

Understanding the Budgets of the Sino-U.S. Naval Arms Race

by James Landreth

In *Destined for War*, Graham Allison traces multiple historical episodes of a rising military power threatening to shift the balance of power away from the incumbent hegemon. Most of these historical cases ended in major conflict, a phenomenon regularly referred to as “Thucydides Trap.” In his Thucydidean analysis, Allison compares China’s current rise and ambition in the Western Pacific to the U.S., the dominant naval power in the Pacific since the end of World War II. Despite soothing rhetoric promoting their desire for a peaceful rise, China’s military buildup and rate of technological development continue to shock the global community and unsettle regional neighbors. Beginning with the 2012 “Pivot to Asia” and increasing with the Trump and Biden administration’s focus on Great Power Competition, the U.S. national security enterprise has increasingly focused its efforts to ensure U.S. dominance in a contest with China.

Despite China’s stated ambition, growing capabilities, and aggression in the South China Sea, many analysts focus on ineffective metrics that distort the view of the Sino-U.S. balance of power and relative war making potential. “Total defense spending” is the most frequently cited—yet most deceitful—metric when it comes to assessing the balance of power between the U.S. and China (2018: U.S. \$649 billion; CN \$250 billion).¹ While performing an exact comparison of U.S. and Chinese defense spending is impossible due to classification issues and the lack of Chinese transparency on federal spending, a “defense purchasing power parity” analysis of shipbuilding provides a meaningful benchmark and a more valuable metric than merely top line budget numbers. Also, a historical analysis of twentieth century naval arms races enhances the defense purchasing power parity analysis by revealing the importance of belligerents’ geographic proximity to the battlespace, quantitative ratios, and total lifecycle costs. The lessons learned from history, combined with an improved understanding of defense purchasing power parity, provide security analysts and policy makers with a better understanding of relative military spending between the U.S. and China, which enables more prudent use of the U.S. instruments of national power. Such a fusion

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of effort will be essential to expertly wield the increasingly agile and integrated instruments of power necessary for establishing and maintaining maritime superiority in the Great Power Competition.

Twentieth Century Naval Arms Races

Anglo-German naval build up prior to World War I

Beginning with the Naval Defense Act of 1899, Britain established the “two-power standard,” which required the Royal Navy to match the strength of the next two largest fleets combined.² When Imperial Germany commenced its naval buildup prior to World War I, the increasing number of hulls and naval tonnage required an aggressive response from the Royal Navy. Though the German naval buildup directly triggered the British response, the prevailing pre-war opinion stated that the English and German economies shared so many financial interests that an Anglo-German conflict was unthinkable.

Many compare the Anglo-German naval buildup amidst deep economic ties to the current Sino-U.S. contest. While the analogy provides value, key differences in this episode inform the defense purchasing power parity study. Germany and Britain both bordered the North Sea, which proved to be the battleground for many of their naval contests. Because of their proximity, the British and German navies needed quantitatively equivalent fleets comprised of similar ships. In comparison, in order for the U.S. to defend treaty commitments in the Western Pacific, the U.S. Navy must operate at the end of extended supply lines with capital ships and logistics transport vessels capable of crossing the Pacific. Conversely, because most realistic conflict scenarios occur in the Western Pacific, the Chinese may compensate for their fewer number of inferior capital ships with a staggering number of anti-ship missiles, littoral naval ships, their suspiciously well-armed Coast Guard vessels,

and maritime militias.³ Additionally, China may allot a greater portion of her naval combatants to such a contest without abandoning key interests elsewhere in the globe. Meanwhile, the U.S. would begrudgingly spare any capital ships dedicated to the deterrence of Russia, Iran, or Democratic People’s Republic of Korea (North Korea).

Washington Conference limitation of U.S., British, and Japanese fleets prior to World War II

In the interwar period, the Washington Conference throttled the potential for a naval arms race between the U.S., British, and Japanese fleets by defining specific ratios of capital ships and naval tonnage.⁴ The obsession with the relative quantity of ships provided a baseline for negotiation and transparency between potential belligerents, but the focus on quantity also had drawbacks. Mainly, at the onset of hostilities, these ratios lost their value since all signatories to the Washington Conference abandoned prior commitments. Since the U.S., British, and Japanese fleets all possessed accomplished mariners, the decisive role of the U.S.’s overwhelming shipyard production capacity exposes the most salient kernel of the World War II case study.

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While the U.S. and China lack any naval arms limitation agreement, both countries maintain well publicized ship building plans. Despite the dramatic growth in cost and complexity of capital ships since the World War II period, potential output of hulls and tonnage will remain decisive in future conflicts. Though U.S. shipyards maintain a qualitative edge at

producing and maintaining capital ships such as nuclear-powered submarines and aircraft carriers, they will be in strict competition with China, the world's largest shipbuilding nation and most prolific low-cost manufacturer.⁵

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The Cold War Submarine Buildup

At the peak of the Cold War, the oceans crawled with 130 U.S. and 260 Soviet submarines.⁶ While the U.S. maintained a qualitative edge in key metrics over Soviet designs, the sheer quantity of Soviet submarines provided a value of its own. Submarines provide an excellent measure of a nation's technical aptitude for high end competition, but the life cycle sustainment costs associated with a large naval buildup require long term investment. According to the Department of Defense, fully 60 percent of the total life cycle costs of submarines occur in the operations and sustainment (O&S) period.⁷ Today, Russia's large fleet of poorly maintained Cold War-era submarines provide a living reminder of how an unsustainable buildup of ships can weigh like an albatross around one's neck.

According to the World Bank, in 2017 the U.S. spent 3.1 percent of its gross domestic product on defense, compared to China's 1.9 percent.⁸ While the U.S.'s decades of experience building and maintaining capital ships provide the corporate knowledge necessary to build relatively accurate budgets, its growing national debt, regular deficits, and trade imbalance limit its potential for economic mobilization.⁹ China's naval buildup and ambitious future plans reveal its intent to spend dramatically more on defense in real terms as well as a percentage of gross domestic product. Despite

a lack of experience maintaining or deploying capital ships, China possesses some inherent advantages. Objectively, China's relatively lower defense spending provides it with greater room for growth in terms of the percentage of gross domestic product. Additionally, China's closed and opaque system of government, tight social control over its population, and high level of nationalism suggest China's high potential to mobilize political will for economic hardship in support of a conflict with the U.S.

Defense Purchasing Power Parity

While history shapes our understanding of some of the aspects of today's Sino-U.S. naval arms race, concrete differences exist in the variables that comprise the top line defense budgets of the U.S. and China.

Cost of personnel

In his fiscal year 2019 budget hearing for the U.S. Army, General Mark A. Milley noted U.S. military personnel received much higher compensation relative to near peer adversaries. While direct comparison of personnel costs are difficult, a comparison of U.S. median household income (\$56,516 per year) and an estimate of the average Chinese salary (\$12,224) provide a 4.6:1 ratio for labor costs.¹⁰ Personnel payment and benefits for military personnel alone account for 39 percent of the fiscal year 2019 budget, and the 4.6:1 labor cost significantly impacts other major categories of defense spending like O&S and research and development (R&D) that bear significant labor costs. Assuming labor accounts for a similar fraction (39 percent) of the O&S and R&D budget line items, the 4.6:1 ratio overshadows another 21 percent of total defense spending.¹¹ Normalizing labor costs associated with military personnel, O&S, and R&D with the 4.6:1 ratio, the U.S. and China defense purchasing power parity drops from 649:250 to 344:250.

Global Commitments

The U.S. 2018 National Defense Strategy lists Russia, China, Iran, North Korea, and violent extremist organizations as opposing forces the U.S. must be prepared to counter. Each of these require sophisticated capabilities and task-shared assets (e.g., capital ships, satellites, cyber resources). In addition to these deterrence missions, the U.S. is actively restoring material readiness after two decades of engagement in kinetic conflicts in Afghanistan, Iraq and Syria. While Congress has appropriated additional funding for overseas contingency operations, the regular use of military equipment in harsh environments increases O&S costs and reduces the planned service life of the equipment. Since the 2018 National Defense Strategy advertised the need to defeat aggression by a major power, deter opportunistic aggression elsewhere, and disrupt imminent terrorist threats, it is certain that comparing top line budget numbers provides limited value in projecting the level of investment the U.S. is making to deter a military contest with China.¹² Even if the U.S. generously concentrated 70 percent of future years' budgets towards conflict scenarios in the Western Pacific, the defense purchasing power parity drops to 241:250 in China's favor.

Chinese asymmetric approach yields high returns on investment

As the world witnessed the results of direct competition with the combat power of the U.S. and its allies in Desert Storm and other post-Cold War military activities, near peer adversaries elected to pursue asymmetric approaches for countering the U.S. Navy instead of preparing for a future Mahanian fleet engagement, such as occurred in the World War II Battle of Leyte Gulf. Over the past decade, China's implementation of its asymmetric anti-access area denial capability demonstrates a defense strategy tailored to counter the U.S. fleet.

China's investment in less expensive yet

effective asymmetric capabilities—frequently referred to as *assassin's mace* technologies—erode the bravado of the U.S. Navy's order of battle and the relative size of topline budget estimates. The available design information on the mobile launched Dong Feng-21D “carrier killer” and the YJ-12 anti-ship cruise missile reveal China customized its offensive weapons to counter costly U.S. carrier strike groups.¹³ Additionally, large numbers of diesel electric submarines, the Undersea Great Wall, and space based “Project Guanlan” demonstrate but a few of the Chinese proportionally lower cost investments to deter U.S. Navy submarines. While doubtful that any one of these technologies deliver a decisive advantage over U.S. Navy systems and employment strategies, the sheer quantity of the buildup notably alters the calculus for traditional scenarios such as those conceivable under the Taiwan Relations Act or the U.S.-Japan Defense Treaty.¹⁴

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The Great Power Competition Will Require All Instruments of National Power

While the U.S. Navy will remain the lead agency for establishing and maintaining maritime superiority at sea, all instruments of national power will be necessary in order for U.S. military action and broader U.S. policy to be effective in the Great Power Competition. The U.S. Navy and broader national security enterprise must advise on meaningful methods of diplomatic, informational, and economic engagement to aid in the military's effort to establish and maintain maritime supremacy.

Diplomatic

In proportion to their defense buildup, China's diplomatic engagement has become exceedingly robust. China's expert combination of "legal warfare" and willingness to act decisively enabled repeat successes in establishing *fait accomplis* on the ground. China's excessive maritime claims and land reclamation activities in the South China Sea provide the most prominent use of legal warfare. Additionally, China's establishment of air defense identification zones in the South China Sea and East China Sea violated international norms, but quick action and a comprehensive legal campaign allowed implementation before the international community could meaningfully protest. In any future conflict with China, the U.S. must be prepared for legal warfare.

...China's leaders possess an incredibly steerable and agile information operations capability.

While the U.S.'s leadership of the United Nations, World Bank, International Monetary Fund, and a myriad of other institutions accompany more bilateral and multilateral security partnerships than any other country, China's robust diplomatic campaign and investment over the past two decades has yielded remarkable dividends. As examples, Beijing's Shanghai Cooperation Organization, Asian Infrastructure and Investment Bank, and Belt and Road Initiative intentionally offer alternatives to U.S.-led diplomatic cooperatives. Thus, while China maintains veto power as a permanent member on the United Nations Security Council, its hands are free within its own initiatives. To counter China diplomatically, the U.S. diplomatic corps must be prepared to articulate how the U.S. Sea Services' control of the maritime domain has enabled the globalized and interconnected world of the twenty-first

century. Further, the diplomatic corps must challenge other political leaders to imagine a world where U.S. values for open access to markets are replaced by a mercantilist power.

Informational

The suspected number of personnel employed by China's propaganda arm dwarfs the dedicated information operations divisions of the U.S. Additionally, the Chinese social credit system coopts the efforts of the majority of Chinese citizens in any information campaign. Combined with the state's total control of the internet and media, China's leaders possess an incredibly steerable and agile information operations capability. While reaching the Chinese public will be difficult due to the Great Firewall, the U.S. should ensure it is prepared to engage the countries within the global community that maintain access to open internet and free media sources. In shaping operations prior to or during any conflict, the U.S. should be ready to declassify intelligence on Chinese activities when doing so would not compromise U.S. sources or methods. For example, in December 2017 the U.S. released satellite imagery of a Chinese oil tanker performing a ship-to-ship transfer with a North Korean at sea, violating United Nations sanctions. Additionally, thanks to open source and de-classified information, P.W. Singer's *LikeWar* documents numerous examples of Russian and Chinese organizations focused on weaponization of social media.¹⁵

Military

The U.S. must maintain its current plans for naval expansion, but reduce its excessive use of military equipment. For example, excessive use of USS Harry S. Truman prompted the U.S. Navy to consider early retirement after only 21 years of its estimated 50-year lifespan. While this controversial decision had well-reasoned arguments on both sides, if the carrier had been used less during the past decades' campaigns to

counter violent extremist organizations, then the carrier's lifespan would have been preserved for high-end competitions. Additionally, the U.S. Navy must look for non-linear ways to increase the war making potential of each hull, especially through the use of unmanned undersea vehicles.

The U.S. must work with partner nations in the region according to their ability. Allies like Japan must maximize the utility of naval assets such as the Izumo-class aircraft carrier. Additionally, planners must find ways for less developed nations to contribute to hypothetical conflict scenarios. Most importantly, the U.S. must ensure it maintains the ability to conduct joint exercises and promote interoperability with partner nations. Ensuring the long-term viability of joint exercises will require coordination with the U.S. diplomatic corps to counter the Chinese efforts to establish a "Code of Conduct" for joint drills in the South China Sea. The U.S., Australia, Japan, and India should work to counter China's clear intent to veto countries from conducting joint training with countries of their choosing.¹⁶

Economic

The military and intelligence communities must improve their interagency coordination efforts with traditionally non-defense-oriented institutions. For example, consistent with the recent Executive Order, when the intelligence community proves that certain countries or companies sell intentionally compromised dual use equipment, then the U.S. should respond with domestic import bans and widely publicize these vulnerabilities to the international community.¹⁷ Additionally, the Department of Defense's role in the oversight of the Committee on Foreign Investment in the U.S. should be sufficient to counter any malign attempts to exfiltrate data on sensitive U.S. technologies.¹⁸ Lastly, the U.S. Navy should ensure security planning exercises incorporate liaison officers from the Department of Treasury and Central Bankers to prepare for an event where a major power attempts to dump U.S. treasuries in order to weaken U.S. resolve or war making potential.

Conclusion

Since the end of the Cold War, the absence of a near peer competitor and increasing domestic political pressures have allowed the U.S. to become inwardly focused. In the midst of this period, comparatively large top line defense spending has provided a false sense of security to political leaders who prioritize the U.S. domestic agenda. In the absence of an existential threat to the U.S. or its allies, many assumed that spending the most money on defense translated into unrivaled capability across all domains.

Neither the U.S. nor China wish to fall into Thucydides's Trap. However, China's aggressive military buildup directly and specifically challenges the U.S.'s ability to establish and maintain maritime supremacy in the Western Pacific, which poses existential threats to U.S. treaty allies and security partners in the region. A robust ability to support the U.S.'s allies and partners as well as assure free access to the maritime commons underpins the international order and globalized trade. History teaches a great deal about the abilities, limitations and consequences of Great Power Competition naval buildups. However, to win in today's Great Power Competition, the U.S. Navy and broader national security enterprise must also understand the reality of defense purchasing power parity in the Sino-U.S. comparison. Because of the significant Chinese advantage in defense purchasing power parity, the U.S. will have to continue its naval buildup while improving its ability to integrate maritime power projection capabilities with the other elements of national power in order to deliver the full potential of the U.S. to the Great Power Competition. While the U.S. still

retains the military advantage, leaders of the Sea Services must promote bipartisan awareness of the evolving military situation. Promotion of meaningful metrics such as defense purchasing power parity will help mobilize the will of political leaders to take appropriate action against external threats and develop achievable policy objectives in the Pacific. **IAJ**

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