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A CALCULATED INTERVENTION: PRACTICAL ACTIONS TO REVITALIZE THE U.S. MARITIME INDUSTRY

ES 6700: Industry Studies – Maritime

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SEMINAR 20

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- Ingalls Shipbuilding, Pascagoula, MS
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- Aker Arctic Technology Inc, Helsinki, Finland
- Arctia, Helsinki, Finland
- Finland Border Guard, Helsinki, Finland
- Helsinki Shipyard, Helsinki, Finland

Norway

- Norwegian Navy Operations Centre, Haakonsvern Naval Base
- Underway Norwegian Coast Guard vessel HNoMS Thor Heyerdahl
- Norwegian Maritime Competence Center (Blue Maritime Cluster), Alesund, Norway
- Vard Langsten Tomrefjord, Vestnes, Norway

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Executive Summary

Developed by a multidisciplinary Seminar of twelve students, including senior officers from a variety of military services as well as career government civilians, this report constitutes a collective effort to evaluate and provide recommendations for the U.S. maritime industry. Supporting the analysis are the Seminar's combined professional expertise as well as insights gathered from guest speakers and field studies at various U.S. and international shipbuilders and supporting firms. The Seminar's comprehensive analysis aims to address the critical challenges faced by the U.S. maritime industry and propose strategic recommendations to enhance its global competitiveness and national security role.

The U.S. maritime industry is currently unable to meet the strategic demands of national security in three primary areas: (1) the affordability and timely delivery of capable ships, (2) the capacity to escalate production in response to contingencies, and (3) the resilience to sustain operations amid international shocks. These deficiencies stem from a range of systemic issues within the industry, including an **aging infrastructure, a shortage of skilled labor, over-reliance on outdated manufacturing paradigms, and restrictive sourcing policies.** Supported by Porter's Diamond analytical model, the Seminar's investigation reveals that the U.S. maritime industry, while historically robust, has **contracted significantly due to globalization, de-industrialization, and consolidation within the defense sector.** The industry is predominantly defense-oriented, with 99 percent of its output serving the U.S. government. This disparity has abetted a lack of competitiveness in commercial shipbuilding, which is generally preserved only through protectionist policies.

Key issues highlighted include a severe labor shortage, particularly in skilled trades, which is a society-wide problem affecting all industries. The industry also suffers from **a consolidated supplier base, which limits competition and innovation.** This is further **complicated by 'Buy American' policies** that simultaneously support domestic industries but restrict the sourcing of essential materials to manufacturers, leading to increased costs and delays. Finally, most shipbuilders possess an **aging infrastructure of high-capital facilities and processes, which frustrates efforts to modernize and innovate.**

In response to these challenges, the Seminar has proposed several policy recommendations aimed at revitalizing the U.S. maritime industry. Among dozens of potentially viable options, these were selected based on their perceived potential for payoff as well as their mutual compatibility as part of a coordinated plan. The recommendations are broadly framed as **two "lines of effort," associated with the commercial maritime industry and U.S. allies and partners respectively.** While these recommendations are binned together for efficiency of presentation, they all work together and each would be beneficial if implemented independently.

The problems of the U.S. maritime industry are complex and will require substantial effort and resourcing to overcome. There is no cure-all waiting to be discovered, but there are available options that can make a difference with strategic impact. By addressing the challenges described in this report, particularly as suggested in the policy recommendations, the U.S. can place its maritime industry on a competitive footing to not only meet the demands of national security but also to strengthen the U.S.'s position as a global standard-bearer in maritime affairs.

Introduction

The United States faces significant challenges from global competitors, particularly the People's Republic of China (PRC), in a variety of strategic domains. Of particular relevance to this strategic competition is the shipbuilding and repair industry, hereafter referred to as the maritime industry. Responsible for constructing and maintaining the civilian fleets that create economic prosperity as well as the naval fleets that protect it, the industry constitutes a national treasure whose responsibility vastly exceeds its resources. Today it faces significant headwinds, with both internal and external problems surmountable only through a concerted national effort. The report that follows will examine these issues, offering strategic insights and policy recommendations to reinforce the U.S. maritime industry's role as a pillar of the U.S. economy and national security.

Strategic Conditions

Since its founding, the U.S. has depended upon maritime activities—both on the sea and from the sea—for security and economic prosperity. Now it stands at a critical juncture as a maritime nation, facing challenges that span economic, diplomatic, environmental, and military dimensions. Central to the strategic landscape is the "pacing challenge" of the PRC, recognized as such in the U.S. National Security Strategy.[1] The PRC's illegal maritime claims, grey zone activities, and overtly hostile actions against U.S. allies and partners threaten fundamental principles of maritime freedom and open access, which are cornerstones of global trade and economic stability. Its extensive state investment in its shipbuilding industry, now at 232 times the

capacity of the U.S., directly challenges U.S. influence on the norms and standards of maritime activity.[2] The disparity not only underscores a severe economic imperative but also highlights vulnerabilities in supply chain resilience and military balance.

Concurrently, Russia, primarily acting as an agent of disruption, extends its contrarian influence into the maritime sector, particularly in the Arctic. The Kremlin's formidable icebreaker fleet and assertive Arctic strategy signal intent to dominate resource-rich polar regions and exploit newly viable shipping lanes. Meanwhile, an energy-hungry PRC seeks to expand its polar capabilities in concert with Russia as an energy extractor. This alignment challenges the U.S. strategic position in a variety of critical regions, not only threatening economic interests but also necessitating a serious reassessment of both military and nonmilitary capabilities.

The U.S. maritime industry struggles to answer these challenges. Its response is frustrated by internal problems such as aging infrastructure, a nationwide shortage of skilled labor, and an over-reliance upon outdated manufacturing paradigms. These issues are compounded by a contraction in domestic maritime commerce and consolidation within defense industries. Some analysts suggest that we are in the early stages of what will ultimately become recognized as a third world war, where maritime capability will critically determine the trajectory of international power.[3] The U.S. maritime industry, therefore, is not just contending with economic competition but is also at the forefront of a broader strategic contest that will define the future of global order.

SECTION I: STATE OF THE U.S. MARITIME INDUSTRY

Industry Analysis

In light of the strategic demand signal described above, the Seminar distilled the national security imperatives of the U.S. maritime industry to three critical needs:

1. Affordable and capable ships that are delivered on schedule,
2. Capacity to escalate production as contingencies require, and
3. Resilience to sustain capacity amid shocks to the international system.

The above are presented in order of priority, i.e. one cannot escalate production in wartime if one cannot answer a baseline demand in peacetime, and one cannot sustain capacity amid shocks if there is not first capacity to sustain. As it stands today, the U.S. maritime industry is incapable of meeting any of the above needs. To explain why, the following pages characterize the U.S. maritime industry, as considered via the Porter's Diamond model of competitive advantage (Figure (1)).[4] For comparison, similar analyses of the respective maritime industries of the PRC and Russia are provided in Appendix A.

Despite a proud and storied history, the U.S. maritime industry has steadily contracted due to the confluence of globalization, de-industrialization, and defense industry consolidation.[5] It currently operates as an oligopoly – 99 percent of output is attributable to defense.[6] As will be explained in Line of Effort One, U.S. commercial shipbuilding is not internationally competitive; it only serves domestic needs as sustained by protectionist policies. For shipbuilders, then, a focus on the effective sole customer of the U.S. government generally dulls innovation excepting that which

benefits military needs; in other words, “the lure of the huge U.S. defense market has diverted the attention of U.S. companies from attractive, global commercial markets.”[7]

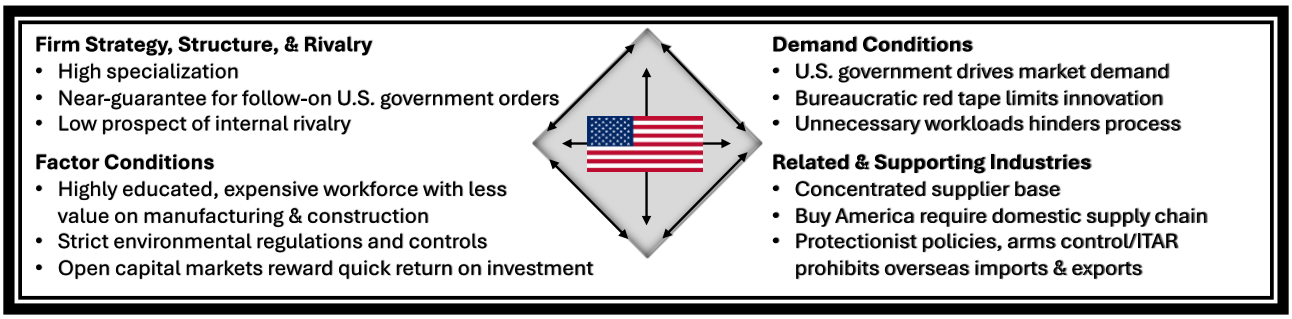

Figure 1: Porter's Diamond Analysis of the U.S. Maritime Industry

Factor Conditions.

The U.S. is an expensive place to build ships. Its population comprises a highly educated, highly paid workforce; further, strict environmental regulations compound risks and expenses for shipbuilders. Entry into the market requires a shipyard (i.e. land with coastal access) and the associated high-capital facilities, heavy cranes, and drydocks. While the U.S. offers plentiful access to investment capital, shipbuilding involves a lengthy acquisition process with long contracting and production timelines; specifically, the average time between contract award and delivery is between four and seven years, prolonging returns on investment.[8]

Shipbuilding is labor-intensive and necessitates a specialized workforce with diverse technical skills such as tradespeople, machinists, and engineers. The U.S. faces a nationwide labor shortage, particularly in skilled trades.[9] For example, the Electric Boat division of General Dynamics (GD) hired 20% less than their yearly goal in 2022 despite over $1 billion in workforce development and recruitment efforts between 2018 and 2022.[10] The President of the Shipbuilders Council of America has identified

“the ability to attract and retain a quality workforce” as the largest issue facing the shipyards, and this sentiment was echoed by every shipbuilder visited by the Seminar.[11] Immigration offers little relief, as citizenship requirements prevent its use in defense manufacturing.

Demand Conditions.

Firms gain competitive advantages when customers are sophisticated and demanding, as higher standards provoke innovation and modernization.[12] The largest “American shipyards are wholly reliant on their biggest customer: the U.S. military,” which is a highly demanding customer.[13] However, excessive bureaucracy encumbers government shipbuilding, discouraging innovation. Further, government officials frequently alter requirements and become enamored with flashy concepts of dubious merit. For example, naval planners invested years in programs like the Littoral Combat Ship and Zumwalt-class destroyer, which are generally considered failures today, constituting what analysts call a lost generation of shipbuilding.[14]

Related and Supporting Industries.

Next to labor, shipbuilders point to supply shortages as the second-most limiting constraint to capacity. “Buy American” policies require shipbuilders to source of key materials from domestic suppliers; however, the U.S. represents less than 1% of global commercial shipbuilding by tonnage, resulting in a limited number of firms in the supplier base and many single-source providers.[15,16] Like the wider defense industry, the supplier base has also consolidated. For example, traditional engine manufacturer Fairbanks Morse underwent a “buying streak” to acquire a variety of ship equipment lines, becoming the sole source for numerous components.[17] Representatives of

Continental Maritime San Diego remarked upon this practice, commenting that consolidation has left “no good vendors” and a “lack of parts” for ship repairs. They specifically observed that Fairbanks Morse now unilaterally controls delivery timelines, forcing the ship repair plans to conform to supplier schedules.[18] As White House officials have noted, “When there is insufficient competition, dominant firms can use their market power to charge higher prices, offer decreased quality,” and further, control delivery timelines.[19]

Firm Strategy, Structure, and Rivalry.

Rivalry is a powerful stimulus to create and sustain competitive advantages. However, the high specialization amongst naval shipbuilders – with a near guarantee for follow-on orders – is the antithesis of competition, eliminating the prospect of legitimate internal rivalry. The U.S. maritime industry therefore does not operate under significant pressure to innovate and improve. Firms are instead “hooked on the narcotic of government contracts...[and] creeping industry protectionism,” as Michael Porter warned.[20] The introduction to Section II includes additional insight into the matter of shipyard modernization.

Stakeholder Perspectives.

Before considering what “we” can do to address the ails of U.S. shipbuilding and repair, it is essential to recognize that the industry entails numerous stakeholders with often competing priorities. Again, from the national security perspective, what “we” presumably want are affordable and capable ships that are delivered on schedule, surge capacity, and resilience. Other stakeholders do not necessarily share those priorities, and where interests overlap they do not necessarily agree on the best way to

pursue them. An industry is comprised not just of stakeholders but of the agreements among them, so what follows is a summary of the industry's competing perspectives to inform the recommendations that follow.

Shipbuilding and Repair Firms.

Shipyard owners construct new ships, repair, convert, and alter previously built ships and produce or prefabricate ship modules in sections.[21] While there are 404 participating firms operating in the industry today, over 57% of the market share belongs to three defense primes—Huntington Ingalls Industries (HII), GD, and BAE.[22,23] Shipbuilders must therefore account for a departure from perfect competition when crafting their business strategies.[24] Their interests principally include the maximization of shareholder wealth, while delivering employment benefits to their workforce or value to their customers are secondary or sometimes competing interests. Shipbuilding firms especially desire a robust backlog of orders – "more ships are always better."[25] Similarly, repair firms look to maximize utilization of their capital-intensive facilities like drydocks.[26] Firms advocate for their interests in various ways, including larger firms' use of lobbyists and associations such as the Shipbuilders Council of America or the Port of San Diego Ship Repair Association.[27, 28]

U.S. Government Agencies.

In 2023, Secretary of the Navy (SECNAV) Carlos Del Toro convened an inaugural meeting of the Government Shipbuilding Council that represented four different departments – Defense, Transportation, Homeland Security, and Commerce—each of whom have distinctive roles and varying interests in the maritime industry.[29] The Department of Defense (DOD), specifically, procures the preponderance of U.S.-built

ships by both tonnage and revenue, with other departments also significantly contributing through procurements for the Coast Guard, Maritime Association (MARAD), National Oceanic and Atmospheric Administration (NOAA), and National Science Foundation (NSF). Their interests include affordability, schedule, and value (i.e. capability), with supply chain resiliency and surge capacity as distant secondary priorities.

Congress.

Through its legislative powers, Congress authorizes and appropriates resources for the construction and repair of ships across the federal government. Shipbuilding represents such a prominent factor in spending that major budgetary committees are "dominated by lawmakers from shipbuilding communities."[30] Despite an ostensible interest in representing the taxpayer, Congress frequently appropriates more ships than what the Navy or Coast Guard propose via budget requests. For example, Congress added funding on 41 occasions over the last 10 years to increase battle-force ship quantities above the Navy's request.[31] Similarly, for the Coast Guard's National Security Cutter program, Congress increased the program from the original quantity of 8 to 11 ships (and appropriated long-lead-time material funds for a 12th that the Coast Guard returned). Interfering with the details of shipbuilding and repair plans (adding ships, prohibiting divestments) serves Congressional interests by funneling resources to their districts, which is then met with voter approval.

Shipyard Employees and Labor Unions.

The U.S. maritime industry – not including subcontractors and domestic suppliers – collectively employs 115,000 personnel.[32] Ingalls Shipbuilding has over 7,000

employees alone.[33] Shipbuilding and repair are highly labor-intensive, with wages constituting the second-largest expense for shipbuilders.[34] Many shipyard workers' interests are represented in the form of labor unions, who negotiate collective bargaining agreements, support workers' rights and safety, and agitate to improve wages and benefits for shipyard employees.

Supporting Industries and Supply Chain.

Supporting industries and suppliers form a discrete and essential stakeholder group within the U.S. maritime industry. These include firms that provide critical services and materials, such as design, engineering, and production of steel or finished goods like electronics, engines, and safety equipment. Like shipbuilders, supporting firms (including critical suppliers) are primarily interested in maximizing the wealth of their owners and shareholders. This leads them to sometimes make short-term decisions with long-term ramifications upon the greater industry; for example, "many producers slashed production as manufacturing capacity fell during the pandemic and struggled to match demand as the economy reopened."[35] In a recent announcement that forecasts more than 11 years of cumulative delays to Navy shipbuilding programs, the Navy and industry cited the post-pandemic supply chain as a key contributor.[36]

Commercial Ship Owners and Operators.

Although defense-related shipbuilding overshadows commercial shipbuilding by a wide margin, the commercial maritime industry is of significant interest to national security for both economic and military reasons.[37] As independent stakeholders in domestic shipbuilding and repair, commercial ship owners and operators are essentially customers; as such, their interests lie principally in affordability. Much like shipbuilding

and repair, ship operators are also significantly impacted by wage growth and the shortage in skilled trades. Most U.S.-flagged commercial shipping subsists today as a result of protectionist measures, which will be discussed along with the national security significance of commercial maritime activity in Line of Effort One below.

SECTION II: RECOMMENDATIONS

In considering ways forward for the maritime industry, the Seminar examined dozens of potential policy recommendations before paring down to two general categories of action, framed as “lines of effort” below. This required the omission of numerous viable options, many of which offered promise but exceeded the scope of this report. In eliminating candidates for recommendation, the Seminar sought to avoid suggestions that are already widely discussed or that merely reframe a common grievance as a solution (e.g. Congress should discontinue the practice of resourcing via continuing resolution). Instead, the Seminar focused on those recommendations that offer the best ratio of potential payoff to feasibility, and specifically those that work best when considered in concert.

Some rejected candidates merit explanation. For example, SECNAV has repeatedly chastised shipbuilders for neglecting to modernize their facilities, and likewise, automation is frequently cited as an underutilized solution to labor shortages.[38] Accordingly, the Seminar investigated several options to incentivize shipbuilder innovation and modernization. What was found is that numerous programs already exist to incentivize shipbuilder modernizations, such as Navy ManTech, the National Shipbuilding Research Program (NSRP), and the MARAD Small Shipyard Grant Program. These are met with mixed success (Figure (2)) and sometimes result in

marginal improvements to efficiency and affordability. In general, though, shipbuilders understand their own industry and are independently motivated to modernize when the business case exists, such that those remaining cases where government incentives might influence the decision are unlikely to achieve a payoff that significantly abates problems of affordability and capacity.

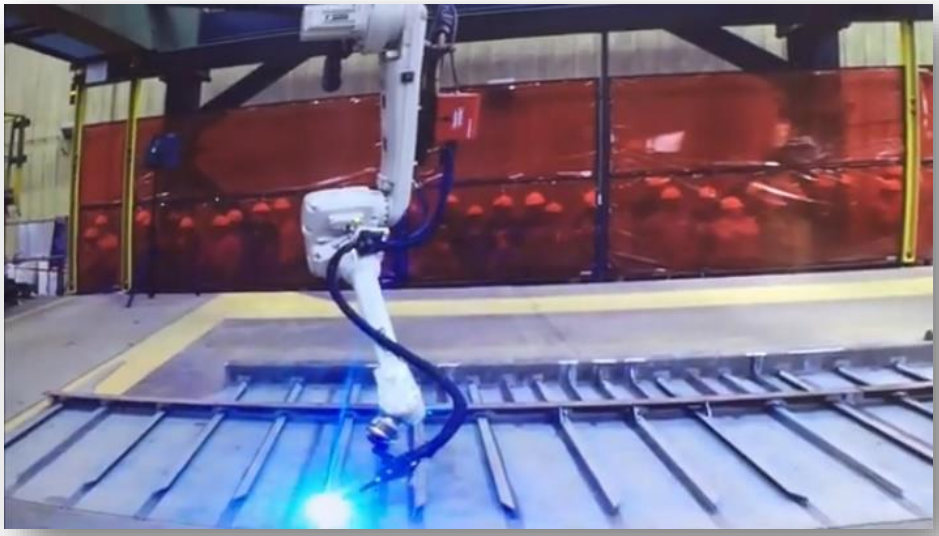

Figure 2: Installed at Bollinger Lockport through funding from the NSRP, the CAR-W robot was ultimately found unsuitable for Bollinger's processes. It now sits idle, its work again performed by manual laborers, at a loss of millions to both Bollinger and the U.S. Government.

Another rejected line of potential recommendations that bears explanation are those specifically targeting the labor shortage. When asked by the Seminar what would be the next-most limiting factor if their labor issues were miraculously resolved, a shipbuilder answered that it would be the capacity of their critical suppliers... who are crippled by their own labor issues.[39] The anecdote illustrates that the shortage of skilled labor is a nationwide problem extending well beyond the maritime industry and that its resolution will also extend well beyond the maritime industry. It will ultimately depend on

the adjustment of wages in response to market forces and, potentially, changes to immigration policy. In the meantime, government stakeholders should focus on what can be done better today, such that shipbuilders will invest in their workforces or modernizations as appropriate to local conditions. In other words, the Seminar takes a "bottom-up" view of industry solutions, where necessities like modernization or labor are appropriately viewed as means to an end.

Line of Effort One: Reinvigorate Commercial Maritime

The Value Proposition.

The commercial maritime industry is of vital importance to U.S. national security. Its relevance extends far beyond the facilitation of seaborne trade and resource extraction. It is also essential to military readiness, particularly through its contribution to the sealift capabilities necessary to deploy and sustain combat forces worldwide. Further, the symbiotic relationship between commercial and military shipbuilding is particularly relevant amid elevated international tensions. Commercial shipyards support surge capacity through ready facilities, active supply chains, and a larger skilled labor pool than can be sustained with defense shipbuilders alone.

The vast potential and vulnerability of maritime trade was recognized by America's Founders, who accordingly enshrined the Commerce Clause in the Constitution.[40] Since then, various laws have served overseas American interests and promoted U.S.-flagged shipping.[41] But today, appeals to the nation's rich seafaring history and attendant prosperity have failed to capture public interest, and the industry is largely taken for granted.[42] Unable to compete against highly subsidized international firms benefitting from entirely foreign labor and regulatory environments, it hangs on

only by threads of protectionist policy and other government interventions and thus competes with other government priorities for subsistence. It is therefore the Seminar's position that enhancing government support for the commercial maritime industry is not only beneficial but essential to U.S. national security.

Some Perspective on Protectionism.

Although the Merchant Marine Act of 1920, or "Jones Act," has become the popular scapegoat for shortcomings in U.S. maritime policy, the regulatory landscape is far more complicated than any one law.[43] Some key examples include coastwise laws such as the Passenger Vessel Services Act of 1886, which abets the Jones Act in reserving the transportation of passengers and merchandise between U.S. ports for U.S.-built, owned, and flagged vessels.[44] Similarly, the 1965 Byrnes-Tollefson Amendment prohibits the construction of military vessels in foreign shipyards, and "Made in America Laws" impose additional requirements for government-supported shipbuilding programs.[45,46] Further, cargo preference laws require certain military and government-impelled cargos to be carried on U.S.-flagged, but not necessarily U.S.-built, ships.[47,48,49]

In addition to protectionist policies like those cited above, the U.S. also maintains financial assistance programs like the Maritime Security Fleet, Cable Security Fleet, and the Tanker Security Fleet.[50] Under these programs, foreign-built commercial vessels with military applications receive an operating differential payment of between $5-$10 million per year to trade under the U.S. flag. The now-defunct U.S. Construction Differential Subsidy attempted to offset the higher costs of shipbuilding in the U.S. versus foreign yards; however, this program was defunded in the 1980s, leaving

American shipyards to compete directly with state-supported foreign shipbuilders.[51,52] For context, from 2008 to 2023, the U.S. government awarded only $303 million in small U.S. shipyard grants, while PRC direct state support amounted to an estimated $132 billion from 2010 through 2018.[53,54]

Opponents of government intervention argue that the protectionist laws are outdated and that they result in higher transportation costs, contributing to an uncompetitive maritime industry.[55] Critics point out that U.S.-built oceangoing cargo ships can cost 300 percent more than those constructed overseas.[56] Similarly, operating a U.S.-flagged oceangoing cargo vessel can cost over $6.5 million per year more than a foreign-flagged ship of similar class.[57]

Proponents of intervention maintain that these laws are essential to the preservation of the nation's industrial base and skilled workforce and that the holistic benefits of an extant commercial maritime industry outweigh the costs of market inefficiencies when considered from a nationwide perspective. Owing just to the country's size, U.S. commercial shipbuilding is a significant economic contributor even if it is dwarfed by defense shipbuilding. For example, the U.S.-produced towboat and barge fleet accounts for over 38,000 vessels, which move nearly 665 million tons of domestic cargo annually.[58] Likewise, the domestic offshore marine service industry and passenger vessel fleet include more than 3,200 U.S.-built and registered vessels.[59,60] Even if it is sustained through regulation, this industry plays a vital role in both the U.S. economy and U.S. national security. Without U.S.-build requirements, many more non-defense shipbuilders would go out of business with attendant degradations to surge capacity, supply chains, and the skilled labor pool.

Absent a revival of construction differentials or direct subsidies, government interventions can be practically restructured to foster solutions such as dual-use shipbuilding programs, cargo preference reform, and sensible incentives to offset operating costs.[61] To spur maritime statecraft through commercial applications, the U.S. should pursue a government-sponsored domestic shipbuilding program for exclusive market activity. An exclusive market, shielded from foreign competition, directly supports national security and provides presence in international shipping. Although the following recommendations are envisioned to comprise a multi-part plan to this end, each can contribute independently and are therefore presented as separate recommendations.

Recommendation: Produce a class of U.S.-built, government-owned / commercially operated (GO/CO) dry cargo ships for dual-use commercial and military applications.

Building 18 moderately sized cargo ships to commercial specifications will allow U.S. shipyards to realize economies of scale, increase production and hiring based on consistent and long-term workload, and avoid costly layoffs of a skilled workforce in the troughs between programs. Adherence to commercial specifications and standards will curb production costs. For example, in 2016 Matson Navigation contracted with GD NASSCO to build two Jones Act Kanaloa class combination container/roll-on, roll-off vessels for $511 million for both ships (Figure (3)).[62] In comparison, the Navy's cost estimate for building a new Common Hull Auxiliary Multi-mission Platform (CHAMP) was $1.14 billion per ship, which was rejected by the Office of Management and Budget in favor of buying secondhand, foreign-built cargo vessels for the Ready Reserve Force.[63] As a result, the Navy's 2025 budget requested almost $205 million for two used

commercial vessels. Overall, the program intends to fund 18 used vessels through 2029 at approximately $1.7 billion.[64]

Figure 3: Matson Kanaloa-Class vessels Lurline and Matsonia were delivered by GD NASSCO of San Diego in 2019 and 2020 respectively.

The recommended dual-use fleet should be immediately pressed into service as Prepositioned and Commercially Employed Ready Sealift Ships (PACERS2). This can be achieved by offering a combination of operating contracts and leases to U.S. shipping companies. This program would see the new ships operated and maintained while providing jobs for U.S. mariners as well as improving sealift capability. The concept is comparable to the Navy's Oceanographic Research Facilities program, Enhanced Use Leases for High-Speed Transport, and MARAD's National Security Multi-mission Vessel (NSMV) fleet.

Recommendation: Leverage novel acquisition techniques for the dual-use fleet.

In addition to curbing cost growth, adherence to commercial specifications will also maximize opportunities to employ nonstandard contracting, acquisition, and program management techniques that are infeasible for higher-risk programs. For example, the acquisition strategy for the new cargo ships should be modeled after the NSMV program. Its hybrid approach allowed MARAD to leverage industry best practices by employing a commercial firm as a Vessel Construction Manager (VCM), responsible to oversee all phases of design, construction, and post-delivery activity.[65] While it requires special legislation to bypass certain Federal acquisition rules, the VCM approach has been validated as the first NSMV was delivered on time and on budget by Philly Shipyard.[66,67]

An additional option, afforded by an 18-vessel acquisition program with low technology risk, is to leverage multiyear procurement (MYP) or block buy (BB) contracting, as well as economic order quantity (EOQ) purchases for major components. Both the Navy and Coast Guard have distinct MYP and BB authorities; the Coast Guard has never utilized them in a shipbuilding program, but the Navy has made extensive use of MYP and BB, reducing overall procurement costs compared to traditional contracting.[68] Additional statutory legislation may be necessary for MARAD to employ MYP or BB as an alternative to relying on existing authorities.

In addition to EOQ purchases, which lower costs, these contracting methods reinforce industry perceptions of stability, incentivizing hiring and modernization. Instead of procuring additional ships as options, which the government may or may not award, MYP and BB contracts procure a production lot upfront. Predictability and stability are

vital for shipbuilders to manage workload; for example, the frequent use of Continuing Resolutions (CRs) to fund government programs has introduced significant instability. By pairing MYP and BB contracts (which already require Congressional approval) with automatic funding authorization and appropriations, CR-driven instability can be mitigated, and the associated costs neutralized. Finally, this type of program would present an ideal opportunity to introduce the use of large modular preassemblies constructed in the shipyards of international partners, as will be detailed in the "friendshoring" section below.

Recommendation: Increase the impact of cargo preference laws.

There are no incentives to build large oceangoing cargo ships in the U.S. beyond the capacity of the coastwise market. Similarly, there are very few commercially viable opportunities to operate U.S.-flagged cargo ships without government interventions such as coastwise protections, cargo preference, government contracts, and operating differentials. Federal cargo preference laws currently require 100 percent of military cargo and at least 50 percent of non-military government cargo to be transported on privately owned U.S.-flagged commercial vessels.[69] These provisions should be modified to include U.S. build requirements (i.e., privately operated U.S.-flagged vessels built in the U.S.).[70] Additionally, non-military government cargo should be increased to 100 percent, provided that U.S.-flagged vessels are available.[71,72] To permit firms to economically adjust to the new laws, requirements should be escalated in a graduated, stable, and well-advertised manner, similar to the concept behind Corporate Average Fuel Economy regulations in the automotive industry. The resulting modern class of U.S.-built ships will be coastwise qualified and able to replace aging capacity within the

coastwise trades. The same fleet can be contracted for prepositioning military equipment and as forward-deployed maintenance platforms in geo-strategic locations. In contingencies, the fleet can provide ready sealift.

Recommendation: Funnel duties from foreign repairs to domestic shipyards.

The Tariff Act of 1930 stipulates that certain repairs made to U.S.-flagged vessels outside the U.S. are subject to a 50 percent ad valorem duty of the foreign cost.[73] Even with this duty, it is still often more cost-effective to conduct repairs in a foreign shipyard. As this law is specifically intended to sustain domestic repair industries against inexpensive foreign labor, the proceeds collected from the ad valorem duty should directly enhance U.S. shipyard grants and support U.S.-flagged operations.

Recommendation: Create a Department of Maritime Affairs.

Genuine maritime power banks on effective interagency coordination to synchronize national security objectives and to collectively resource the industrial base. Yet, to date, the U.S. has no comprehensive and authoritative national maritime strategy. The Navy, Marine Corps, and Coast Guard have a 2020 maritime strategy.[74] Separately, MARAD published its 2020 maritime strategy following a seven-year effort.[75,76] Three years later, in 2023, MARAD received a new Congressional mandate for an updated strategy.[77] By 2024, a bipartisan, bicameral, Congressional group renewed the call for a national maritime strategy and recommended installing an interagency maritime policy coordinator to lead the effort.[78] While a centralized approach is merited, it is unclear how effective a central policy coordinator can be without resources and statutory authority.

An alternative is to establish the Department of Maritime Affairs, comprising the Coast Guard, MARAD, NOAA, the Federal Maritime Commission, and a new Commission on Shipbuilding. The Secretary of Maritime Affairs would be designated as the interagency maritime policy coordinator responsible for strategy development and implementation, reporting directly to the President. Additionally, the newly formed Commission on Shipbuilding would be responsible for fostering, promoting, and developing a robust, resilient, secure, and innovative maritime capability inclusive of military, government, and commercial equities.

The new Department of Maritime Affairs would be positioned to co-sponsor and implement a meaningful national maritime strategy in coordination with the DOD, interagency, U.S.-based maritime industry, and international partners. Commensurate with the elevated profile of seapower in today's strategic environment as well as the seemingly intractable problems of the maritime industry, this reorganization would align the federal agencies with authority over maritime governance for national, homeland, and economic security under a single functional Department, clear of competing demands such as border security or commercial aviation safety. This, in turn, would facilitate the whole-of-government approach needed to align naval and commercial interests in support of international maritime power.

Line of Effort Two: Friendshoring

The Value Proposition.

As American dominance observably evaporates in economic, military, and technological domains of competition, the affinity of "partners and allies" naturally takes center stage as a U.S. core strength. Accordingly, "friendshoring" - a catch-all term for

leveraging allies and partners to augment manufacturing capabilities, resources, and supply chains - is frequently promoted as an underutilized solution for the challenges facing the U.S. maritime industrial base. As previously stated, SECNAV has made friendshoring a cornerstone of his vision for maritime statecraft, a “whole-of-government effort to build comprehensive U.S. and allied maritime power.”[79] Seeking support from allies in shipbuilding, maintenance, and repair, SECNAV has recently courted shipbuilders from Australia, Italy, Japan, and South Korea, trumpeting the Biden Administration’s openness to critical investment from trusted allies in the U.S. maritime industry.[80]

Significant victories have supported the pro-friendshoring narrative. Examples include the 2022-2023 master ship agreements between the U.S. Navy and Indian shipyards for the maintenance and repair of U.S. assets in the Indo-Pacific, as well as the use of a foreign-sourced parent design and modular preassembly by Philly Shipyard (an effort which even survived a Jones Act-related court challenge in 2008).[81,82] As a standalone solution, though, maritime friendshoring offers only measured potential. A mix of entrenched political interests and restrictive U.S. regulations, coupled with the appropriate self-interest of partner nations, can scuttle even the most well-intentioned of friendshoring endeavors. A recent and relevant case is the blocked attempt by Japan’s Nippon Steel to acquire U.S. Steel; beginning in 2023, the deal was publicly opposed by no less than President Biden.[83] Had this deal gone through, it would have injected partner capital and management expertise into a struggling domestic industry that provides the raw materials for ship components such as hulls, propellers, rudders, and engine parts. The Nippon Steel example demonstrates that for friendshoring to succeed

it must be thoroughly set up for success through interagency efforts that are sensitive to public concerns across vast separations of location and culture.

Nuclear-powered friendshoring.

AUKUS, the trilateral partnership among Australia, the United Kingdom (U.K.), and the U.S. announced in 2021, has the potential to develop into a historic paragon of maritime friendshoring. Building on trust developed through decades of security cooperation, the pact aims to provide Australia with conventionally armed nuclear submarines, as well as to foster collaboration on advanced capabilities involving technology and information sharing.[84] On paper, AUKUS is a great deal for the U.S.: It offers a step increase in a trusted partner's capability, interoperability, and commitment to U.S. naval imperatives as well as a new and strategically-located homeport for U.S. and British submarines. Furthermore, with Australia's commitment to procure up to five Virginia-class submarines, U.S. shipyards will benefit from an expanded submarine market as well as direct infrastructure investments by Australia. For Australia, AUKUS is also very promising: in addition to gaining interoperability with the U.S. Navy, it will become the only nation other than the U.K. with which the U.S. has shared nuclear propulsion technology. The deal will culminate in Australia's domestic design and construction of a new submarine class, SSN-AUKUS, in the late 2030s and into the 2050s.[85]

Despite its enormous potential, AUKUS faces substantial legal and regulatory obstacles. Chief among these are the International Traffic in Arms Regulations (ITAR), which control the import and export of defense products and complicate the technology-sharing aspects of the agreement.[86] Congress's passage of a 2023 bill directing the

State and Defense Departments to streamline export licenses in support of AUKUS was a step towards mitigating ITAR's impact on the deal.[87] More recently, the State Department's May 2024 publication of proposed AUKUS-friendly updates to ITAR suggests that the political momentum behind AUKUS is building.[88]

But AUKUS's regulatory obstacles go well beyond ITAR. U.S. immigration laws, in particular, are a complicating factor, as U.K. and Australian firms struggle to secure visas for essential foreign workers. Like ITAR, overcoming these regulatory challenges is possible, but it requires pragmatic compromises that U.S. lawmakers, particularly in a divided Congress during an election year, often seem reluctant to make. These factors underscore that AUKUS, with its lengthy timeframe, must survive multiple administrative shifts across three continents in an increasingly contentious global political climate. Currently, it remains uncertain whether AUKUS will ultimately emerge as a friendshoring success or founder on the rocks of internal dissent.

Friendshoring succeeds when best practices are followed.

To be clear, the obstacles to initiatives like AUKUS are not insurmountable. Success depends upon the disciplined application of lessons learned and adherence to best practices. To that end, the following are some specific qualities shared by all notable friendshoring success stories:

- *Strategic focus:* Friendshoring is too often proffered as if it were, in itself, a desired outcome—friendshoring for friendshoring's sake. Instead, as a means to an end, it must serve to advance specific and limited goals, such as in the case of the U.S.-India ship repair initiative, or potentially, AUKUS.[89] Moreover, as the

U.S. expands its friendshoring commitments, it must be careful not to overcommit to vague and open-ended collaborations it cannot sustain.

- *Clear Mutual benefit:* Advancing America's interests is a fundamental goal of U.S. foreign and security policy, so it is understandable that in crafting a particular friendshoring initiative, policymakers should focus foremost on its potential benefits to the U.S. That said, partner nations also justifiably want to advance their own interests, and like the U.S., must manage a tangle of competing domestic interests and concerns. Therefore, successful friendshoring must be a multi-way street, with effects that not only benefit all parties but do so in ways that are articulable and recognizable at the level of public discourse. In other words, for a friendshoring venture to succeed it must sell well to stakeholders on each side of the agreement.
- *Domestic groundwork:* Risks and trade-offs are inherent to friendshoring. For example, U.S. shipyards may lose some preferred contracts as collaboration ramps up with foreign partners. If such a trade-off is unacceptable, or if the U.S. is unwilling to mitigate it through subsidies or other compensatory measures, then the friendshoring measure in question should be reconsidered. Ultimately, for friendshoring to succeed, the U.S. needs to demonstrate the political will to get its own house in order. This includes doing the hard work at the Congressional, Departmental, and White House levels to modify regulations and bureaucratic structures that impede international collaboration, such as ITAR and immigration law.

Recommendation: Leverage Nordic polar expertise.

With only one deployable heavy icebreaker and five major icebreakers to Russia's forty, and with the PRC set to surpass America's icebreaker capacity by 2025, the U.S. is at a dangerous precipice in the polar domain, both militarily and economically.[90,91] Demand for polar marine traffic has skyrocketed as the effects of climate change and emerging resource-exploitation technologies have made new routes economically viable.[92] Accordingly, both Russia and the PRC have ramped up efforts to capture strategic positions on this polar frontier. Meanwhile, the U.S. has struggled to adapt, with what the press call "disorganized, wasteful, and dysfunctional efforts at reconstituting fundamental polar capabilities."[93]

Almost as if on cue, the admission of Sweden and Finland to NATO has brought with it access to the world's most proven and experienced authorities in polar engineering and navigation. Helsinki Shipyard, which the Seminar visited during field studies, currently sits idle due to the cancellation of its Russian contracts. The shipyard, now owned by Canadian firm Davie, has built more icebreakers than any other shipbuilder in the world.[94] A Davie executive estimated that it could build an international multipurpose icebreaker for under $600M within 28 months of contracting.[95] Meanwhile, the U.S. has not built a heavy polar icebreaker in almost fifty years; the current Polar Security Cutter program, ongoing in Louisiana, is at now least three years behind schedule.[96] That said, U.S. firms have demonstrated success in building light and medium icebreakers which could be leveraged to mutual benefit in an international exchange of technology and manufacturing capacity. Commentators now call for such a "Polar AUKUS" agreement, arguing that an AUKUS-like partnership would leverage

heretofore untapped polar expertise.[97] A multinational agreement could put Helsinki Shipyard to work building a “NATO Icebreaker,” leveraging economies of scale to provide a common, cost-effective solution for NATO members with arctic interests.

Recommendation: Expand the use of modular preassemblies to include international partners in manufacturing.

In modern shipbuilding, the use of modular preassemblies represents a significant advancement in construction techniques, enhancing both efficiency and quality. This method involves assembling large sections or modules of a ship in a controlled environment before transporting them to a separate construction yard for final assembly and outfitting. Each module typically includes complete systems like piping, electrical networks, and machinery. This approach reduces labor costs, permits specialization, and reduces the overall construction time and the potential for errors that might occur in a less controlled environment. By streamlining production processes and improving the accuracy of construction, modular preassemblies help shipbuilders meet tighter schedules and budgets, while also achieving higher standards of quality and safety in the finished vessels.

Figure 4: A hull preassembly is towed from Romania to Vard Langsten for outfitting as a Jan Mayen-class cutter for the Norwegian Coast Guard.

Modular construction techniques have been employed for generations, and are considered an industry best practice by firms like NASSCO, Philly Shipyard, GD, HII, and Austal USA.[98,99,100] Due to advances in computer-aided design, the size of completed modules has trended upward over time; Vard, for example, uses preassemblies comprising almost an entire hull. These are constructed under favorable labor conditions in Romania, before being transported to Norway for final assembly and outfitting (Figure (4)).[101] Although this path will require legislative work to navigate protectionist restrictions, the Vard model paired with a commercially-based contracting approach (as discussed in the earlier proposal for a dual-use fleet) presents an ideal opportunity to capitalize on partner shipbuilding capacity and labor.

While any effort to send manufacturing overseas (even to partners and allies) will meet some domestic resistance, virtually no complex product today is comprised exclusively of parts made in one country, and certainly nothing as sophisticated as a ship. Whether the part is an LCD monitor or a prefabricated hull assembly, foreign-made parts are a permanent feature of ships today. Friendshoring hull preassemblies, particularly for icebreakers or a dual-use fleet, would be more like an adjustment within a continuum than a radical departure from existing norms.

Conclusion

The challenges facing the U.S. maritime industry are both severe and multifarious, demanding a strategic approach to restore competitiveness, resilience, and capability. The ascendance of the PRC in shipbuilding, combined with Russia's strategic maneuvers in the Arctic, underscores an urgent need for the U.S. to address its current deficiencies in shipbuilding capacity, skilled labor, and innovative prowess. Addressing these challenges requires a combination of policy reform, investment, diplomacy, and a wealth of political will. But by embracing the necessary changes, the U.S. can come through its challenges to safeguard its maritime interests, support national security, and preserve its strategic position on the global stage.

APPENDIX A: COMPETITOR MARITIME INDUSTRY ANALYSIS

This appendix comprises an analysis of the shipbuilding and repair industries of the PRC, our pacing challenge, and Russia, an acute threat and agent of disruption. Similar to that provided for the U.S. maritime industry in the body of this report, analyses are structured using the Porter's Diamond model of competitive advantage.

The PRC Shipbuilding and Repair Industry

The PRC has keenly recognized the critical role of seapower in economic security and the shaping of foreign policy. As part of its economic reforms, the Chinese Communist Party (CCP) has acted with strategic intentionality, deliberately cultivating its shipbuilding sector to support a campaign for global maritime dominance. The approach is supported by substantial government intervention, skewing the market and pricing structures to enhance the industry's international competitiveness. Today, the PRC is the world's largest builder of commercial, ocean-going ships, with over 40% of the global market built in Chinese shipyards.[102] The attendant supply chain is increasingly controlled by Chinese firms, primarily state-owned enterprises (SOEs), which have received support "that is unrivaled in size and scope."[103] This dominance is no mere coincidence; it is the result of deliberate and sustained policy support.

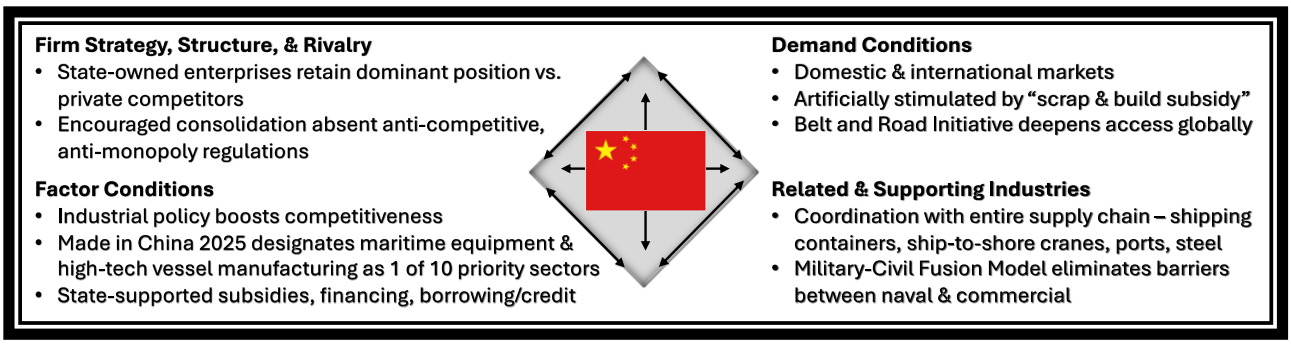

Figure 5: Porter's Diamond Analysis of the PRC Shipbuilding and Repair Industry

Factor Conditions.

Maritime industries are characterized by high capital intensity and low profit margins. To overcome these challenges, Chinese firms rely extensively upon state support which includes direct and indirect subsidies, financing from state-owned banks, state-supported fundraising, preferential borrowing rates, and low-cost credit. This comprehensive support system has enabled Chinese companies to "flood the world with cheap products, dive foreign competition out of business, and gain global dominance."[104] From 2010 to 2018, these firms received approximately $132 billion from direct subsidies and financing from state banks alone. [105] Furthermore, state-owned banks strategically direct individual state-owned enterprises (SOEs) to invest in other SOEs, reallocating resources to industries deemed strategically important but which might otherwise struggle to survive under normal market conditions. [106]

Central to the CCP's strategy is the "Made in China 2025" initiative, which designates maritime equipment and high-tech vessel manufacturing as one of ten priority sectors for the PRC to use industrial plans to "boost competitiveness by advancing China's position in the global manufacturing value chain, 'leapfrogging' into emerging technologies, and reducing reliance on foreign firms."[107] The initiative aims

to enhance China's competitiveness by advancing its position in the global manufacturing value chain, pioneering emerging technologies, and reducing dependence on foreign firms.

Demand Conditions.

The PRC benefits from robust demand in both domestic and international markets. The nature of home market demand has a disproportionate effect on how companies perceive, interpret, and respond to buyer needs.[108] During the global economic downturn in 2008, which caused a sharp decline in worldwide demand within the industry, the PRC initiated a "scrap and build subsidy" scheme to artificially boost demand.[109] This policy enabled Chinese firms to modernize their fleets at a substantially reduced cost, improving the balance sheets of shipping firms while also propping up demand for shipbuilders.

The PRC's Belt and Road Initiative (BRI) has also significantly impacted the maritime environment. In addition to fostering domestic demand for shipbuilding and repair, it expanded access to global maritime markets. From 2010 to 2019, under the BRI, Chinese companies invested approximately $11 billion in overseas ports through 25 projects across 18 countries. Concurrently, the PRC has implemented restrictions on foreign investments in the shipbuilding sector, restricting access for foreign-owned firms which constitute only 5% of the ships built in China. [110] This strategy effectively preserves a competitive edge for domestic firms by limiting foreign competition within the local market.

Related and Supporting Industries.

The PRC has skillfully implemented industrial policies to boost its competitiveness not only within the shipbuilding and repair industry but also throughout the entire maritime supply chain. In an economy comprising 116 industrial sectors, “97 are associated with the shipbuilding sector.”[111] The nation dominates the production of key maritime components, manufacturing 96% of the world’s shipping containers and more than 80% of the world's ship-to-shore cranes. Chinese steelmakers also contribute approximately 55% of the global steel output—an essential material for shipbuilding and repair. The proximity and scale of these suppliers, who are global competitors themselves, provide a significant advantage to the nation's shipbuilding sector. Furthermore, China is home to 7 of the world’s 10 busiest ports. [112]

Capitalizing on the symbiotic relationship between commercial and military shipbuilding, the PRC employs a Military-Civil Fusion (MCF) model which effectively forces the integration of naval and commercial shipbuilding. This relationship allows each sector to support and benefit from the other. A prime example of this model’s effectiveness is the China State Shipbuilding Corporation (CSSC), which not only builds one-fifth of the world’s cargo vessels but also supplies warships to the People's Liberation Army Navy (PLAN). This overlap means that foreign orders for cargo ships may inadvertently support the modernization of the PLAN; over 70% of the orders at CSSC’s flagship yard are from foreign owners, illustrating the global influence and strategic depth of China’s maritime industries. [113]

Firm Strategy, Structure, and Rivalry.

Two-thirds of the ships built in China are produced by state-owned enterprises (SOEs).[114] The PRC has actively encouraged these SOEs to consolidate, effectively reducing internal competition. Notable examples include the merger that transformed China Merchant Group into the world's largest port and logistics company, as well as the combination of China's COSCO Shipping Corporation with China Shipping Group, creating the world's third-largest shipping firm.[115] These mergers and acquisitions take place in an environment devoid of the antimonopoly and pro-competitive regulations typically found outside of the PRC. This regulatory landscape encourages the formation of massive conglomerates strategically poised to capture and exploit significant market share.

The Russian Shipbuilding and Repair Industry

Like the U.S., Russia has a storied history in both naval and commercial shipbuilding. However, Russia's maritime industry was among its worst impacted by the dissolution of the Soviet Union.[116] Today, its capabilities are primarily focused on Naval Engineering and Armament (NEA), leading to a significant imbalance between the civil and military sectors. Historically a prominent exporter of ships for foreign navies, the industry has faced substantial setbacks due to international sanctions—initially triggered by the annexation of Crimea in 2014 and intensified following the invasion of Ukraine in 2022.[117,118]

As an international competitor, Russia's maritime industry trails behind its American and Chinese counterparts. In 2023, for example, the U.S. Navy expanded by 32,000 tons and the People's Liberation Army Navy (PLAN) by 50,000 tons, whereas

the Russian fleet saw minimal growth.[119] This stagnation underscores the broader struggles facing the industry, which the Russian government is keen to address in an attempt to restore competitiveness.[120] However, any efforts to rejuvenate the shipbuilding and repair sector must contend with the demands of the ongoing conflict in Ukraine. Despite a 40% increase in defense budgets, naval procurement remains a low priority, with spending predominantly directed towards capabilities suited for land warfare.[121]

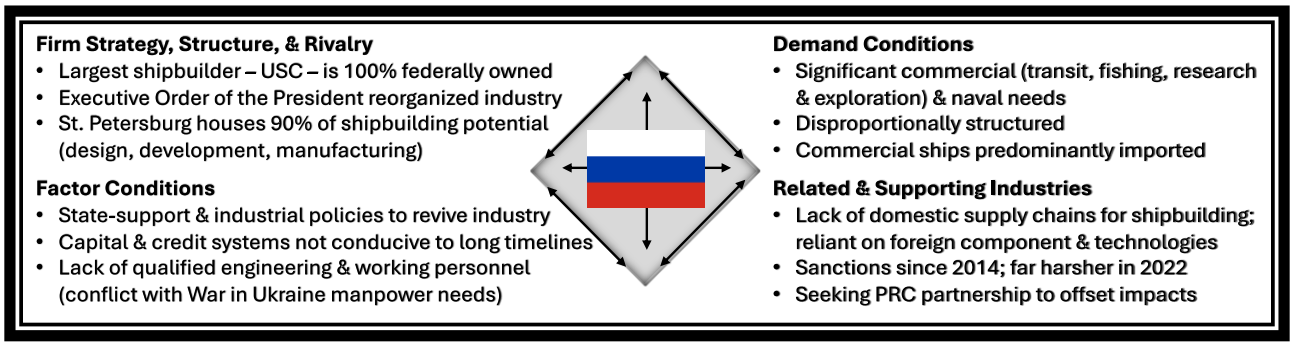

Figure 6: Porter's Diamond Analysis of Russia's Shipbuilding and Repair Industry

Factor Conditions.

The Russian government has historically been deeply involved in shaping the country's maritime industry. During the Soviet era, extensive state support facilitated rapid growth, elevating the industry to one of the strongest globally. However, following the collapse of the Soviet Union, the industry suffered a lack of financing, reduced orders, and a general trend of de-industrialization, causing Russia to lose its competitive edge internationally.[122]In more recent times, the industry has been challenged by capital funds and credit systems ill-suited for developing advanced technology products, coupled with a shortage of highly qualified engineers and skilled workers.

The Russian government has attempted to respond to these challenges, with initiatives beginning in 2008 to advance scientific and technological research in marine technology. By 2012, the government had approved a $3.6 billion state-run program focused on shipbuilding science, the development of new vessels, and the improvement of manufacturing facilities to meet “the full satisfaction of state and business demand.”[123] This program was designed to answer both state and business demands comprehensively and to enhance the global standing of Russian shipbuilding.

The effectiveness of these initiatives has been frustrated by the impact of international sanctions, which have disproportionately impacted Russia’s competitiveness in commercial maritime industries. Specifically, before the sanctions, “Europe and South Korea were the two biggest markets;” now both are “imperiled” by an inability to access foreign equipment those customers demand.[124] For example, the shipbuilder Zvezda SSC has been unable to complete orders due to sanctions, following the withdrawal of its partnership with South Korean shipyards to produce new large tankers.[125]

Despite these challenges, analysts still consider shipbuilding to be one of Russia’s “most important industries.”[126] Continued government intervention reflects this consensus; in 2023, the government announced a $5.1 billion long-term state support program targeting commercial shipbuilding, alongside a $1.1 billion program dedicated to the domestic development of engines, both areas significantly affected by sanctions.[127] These efforts underscore the Kremlin’s ongoing commitment to revitalizing an industry deemed vital to Russia's economic and strategic interests.

Demand Conditions.

As the world's largest country by area, Russia has substantial shipbuilding and repair requirements. With an extensive network of rivers traversing its vast landmass and approximately 25,000 miles of coastline, the nation relies heavily on both commercial and naval vessels to ensure national security, political stability, food security, and efficient transportation. Russia's maritime industry is disproportionately structured in favor of naval production, an imbalance that persists even though there is significant demand for commercial vessels. As a result, the country relies heavily on imported supply to meet the needs of its civilian maritime sector.[128]

Related and Supporting Industries.

Russia has a significant presence in industries related to shipbuilding, such as freight travel via its extensive waterways connecting Europe to Asia, as well as fishing and scientific exploration in the Arctic region. These industries serve as important commercial customers for the shipbuilding sector. However, despite this potential, shipbuilders only constitute 4% of domestic industrial demand.[129]

Although shipbuilding is a major employer in Russia, the industry lacks robust organic supply chains.[130] Sanctions have highlighted this vulnerability, restricting the imports of essential foreign components and technologies. In the naval sector, critical supplies such as diesel engines, composite superstructures, and complex electronics (radars, communications systems, guided missiles, and sonar arrays) are unavailable due to a lack of domestic substitutions. These challenges are further compounded by shortages of qualified personnel with technical expertise, limited access to necessary alloys, and an absence of automation or precision machining equipment.

In response to these challenges, Russia is actively pursuing initiatives to replace foreign components and technologies with domestic alternatives. It also seeks to mitigate the impact of sanctions through partnership with the People's Republic of China (PRC).[131] However, the process of replacing technology and establishing new supply chains is time-consuming, and the industry continues to face significant hurdles in its path to self-sufficiency and global competitiveness.

Firm Strategy, Structure, and Rivalry.

The Russian government plays a significant role in the strategic direction, structural organization, and competitive dynamics of its shipbuilding industry. By a 2007 presidential executive order, a major restructuring was initiated to preserve and enhance the country's shipbuilding capabilities, leading to the creation of the United Shipbuilding Corporation (USC). USC is now a fully state-owned entity and the largest shipbuilder in Russia, boasting over 60 shipyards with more than 80,000 employees, and responsible for managing over 80% of the nation's shipbuilding output.[132]

The strategic intent behind this organization includes developing the capability of all Russian shipyards to support both commercial and naval vessels. This approach aims to maximize the utilization of production capacities and reduce manufacturing costs, enhancing the overall competitiveness of Russian shipbuilding. USC is headquartered in St. Petersburg, which is Russia's primary shipbuilding hub, hosting the bulk of maritime manufacturing capacity as well as the industry’s critical design and development sectors. Nearly 90% of the country's shipbuilding potential is concentrated in this region.[133]

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[46] "Made in America Laws" includes all statutes, regulations, rules, and Executive Orders relating to MARAD's Federal financial assistance awards as well as those that refer to "Buy America" or "Buy American," which stipulate the purchase or acquisition of goods, products, or materials produced in the United States.

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