the First Time in Naval Evacuation from Yemen Conflict," *China Brief*, Vol. 15, No. 7 (April 2015), pp. 1–3, <https://jamestown.org/program/pla-navy-used-for-first-time-in-naval-evacuation-from-yemen-conflict/>. Chinese citizens have been evacuated from the Solomon Islands (2006), East Timor (2006), Tonga (2006), Chad (2008), Thailand (2008), Haiti (2009), Kyrgyzstan (2010), Egypt (2011), Libya (2011), Vietnam (2014), Iraq (2014), Syria (2015), Nepal (2015), Antigua and Barbuda (2016), and Indonesia (2017). Peter Connolly, "Chinese Evacuations and Power Projection (Part 1): Overseas Citizen Protection," *Strategist*, Australian Strategic Policy Institute, December 12, 2018, <https://www.aspistrategist.org.au/chinese-evacuations-and-power-projection-part-1-overseas-citizen-protection>.

121. Cristina L. Garafola and Timothy R. Heath, *The Chinese Air Force's First Steps toward Becoming an Expeditionary Air Force* (Santa Monica, Calif.: RAND, 2017).

seek fuller utilization of commercial ports to execute their mission to protect China's overseas interests.¹²²

Chinese strategists and officials are aware of how other states use maritime power to mitigate threats to their overseas interests. They cite Great Britain and the United States as evidence of how control over vital maritime passages, facilitated by regional basing arrangements, enable a state to pursue and defend its interests abroad.¹²³ In particular, PRC leaders today view U.S. maritime dominance as a primary security threat. The U.S. Navy's long-standing intent to control the globe's "sixteen vital chokepoints" raises particular concerns for China.¹²⁴ "In seeking to control them in peacetime," explains a leading PLAN analyst, "the U.S. is in reality creating for itself an advantageous strategic situation. In wartime, it would be able to ensure at fairly small cost that the U.S. and its allies could use the ocean without impediment while preventing the enemy from doing so."¹²⁵ PRC firms' dominant international port network also builds resilience against possible U.S. coercion by fostering dynamics of economic dependence that favor China.¹²⁶ Specifically, China's power position in global ports conceivably provides the PRC with retaliatory coercive capabilities of its own through delaying, degrading, or otherwise disrupting the maritime trade flows of other states or regions.

Although China has established one military base in Djibouti and will likely try for more, intense international pushback makes it unlikely that it will successfully develop a large, global base network. Some states will interpret any Chinese basing expansion efforts as aggressive and are likely to take corresponding military and political countermeasures. For example, Chinese analysts expect that overt militarization of China's commercial presence in Pakistan would prompt India to balance aggressively against China, moving from nonalignment to alignment with the United States.¹²⁷ Establishing bases

122. SCIO, *China's National Defense in the New Era*.

123. One article on "maritime strategic channels" by Liang Fang discusses the U.S. Navy's focus on chokepoints and their fundamental importance to sea power. In it, she criticizes "America's overreliance on force to control maritime strategic passages" and suggests that China can achieve some of the same strategic benefits without overseas bases. Liang Fang, "Meiguo kongzhi haishang zhanlüe tongdao de lilun shijian yu qishi" [Theory and practice of U.S. control of maritime strategic passages and lessons for China] *Zhongguo haiyang daxue xuebao (shehui kexue ban)* [Journal of China Ocean University (Social Science Edition)], No. 5 (2019), pp. 39–46.

124. Fang, "Meiguo kongzhi haishang zhanlüe tongdao de lilun shijian yu qishi," p. 41.

125. *Ibid.*

126. On economic dependence and markets as sources of political power, see Albert O. Hirschman, *National Power and the Structure of Foreign Trade* (Berkeley: University of California Press, 1980); and Robert Gilpin, *The Political Economy of International Relations* (Princeton, N.J.: Princeton University Press, 1987).

127. For example, see Xue Guifang and Zheng Jie, "Zhongguo 21 shiji haiwai jidi jianshe de xianshi xuqiu yu fengxian yingdui" [China's overseas basing: Necessities and risk response in the

and deploying PLA capabilities to foreign states would likely trigger local countermeasures. For example, the United States might make additional navy deployments, retarget its theater and anti-ship missile capabilities, and expand its anti-aircraft batteries.¹²⁸ The wider political impact of an observed militarization of Chinese facilities overseas would be damaging for the Belt and Road Initiative, and it would contradict China's narrative of peaceful development.

Building a global network of overseas bases is even less appealing for China because an attractive alternative is available. Chinese companies' large holdings of commercial assets abroad in critical infrastructure, especially ports, can support logistics, intelligence, and other military missions cheaply and without the geopolitical consequences that dedicated overseas bases would trigger. PLA strategists recognize that PRC firms' infrastructure portfolios such as ports offer a strategic opportunity for the Chinese military to achieve security objectives without formal bases. PLA logistics officers even argue that China's networks overseas "create opportunities for firms to participate in or service military operations and provide a platform for the military to leverage the power of businesses."¹²⁹ These officers advise the PLA to "use market economic means, and adopt commercial contracting methods to give full play to the advantages of China's overseas enterprises by sharing their equipment and thereby materially guaranteeing that our military can conduct overseas military operations."¹³⁰ Capacity available elsewhere may offset the potential deficits of any individual terminal, as long as other ports in the network offer necessary facilities. Table 3 summarizes PLAN activities and the attributes of PRC companies' ports that support various military uses.

21st century], *Guoji zhanwang* [Global Review], No. 4 (2017), pp. 104–121; and Song Dexing and Bai Jun, "21 shiji zhi yang: diyuan zhanlüe shijiao xia de yindu yang" [21st century ocean: Indian Ocean from a geostrategic perspective], *Nanya yanjiu* [South Asian Studies], No. 3 (2009), pp. 31–45.

128. Zhou Fangye, "21 shiji haishang sichou zhi lu zhi zhanlüe zhidian jianshe de ji dian kanfa" [A few perspectives on the construction of 21st century maritime silk road strategic strongpoints], *Guoji zhengzhi yu jingji* [International Politics and Economics], No. 2 (2015), p. 107; Li Qingsi and Chen Chunyu, "Shixi zhongguo de haiwai gang lian jidi zhanlüe" [Analysis of China's overseas port chain basing strategy], *Quyue yu quanqiu fazhan* [Regional and Global Development], No. 2 (2019), pp. 123–137; and Luo Zhaohui, Wan Jie Wan, and Li Hongyang, "Woguo haijun haiwai jidi xuan zhi yinsu yanjiu" [Research on the factors for selecting overseas naval bases], *Junshi wuliu* [Military Logistics], Vol. 38, No. 6 (2019), pp. 141–144.

129. Liu Dalei, Hu Yongmin, and Zhang Hao, "Wo jun haiwai junshi xingdong zhuangbei baozhang wenti yanjiu" [Research on equipment support for overseas military actions of our military], *Junshi jiaotong xueyuan xuebao* [Journal of Military Transportation Academy], Vol. 19, No. 9 (September 2017), p. 24–25.

130. *Ibid.*, p. 25.

Table 3. PLAN Utilization of PRC Firms' Ports Abroad and Their Attributes

	Number of PRC firms' ports abroad
PLAN activity	
port calls (resupply/replenishment, diplomacy)	32
PLAN technical stops (overhaul, repairs)	9
PLA exercise with host state	69
dry dock facility (repairs)	47
Port attributes	
meets PLAN Type 2 aircraft carrier requirements	83
within 50 kilometers of airfield	74
within 480 nautical miles of maritime chokepoint	53
ports along "lifeline" sea lines of communication	45

Conclusion

This article analyzed China's demonstrated ability to use its firms' overseas commercial port assets for military functions. As essential nodes in the global transport of goods, ports serve a vital military purpose by undergirding the logistics that enable the PLA to project power regionally and globally. To evaluate the international security implications of China's global port expansion, we mapped and assessed the port-folios of all PRC firms that own and operate terminals overseas. Although the Party-state has varying ties with each global port conglomerate, it possesses multiple organizational and legal mechanisms of influence over all of them. The attributes and distribution of these ports, and the Party-state's institutionalized influence on the PRC firms that own and operate them, allow the PLA to use this network for military operational and strategic purposes.

As China joins the ranks of great powers pursuing commercial and military advantage across the seven seas, the potential for this networked mode of power projection looms ever larger. We have argued that assessments of state power projection capability centered on overseas military bases are incomplete. Our findings suggest that China can project substantial naval power beyond its borders without developing a large, global network of military bases. The PLA already has a track record of using Chinese commercial port facilities for logistics and likely also for intelligence functions. Chinese military officials and analysts indicate that such utilization will continue and expand in scope and sophistication. Such power projection can be understood as China's next-best solution: electing to use the substantial assets it already has (i.e., commercial ports) rather than seeking to build the worldwide military base network that PLA planners might prefer.

China's capability and evident willingness to project power from its firms' burgeoning port network is already reshaping the international security environment. Chinese companies now own and operate ports across every major region and waterway, and control over these assets is highly concentrated among a few key players that are subject to multiple mechanisms of Party-state influence. Chinese firms' rapid expansion in the global port industry creates the conditions for embedding China's military capability within non-Chinese, nonmilitary settings around the world. Yet few states have been willing to block PRC firms from operating or acquiring maritime assets, despite evident security externalities. Neither just one nor several states can sharply limit the power projection capability that PRC firms' overseas port assets enable. There is neither a single node in this distributed, decentralized network that uniquely produces its coercive capabilities, nor any one that can be taken off-line to undermine its overall functioning.

While analysis of power projection typically only addresses combat power, peacetime functions like logistics and intelligence are fundamental military missions that underpin wartime activities. Chinese companies' control over international port assets in wartime or other crisis scenarios remains incomplete and vulnerable to foreign military and host state action alike. A host state could seize, nationalize, suspend, delay, or even stop operations at Chinese firm port facilities. Changing governments and geopolitical circumstances present distinct risks, especially given the PRC's lack of formal military alliances and status of forces agreements. In addition, multiple operational measures could quickly limit a commercial port's utility: Mining or scuttling a vessel in an approach channel could render an entire port inoperable, while striking nearby transportation infrastructure would limit support and supplies from inland roads and airfields. Technical challenges further limit the PLAN's ability to fully service military vessels in many commercial ports (particularly in specialized and automated container facilities), while lack of force protection and hardened facilities makes civilian anchorages more susceptible to direct strikes.

China's leadership can still use PRC firms' transnational network of assets for coercive purposes in peacetime competition. Although such nonmilitary "weaponization" remains largely hypothetical, Chinese firms' ascendance in global maritime trade and transportation creates the latent capacity for it. For example, China is uniquely positioned to exploit U.S. supply-chain vulnerabilities.¹³¹ In April 2020, Xi Jinping instructed the CCP Central Financial and

131. U.S. Deputy Secretary of Defense, *Securing Defense-Critical Supply Chains: An Action Plan Developed in Response to President Biden's Executive Order 14017* (Washington, D.C.: Department of

Economic Affairs Commission to “tighten the dependence of the international industrial supply chain on China and form a strong counter-measure and deterrent capability for outsiders to artificially cut off supply.”¹³² Without meaningful U.S. ownership or control of the ports, shipping, manufacturing, and logistics underpinning the global maritime trade and transport network, flows of goods vital to U.S. economic health and military capabilities are at risk of disruption. PRC firms’ dominant network position affords the Party-state a range of options apart from military power projection to delay, degrade, or otherwise impede such critical flows of goods, using plausibly deniable commercial disruptions (i.e., denying port calls, misdirecting cargoes, delaying or halting terminal operations). The COVID-19 pandemic further accelerated efforts in China to exert greater control over supply chains and their maritime links, and it exacerbated existing U.S. vulnerabilities in this domain.¹³³

Other states that have firms with internationally distributed, large-scale transnational networks of commercial assets are unlikely to use them for overseas power projection. For example, Dubai Ports World is a subsidiary of the United Arab Emirates’ state-owned Dubai World and owns and operates terminal assets in fifty ports worldwide.¹³⁴ Port of Singapore Authority, another state-owned firm, owns and operates terminals in forty ports worldwide and ranks second behind COSCO in global container throughput.¹³⁵ Among privately owned firms, Japanese global port operators (NYK Line, Mitsui O.S.K. Lines, and Kawasaki Kisen Kaisha, Ltd.) and the Korean shipper HMM Company are part of large industrial conglomerates with diverse assets across the transportation sector. These firms’ networks of overseas commercial ports meet most of the basic conditions for power projection (see table 1), but their home states do not evidently possess geostrategic interests motivating such use. Chinese leaders’ perception of mounting threats to overseas interests

Defense, February 2022), <https://media.defense.gov/2022/Feb/24/2002944158/-1/-1/1/DOD-EO-14017-REPORT-SECURING-DEFENSE-CRITICAL-SUPPLY-CHAINS.PDF>. For a summary of some of the perceived U.S. deficiencies and associated fears of PRC strengths in maritime transportation, see McMahon, “The Middle Kingdom Returns to the Sea,” pp. 3–14.

132. Xi Jinping, “Guojia zhong chang qi jingji shehui fazhan zhanlüe ruogan zhongda wenti” [Several major issues in national medium- and long-term economic and social development strategy], *Qiushi* [Seeking Truth], October 31, 2020, http://www.qstheory.cn/dukan/qs/2020-10/31/c_1126680390.htm.

133. Extended shutdowns of ports in mainland China in response to small numbers of COVID-19 cases illustrate how the PRC’s position in the global port network gives it extraordinary coercive power in the global economy, whether by design or simply as a byproduct of that position. See Ji Siqu, “China’s Shipping Backlog Leaves Factory Owners with Nowhere to Put Goods, and Prices are Rising,” *South China Morning Post*, July 20, 2021, <https://www.scmp.com/economy/global-economy/article/3141707/china-shipping-backlog-leaves-factory-owners-nowhere-put>.

134. Davidson, *Global Container Terminal Operators*, p. 30.

135. *Ibid.*, p. 86.

currently renders China the only plausible user of this networked form of power projection.

Future research could analyze the potential and limits of power projection involving other transnational commercial networks, both within and beyond the maritime domain. In the telecommunications industry, for example, the Chinese firm Huawei has already raised concerns that its 5G hardware could be used to collect intelligence, surveil, or otherwise pose security risks.¹³⁶ Like global ports, the distributed nature of telecommunications networks and their large, redundant scale facilitate their utilization by the state for military and surveillance purposes. In addition, empirical analysis of the contracts and leases governing individual port operations would illuminate the prior agreements that may govern PLA use of overseas commercial port facilities in the event of a conflict or crisis. Regardless of what those closely held arrangements may be, the observed network already creates new and expanded capabilities for China's peacetime projection of military power.

136. Adam Segal, "The Right Way to Deal with Huawei," *Foreign Affairs*, July 11, 2019, <https://www.foreignaffairs.com/articles/china/2019-07-11/right-way-deal-huawei>.

EXHIBIT 9

Testimony before the
**House Committee on Transportation and
Infrastructure**
Subcommittee on Coast Guard and Maritime
Transportation

Hearing on
“China’s Maritime Silk Road Initiative: Implications for the Global
Maritime Supply Chain”

Testimony by
Carolyn Bartholomew
Chairman
U.S.-China Economic and Security Review Commission
October 17, 2019

Chairman Maloney, Ranking Member Gibbs, Members of the Subcommittee, thank you for the opportunity to testify today. It is an honor to appear before you and to serve on this panel with such distinguished witnesses. The views in this testimony are informed by the Commission's body of work. They are, however, my own and do not necessarily reflect those of the full U.S.-China Economic and Security Review Commission.

I. Overview of the Commission and its Study of BRI

The U.S.-China Commission was created by the Congress in 2000, as Congress voted to grant China Permanent Normal Trade Relations (PNTR), which paved the way for China's accession to the World Trade Organization (WTO). We were established to advise Congress on the national security implications of the U.S.-China economic relationship and to make recommendations to Congress on our findings.

There are 12 Commissioners—six Democrats and six Republicans—three each appointed by the House and Senate Democratic and Republican leaders. Commissioners are backed up by an excellent professional staff. We do an annual report to the Congress based on eight hearings, meetings with government officials and other experts, outside research, and, generally, one trip to the Indo-Pacific region. Our 2019 report, which has 38 recommendations to the Congress on a range of economic and national security issues, has gone to press and will be released on November 14. I have included, as an attachment, a list of some of the Commission's previous recommendations which may be of interest to the Subcommittee's members (see Appendix 1).

The Commission first discussed China's Belt and Road Initiative (BRI), originally called One Belt One Road (OBOR), in our 2015 Annual Report in a section on China and Central Asia. Indeed, when BRI was first introduced, most of its focus was on Asia. Much has changed since then.

II. The History and Current State of the Belt and Road Initiative

The BRI, formally launched in 2013, is the signature foreign policy of General Secretary of the Chinese Communist Party (CCP) Xi Jinping, and has become a pillar of China's expanding presence on the global stage. BRI is not a new concept. It is a culmination and rebranding of previous policies and projects aimed at linking China with its trading partners. It is, however, so important now that Chinese leaders call it the "Project of the Century" and have written it into China's constitution. The BRI marks the end of Deng Xiaoping's era of "hide your capabilities and bide your time" and underscores China's move onto the global stage, with economic, diplomatic, geopolitical, and national security implications.

Chinese leaders want to use BRI to revise the global political and economic order to align with Chinese interests. In a speech marking BRI's fifth anniversary in August 2018, General Secretary Xi emphasized that the initiative serves as a solution for China to participate in global opening up and cooperation, improve global economic governance, promote common development and prosperity," and build a "community of common human destiny."¹

Broadly, BRI's land-based "Belt" crosses from China to Central and South Asia, to the Middle East, and then to Europe. The sea-based "Road" connects China with South Asia, the Middle East, East Africa, and Europe via sea lanes traversing the South China Sea, Indian Ocean, Red Sea, Suez Canal, and Eastern Mediterranean.² (See map in Appendix 2.)

China's ambitions for BRI are not confined to just two geographic paths. China's vision for BRI includes Latin America and the Caribbean, the Arctic, space, and cyberspace (the so-called "Digital Silk Road"). The most visible manifestations of BRI are economic and official Chinese communiqués focusing on economic objectives. But BRI has clear strategic intent, including increasing China's influence over global politics and governance.

According to the Chinese government, it has signed 171 BRI cooperation agreements with 29 international organizations and 123 countries.³ Others estimate around 70 countries.⁴ The second Belt and Road Forum took place in Beijing in late April. A reported 5,000 delegates, including leaders from 37 countries, delegations from more than 150 countries and 90 international organizations, participated. One-third of the participating heads of state were from Europe.⁵

III. The Economic Background on the Maritime Silk Road

The witnesses from the Department of Defense are focusing on the national security implications of the Maritime Silk Road, a critical component of BRI. I would like to situate China's Maritime Silk Road activities in the bigger economic picture.

China is the world's largest exporter and second-largest importer, so its investment in ports helps facilitate China's global trade footprint. By owning and/or operating a network of logistical nodes across Asia, Europe, and Africa, China can control a significant portion of its inbound supply chain for essential commodities and outbound trade routes for its exports. About 90 percent of the world's trade is carried by sea.⁶ China's growing investments in ports increases Beijing's ability to influence and control global supply chains, which could affect the United States' ability to maintain reliable cross-border trade volumes. China has focused its port investments in countries where the interruption of its own trading routes would be most costly, based on the amount of trade that would be diverted, or the extra distance that would have to be traveled, if shipping were interrupted.⁷

The Maritime Silk Road rebrands existing maritime policies and directs investment toward key strategic blue economy sectors, which include traditional marine industries (e.g., shipbuilding and fisheries), emerging strategic industries (e.g., maritime engineering and maritime renewable energies), and maritime services (e.g., maritime transport and finance).⁸ According to a 2018 report from the European Council of Foreign Relations,

Concretely, today the Maritime Silk Road consists of a set of flagship projects in port infrastructure [e.g., Piraeus in Greece, Hambantota and Colombo Port City in Sri Lanka, Gwadar in Pakistan, and Djibouti],

*financial investment in port management, and acquisitions of container management companies across Europe, the MENA region, and east Africa.*⁹

The Chinese Communist Party (CCP) has repeatedly highlighted the importance of its maritime economy and shipbuilding industry in recent high-level meetings and policy documents, including the 13th Five-Year Plan, the 19th Party Congress, and the Made in China 2025 Plan.

A major goal of BRI is to open more markets for Chinese goods, displacing goods and services currently provided by the U.S. and other countries. While BRI is characterized as a boon to global development, it is, in large part, designed to boost the competitiveness and innovative capacity of Chinese companies. China's "marine GDP" (which includes marine industries, services such as transport and tourism, and exploitation of ocean resources) made up about 10 percent of its total GDP in 2017, according to China's State Oceanic Administration.¹⁰ BRI provides ripe opportunities to expand those activities.

IV. Chinese Investments in Ports and Related Infrastructure

Chinese state-owned enterprises (SOEs) play a major role in BRI activities. China's largest shipping and shipbuilding companies are all SOEs. Four Chinese SOEs are among the world's leading port operators: COSCO Ports, China Merchants Ports, Shanghai International Port Group, and Qingdao Port International.¹¹ These companies are backed by Chinese state-owned banks. For example, in 2017 state-owned China Development Bank provided COSCO a \$26 billion credit facility to develop its shipping interests.¹²

The total amount of Chinese port investment is difficult to determine because of the lack of transparency around deals. According to estimates by London-based investment bank Grisons Peak, between mid-2016 and mid-2017, Chinese investments in overseas ports reached \$20 billion.¹³ Nearly two-thirds of the world's top 50 container ports were Chinese owned or invested in by 2015, up from about one-fifth in 2010, according to research from the *Financial Times*.¹⁴ Chinese investments in overseas ports have mostly been outside of the world's top 25 container ports (ten of the top 25 container ports in the world are in China).¹⁵ According to the *Financial Times*, of the top 10 port operators worldwide, Chinese companies handled 39 percent of all volumes, nearly double the next largest nation group (Singapore).¹⁶

Chinese port investments range from building the port to managing and operating the port. They include:

- *Landlord ports*: China Merchants Port Holding's 99-year lease on Hambantota Port in Sri Lanka is an example of Chinese ownership through a "landlord port" model. In this model, "the port authority acts as regulatory body and as landlord, while port operations ... are carried out by private companies." This model is dominant in larger and medium-sized ports around the world.¹⁷ Under the concession agreement, China Merchants Port Holding holds a 70 percent stake in the Sri Lankan joint venture running the commercial operations of the port.

- *Fully privatized ports:* In fully privatized ports, the ownership of port land is transferred from the public to the private sector. In addition, “some governments may simultaneously transfer the regulatory functions to private successor companies.”¹⁸ For example, in 2016, COSCO acquired a 51 percent stake in the Piraeus Port in Greece. The Greek government agreed to privatize the port in 2015 as part of its bailout deal with the European Union. Piraeus is the only port in Europe where a Chinese company owns the port authority.¹⁹

China also has port investments in the Western Hemisphere. COSCO has minor investments in U.S. ports, including at the ports of Los Angeles and Seattle.²⁰ In 2013, China Merchant Holdings acquired a 49 percent stake in commercial container operator Terminal Link, which owns 15 container terminals around the world, including in Miami and Houston.²¹ In April 2019, Hong Kong-based Orient Overseas sold its ownership stake in the Long Beach Container Terminal to comply with an agreement reached with CFIUS to mitigate national security concerns; the agreement allowed COSCO to acquire Orient Overseas in July 2018.²² Panama Ports Company (a subsidiary of the Hong Kong-based firm Hutchinson Whampoa Ltd.) operates the two main ports—Balboa and Cristobal—located on either side of the Panama Canal. In addition, Chinese firms are acquiring and constructing port facilities on both sides of the canal.*

China’s shipping giants see investment in the port terminal business as an important source of growth. According to researchers from the European Council on Foreign Relations,

*Operating port terminals is a source of predictable and stable return on investment for Chinese conglomerates, unlike shipping, which depends on oil prices. As a result there is an incentive for Chinese state-owned enterprises to expand into business areas surrounding shipping, including investment in port infrastructure and other logistical components of maritime trade.*²³

The chairman of COSCO Shipping said in a 2016 interview he expects the company’s investment in the port terminal business to significantly increase in the coming years and become an important source of growth. He added the port terminal business is more stable and often more profitable than shipping because it has a fixed rate of return on investment, generally between 8 to 10 percent.²⁴

Port investments can give Beijing significant economic leverage as well as advance its geostrategic goals. Analysts have pointed to a number of ports where China is invested and, if converted to include a military presence or function, would significantly improve China’s ability to project naval power. Indeed, the requirements in China’s 2017 National Defense Transportation Law to “embed military in civilian” suggest commercial ports

* For a map of Chinese firms’ role in Panamanian port construction and a full list of Chinese port projects in Latin America and the Caribbean, see Katherine Koleski and Alec Blivas, “China’s Engagement with Latin America and the Caribbean,” *U.S.-China Economic and Security Review Commission*, October 17, 2018, 26, 33-34. <https://www.uscc.gov/Research/chinas-engagement-latin-america-and-caribbean>.

could be utilized by military personnel if Beijing were to decide it was in its interests to do so.²⁵ Chinese investment in civilian ports can also pave the way for military visits to rest crews, refuel, repair ships, or for joint exercises—even if China does not have a base there.²⁶

We can already see examples of where Chinese control of ports can be used as a form of market creation, through which China can leverage its port control to strengthen their economic relationships with certain countries. The ports in Hambantota, Gwadar, and Djibouti, for example, all include plans for free trade zones. Those three ports, as well as Piraeus and Colombo, also include plans for additional investment in the transportation sector, including airports, additional flight routes, roads, and railways.²⁷

Nearly two-thirds of global container traffic flows through Chinese-owned or -invested ports. China has significant investments in two of the world's top 30 busiest container ports by volume: Colombo, at #24, with 7.05 million TEU,^{*} and Piraeus, at #30, with 4.91 million TEU. In the event of conflict, China could use its control over these and other ports to hinder trade access to other countries. Beijing could provide Chinese vessels preferential berthing rights,²⁸ potentially leading to delays for U.S. companies getting goods in and out of Chinese-invested or owned ports.²⁹ It could also use control over ports to set higher prices and dictate onerous terms of engagement to trade partners.³⁰

Chinese port investment can translate into increased political leverage. Chinese investments in the port of Piraeus in Greece, for example have influenced Athens' response to China's claims and activities in the South China Sea and human rights abuses, with Athens in 2017 blocking an EU consensus by refusing to endorse an EU statement critical of China's human rights record in the UN Human Rights Council.³¹

Even if countries try to reduce their dependence on trade with China in order to lessen their exposure to economic coercion, Chinese ownership of ports worldwide could complicate these efforts. For instance, companies moving operations to Vietnam could still be susceptible to Chinese coercion if a Chinese company controls their ability to ship their goods.³²

Control of ports also could allow for economic and traditional espionage, as China can install surveillance equipment in ports to monitor foreign companies and U.S. military activity or that of our allies and partners.³³ Shortly after gaining control of the port of Piraeus, for example, China replaced the network infrastructure of the port with internet routers, firewalls, and switches for the data center with technology from Huawei.³⁴

V. The Role of Industrial Policy in Advancing China's Shipping Industry

The Chinese economy is not a free market. It is a state-managed economy with an industrial policy. The Chinese government is transparent in its plans and goals. When it identifies strategic sectors, it uses a whole-of-government approach to build them up. The government's toolkit includes subsidies to boost domestic firms; tariff and non-tariff

^{*} TEU (Twenty-Foot Equivalent) is a measurement of a ship's carrying capacity.

barriers to limit foreign access to the Chinese market; and acquisition, licit and illicit, of foreign technology to drive domestic development. The Chinese shipping and shipbuilding industries are the beneficiaries of this policy, to the detriment of the U.S. industries.

Like other industries the Chinese government has focused on and built, China's shipping and shipbuilding firms benefit from industrial subsidies.³⁵ The dominant firms in both industries have undergone a wave of consolidations over the past few years. For example:

- *Shipping:* In 2016, China's two largest shipping corporations, China Ocean Shipping Company (COSCO) and China Shipping Group, merged into a new company, China COSCO Shipping Group. In 2018, the China COSCO Shipping Group acquired Hong Kong-based Orient Overseas (International) Limited,³⁶ and is now the third-largest container shipping company in the world, behind APM-Maersk (Denmark) and Mediterranean Shipping Company (Switzerland).³⁷
- *Shipbuilding:* In July 2019, China's two largest shipbuilding corporations, China Shipbuilding Industry Corp. (CSIC) and China State Shipbuilding Corp. (CSSC), announced plans to merge. This merger would form the second's largest shipbuilding company, after the planned merger of South Korea's Hyundai Heavy Industries Co. and Daewoo Shipbuilding & Marine Engineering Co.³⁸ In addition, the state-run shipbuilding company China Merchants Industry Holdings Co. Ltd. (CMIH) is reportedly in negotiations to merge the shipbuilding and marine engineering operations of shipbuilding firms China International Marine Containers (Group) Ltd. (CIMC) and AVIC International Holding Group (AVIC INTL) under the CMIH umbrella.³⁹

A 2017 study by Myrto Kalouptsi of Harvard University on the impact of industrial subsidies in Chinese shipbuilding found evidence that China had subsidized shipyard costs by between 13 and 20 percent between 2006 and 2012.⁴⁰ The study concluded Chinese government subsidies in the shipbuilding industry "have led to substantial misallocation of global production."⁴¹

U.S. leadership in maritime engineering equipment and high tech maritime vessels is under threat. Ocean engineering and high-tech ships are one of the 10 target areas of Made in China 2025. There is evidence that some of the U.S. companies are being targeted. In July 2019, Shan Shi, a U.S. citizen originally from China, was convicted of stealing trade secrets from a U.S. company by poaching employees of other companies and enticing them to bring to his company data on syntactic foam technology for the benefit of CBM-Future New Material Science and Technology Co., Ltd., a Taizhou-based Chinese company. The U.S. government alleged that Shan did so in order to benefit China as part of China's plan to close its gap in buoyancy technology, which has both military and commercial shipping uses.⁴²

While many of the traditional shipping financiers (largely European banks) are scaling back their exposure, Chinese state-owned banks are ramping up their investments.⁴³ In 2008, no Chinese bank ranked in the top 15 shipping lenders.⁴⁴ As of 2017, Bank of China

is the world's largest shipping lender and China Eximbank the second largest, with China Development Bank also ranking in the top 20.⁴⁵ While entry into the shipping industry was based on market factors, lending has also been used to subsidize Chinese shipyards and expand China's merchant fleet.⁴⁶ Industry experts expect China will control about half of the total financing market for the shipping industry by 2025.⁴⁷

VI. BRI and China's Promotion of its Technology Standards

BRI is intended to advance the adoption of Chinese technology standards. BRI can create new barriers to U.S. exports and investment to the extent that China is able to get participating countries to accept Chinese technical standards, for example in high-speed rail, telecommunication, and energy. If these efforts are successful, they will create long-term reliance on Chinese intellectual property and technology, while disadvantaging U.S. and other foreign companies.

It is critically important for the U.S. to participate actively in standard-setting bodies, including the International Maritime Organization (IMO) and International Organization for Standardization (ISO). In the IMO, China is a 2018-2019 member of the Council, a 40-country body that is elected by the Assembly (the highest governing body, consisting of all members) and serves as the executive body of the IMO. It also serves the Assembly's role between sessions of the Assembly, which generally meets once every two years.⁴⁸ In the ISO, in addition to its leadership position on the Technical Committee on Ships and Maritime Technology, China is currently a member of the 20-member Council, which is the core governing body of the ISO. Membership on the Council rotates (the U.S. is also currently a member).⁴⁹ In 2015-2017 the ISO president was from China (the president is elected by all member countries).⁵⁰

Within the ISO, the Technical Committee on Ships and Marine Technology (ISO/TC8) is responsible for the standardization of design, construction, structural elements, outfitting parts, equipment, methods and technology, and marine environmental matters, used in shipbuilding and the operation of ships, comprising sea-going ships, vessels for inland navigation, offshore structures, ship-to-shore interface and all other marine structures subject to IMO requirements. ISO/TC8's Secretariat is China's Standardization Administration.⁵¹

VII. Conclusion

Through the Maritime Silk Road, China is gaining long-term economic and strategic influence by financing, building, operating, and owning overseas ports. While doing so, it is edging out shipping companies owned by U.S. allies and partners. China's increasing role in shipping finance could result in other shipping companies to relocate to Asia.

Subsidies for Chinese shipbuilding SOEs have harmed the U.S. shipbuilding industry's ability to compete in the global market, and have led to shipyard closings and a reduced U.S. vendor base over the past several decades.⁵²

I have been reading *The Guns at Last Light: The War in Western Europe, 1944-1945*. The prologue to this book by Rick Atkinson describes the extensive level of logistics that went into preparing for D-Day. It was astonishing. Our sailors, merchant marines, longshoremen, and factory workers, as well as our soldiers, were critical to that mission and, indeed, critical to helping to win the war. I hope that we never face a task like that again. I worry that, if we do, we no longer have the manufacturing capacity, the shipbuilding capacity, and the elements of the shipping industry that would be necessary to meet the challenge. The U.S. economy and the U.S. military are vulnerable to disruptions in the global supply chain. We are, for example, 100 percent import-reliant on 18 key mineral commodities, many of which are critical to our defense industrial base.⁵³

China is clearly moving into a stronger position on the global stage and is determined to remake global institutions to reflect its interests and values. The Belt and Road Initiative is a major component of its efforts and the Maritime Silk Road is an important component of BRI. We must develop a whole-of-government approach to addressing the challenges it presents.

Thank you for the opportunity to testify today. I look forward to answering any questions.

Appendix 1: U.S.-China Commission Recommendations on Maritime Security

2018

Chapter 3, Section 1: Belt and Road Initiative

- Congress require the Director of National Intelligence to produce a National Intelligence Estimate (NIE), with a classified annex, that details the impact of existing and potential Chinese access and basing facilities along the Belt and Road on freedom of navigation and sea control, both in peacetime and during a conflict. The NIE should cover the impact on U.S., allied, and regional political and security interests.

2017

Chapter 2, Section 3: Hotspots along China's Maritime Periphery

- Congress require the executive branch to develop a whole-of-government strategy for countering Chinese coercion activities in the Indo-Pacific coordinated through the National Security Council that utilizes diplomatic, informational, military, economic, financial, intelligence, and legal instruments of national power.

2016

Chapter 4: China and the U.S. Rebalance to Asia

- Congress direct the U.S. Department of Defense to include a permanent section in its Annual Report on Military and Security Developments Involving the People's Republic of China on the role and activities of China's maritime militia and the implications for U.S. naval operations.

2015

Chapter 3, Section 2: China and Southeast Asia

- Congress direct the U.S. Government Accountability Office to prepare a report assessing the effectiveness of recent U.S. efforts to enhance the maritime security capabilities of allies and partners in Southeast Asia and identifying the remaining challenges and opportunities.
- Congress urge the Administration to enhance its support for regional information sharing institutions focused on maritime security in Southeast Asia.

2014

Chapter 2, Section 2: China's Military Modernization

- Congress fund the U.S. Navy's shipbuilding and operational efforts to increase its presence in the Asia Pacific to at least 67 ships and rebalance homeports to 60 percent in the region by 2020 so that the United States will have the capacity to

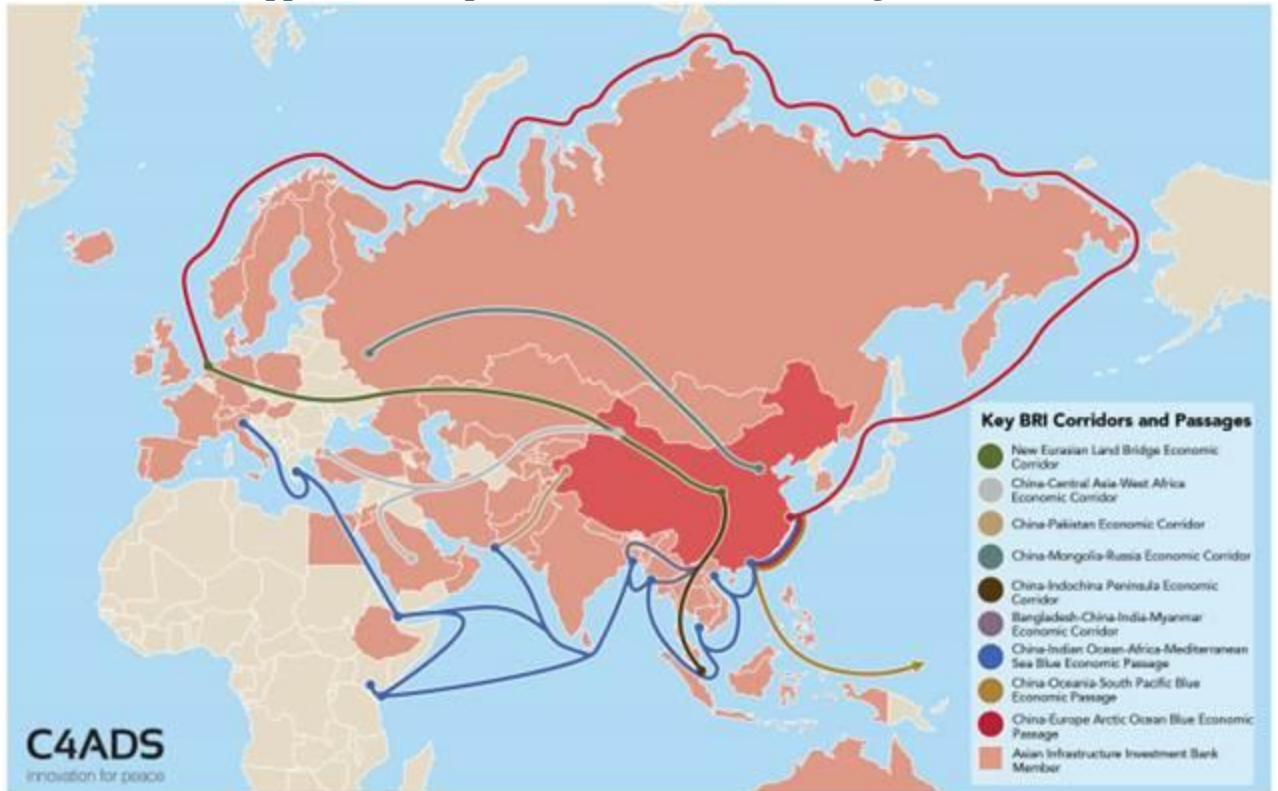
maintain readiness and presence in the Asia Pacific, offset China's growing military capabilities, and surge naval assets in the event of a contingency.

2013

Chapter 2, Section 3: China's Maritime Disputes

- Congress fund the U.S. Navy's shipbuilding and operational efforts to increase its presence in the Asia Pacific to at least 60 ships and rebalance homeports to 60 percent in the region by 2020 so that the United States will have the capacity to maintain readiness and presence in the Western Pacific, offset China's growing military capabilities, and surge naval assets in the event of a contingency.
- Congress fund Departments of Defense and State efforts to improve the air and maritime capabilities of U.S. partners and allies in Asia, particularly with regard to intelligence, surveillance, and reconnaissance, to improve maritime domain awareness in the East and South China Seas.
- Congress urge the Department of Defense to continue to develop the U.S.-China maritime security relationship in order to strengthen strategic trust. The relationship should be within the bounds of the National Defense Authorization Act for Fiscal Year 2000 (Public Law 106-65) and based on the principles of reciprocity and transparency.
- Congress fund U.S. Coast Guard engagement efforts with coast guard and maritime law enforcement agencies in the Western Pacific to increase understanding among civilian maritime bodies in the Asia Pacific.

Appendix 2: Map of BRI Corridors and Passages



Source: Devin Thorne and Ben Spevack, "Harbored Ambitions: How China's Port Investments are Strategically Reshaping the Indo-Pacific," *C4ADS*, 2017, 13.

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⁵² U.S. House of Representatives Committee on Transportation and Infrastructure, *Hearing on U.S. Maritime and Shipbuilding Industries: Strategies to Improve Regulation, Economic Opportunities and Competitiveness*, oral testimony of Mark H. Buzby, March 6, 2019. <https://www.transportation.gov/content/us-maritime-and-shipbuilding-industries-strategies-improve-regulation-economic-opportunities>.

⁵³ U.S. Department of the Interior and U.S. Geological Survey, “Mineral Commodity Summaries 2019,” February 28, 2019, 7-8. https://prd-wret.s3-us-west-2.amazonaws.com/assets/palladium/production/atoms/files/mcs2019_all.pdf.

EXHIBIT 10



USA

As China Expands Its Fleets, US Analysts Call for Catch-up Efforts

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By Xiaoshan Xue

WASHINGTON — As China builds more naval and merchant ships, U.S. maritime experts are calling on the Biden administration to increase investment in domestic shipbuilding to catch up with Beijing.

The disparity has prompted U.S. maritime experts to call for a "Ships Act" comparable to the recently enacted "Chips Act" that supports the return of chip manufacturing to the United States.

A Ships Act would recall the U.S. effort undertaken in World War II when domestic shipyards launched more than 5,000 vessels in a war-changing torrent.

Bryan McGrath, managing director at The FerryBridge Group, told VOA Mandarin that the shipbuilding bases of the U.S. and China are simply not comparable.

"The Chinese industrial base is a behemoth, and the U.S. shipbuilding industrial base is freakishly undersized as a function of the size of America's economy and its influence in the world," McGrath said.

As of 2020, the U.S. Navy had 297 battle force ships, according to a report by the Congressional Research Service. China surpassed the U.S. as the world's largest navy with an inventory of about 355 vessels, according to a U.S. Defense Department report released in 2021. The Office of Naval Intelligence (ONI) projects that China will have 400 battle force ships by 2025 and 425 by 2030.

The U.S. merchant marine fleet is falling even further behind China. The U.S. has fewer than 80 commercial ships in international service while China has more than 5,500 merchant ships, a senior U.S. Navy officer told gCaptain, a maritime news website, in May.

The U.S. Transportation Department's Maritime Administration estimates only 1.5% of U.S. waterborne imports and exports are carried on U.S.-registered vessels. Few of those have the capacity to participate in a sealift operation, which refers to the use of commercial vessels to assist the Department of Defense with the transport of supplies, military personnel and other military assets.

The U.S. shortfall of ships is a "screaming national security vulnerability" according to an unnamed senior official quoted in a November 2021 Brookings report. China already has prepared its merchant fleet to perform as the "logistical backbone" for an invasion of Taiwan, according to a May 2022 report from the China Maritime Studies Institute.

Jerry Hendrix, a retired Navy captain and senior fellow at the Sagamore Institute, wrote in an op-ed in the *National Review* that the U.S. needs a "Ships Act" similar to the Chips Act that President Joe Biden recently signed.

"Chips made in America will most likely cost more than chips made overseas ... but they will be available if a war were to break out, so this made strategic sense. The Chips Act passed with strong bipartisan support. For these same reasons, Congress should pass, and the president should sign, a "Ships Act" that would increase domestic U.S. shipbuilding and ship repair capabilities, Hendrix wrote in the August 29 issue.

Strained industrial capacity

During World War II, the U.S. had more than 50 public and private shipyards that could either build or repair ships in excess of 500 feet in length. Today, it has fewer than 20, Hendrix wrote.

China, South Korea and Japan have become the world's top three shipbuilding nations in terms of gross tonnage, according to data from Statista.

"China has 19 modern shipbuilding yards pumping out commercial and naval ships," Hendrix wrote. "One of China's shipyards is so large that its capacity surpasses that of all U.S. shipbuilders combined."

According to U.S. Chief of Naval Operations Admiral Mike Gilday, the service faces challenges in adding more ships due to constrained industrial capacity.

"We have an industrial capacity that's limited. In other words, we can only get so many ships off the production line a year," Gilday said at a Heritage Foundation event on August 25.

Gilday's 2022 Navigation Plan, released in July, calls for more than 350 manned ships and about 150 unmanned surface and underwater vehicles by 2045.

China's subsidized shipbuilding

The rise of China's shipping industry has benefited from government support. According to a study by the Center for Strategic and International Studies, combined state support to Chinese firms in the shipping and shipbuilding industry totaled roughly \$132 billion between 2010 and 2018.

Michael Roberts, adjunct fellow at Hudson Institute's Center for Defense Concepts and Technology, said U.S. commercial shipbuilders lack the orders needed to compete effectively with shipyards in other countries and receive almost no support from the government.

"The U.S. order book for large commercial ships is for less than 10 ships. In comparison, China's order book for large commercial ships stood at 1,529 ships, number one in the world, with almost half of the global total," Roberts told VOA Mandarin.

During World War II under the Emergency Shipbuilding Program, the U.S. rapidly built nearly 6,000 ships to transport troops and supplies to allied and foreign war zones.

Hendrix suggested the U.S. should increase the number of both shipbuilding dry docks and large shipyards, as well as redirect the contracts to small- and medium-sized yards.

"We need to do that now. In World War II, a lot of the industrialization that became very useful to us in 1942 actually began in 1939 with the long lead procurement of certain vessels that entered the fleet three years later," Hendrix told VOA Mandarin in an interview.

However, Alex Wooley, a journalist writing on naval issues and a director at William and Mary's Global Research Institute, believes that the U.S. will not be able to rebuild this capacity easily as the shipbuilding factories that have closed lost the essential skilled workers needed to reopen.

"Shipbuilding benefits from a sense of continuity. There is not a lot of untapped surge capacity," Wooley said.

The U.S. shipbuilding decline began in 1981, when the Reagan administration adopted laissez-faire economic principles and eliminated shipbuilding subsidies, according to Hendrix. Countries such as China chose to increase government subsidies to help capture shipbuilding market share and fill the vacuum created by the U.S. withdrawal.

As a result, Chinese companies have become dominant across the global maritime supply chain. According to the CSIS report, China constructed over a third of the world's vessels in 2019. They also produced 96% of the world's shipping containers and more than 80% of the world's ship-to-shore cranes.

Although there are hurdles to expanding shipping capacities, some U.S. shipyards have started to make infrastructure investments that could set them up to build more ships.

McGrath said Congress needs to commit significant financial resources to the shipbuilding industry to subsidize necessary investments and acquisitions as well as to incentivize the shipbuilding workforce.

Hendrix, in his opinion piece, also called for subsidies and government-led industrial policy to become part of the U.S. shipbuilding future, saying, "We can no longer follow the path of intellectual economic idealism that has led us to the present position of industrial isolation."