

# Strategic Contours of China's Arms Transfers

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## Abstract

Over the past two decades, China has gone from being a significant importer of conventional arms to being an increasingly competitive exporter of major weapons systems. Its increasing presence on global arms markets reflects the relative progress of Chinese defense, science, technology, innovation, and industry in terms of developing and manufacturing relatively advanced military platforms and technologies. China aims for relative parity with the global military-technological state-of-the-art base by fostering indigenous innovation—mitigating foreign dependencies on technological transfers and arms imports—while leveraging civil-military integration to overcome entrenched barriers to innovation. At the same time, China's current arms export strategy reflects varying “competitive” paths. In the developing countries of Latin America, Africa, and even Central Asia, China is trying to position itself as an alternative to Russian arms exports while also counterbalancing the influence of Western powers. Consequently, China has a growing capability to shape the direction and character of the varying regional arms competitions—not only through its military-technological development and diffusion of arms exports but, more importantly, through its strategic choices that influence the development of strategic alliances and balance of power in different geographic areas.

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China's rising global geopolitical aspirations—backed up by growing economic clout—shape the direction and character of its military-technological choices, including its strategic interests to strengthen its position on global arms markets. Since 2010, China has been able to accelerate its transition from a large arms importer into a net exporter, with the potential to become one of the world's leading arms exporters. Specifically, Chinese defense companies are increasingly expanding bids for weapons contracts that include missiles, armored vehicles,

artillery, ships, air defense systems, and unmanned aerial vehicles (UAV). These solicitations often align with or complement Beijing's economic, trade, and military-technical cooperation packages with select countries in Asia, Africa, and the Middle East. While China remains a net importer of advanced military technologies and components such as aircraft engines, naval weapons, and sensors, it has been able to enter new markets particularly by way of low cost, affordable service, lack of geopolitical strings, and upgrade packages.<sup>1</sup> Indeed, Chinese weapons can now be found in the armaments of Saudi Arabia, Morocco, Venezuela, Ecuador, Peru, Mexico, Nigeria, Kenya, Thailand, Turkmenistan, and Kazakhstan. How has China accomplished this transition? What factors have shaped China's arms export strategy, and ultimately, what are key strategic implications of its growing presence in the global arms market?

This article provides brief contours of China's evolving arms export strategy, its defense industry capabilities, and the impact of Chinese arms transfers on other arms-exporting nations. The principal argument is that Chinese entrance into the global arms markets is based on three major developments. First, China's defense science, technology, and industrial (DSTI) system has been gradually improving in terms of developing and manufacturing new, relatively advanced military platforms and technologies that increasingly meet the widening operational requirements of the People's Liberation Army (PLA). These include the introduction of next-generation supercomputers; aviation prototypes such as the J-16, J-20, J-31, new helicopters, and UAVs; and the ongoing construction of a second aircraft carrier, as well as record numbers of commissioned ships such as Type 054A frigates, 056 corvettes, and 052C destroyers. The constant imperative to advance the PLA's military equipment capabilities has been a long-term driver of the Chinese defense industry and its continuing reforms.

Second, China's growing position in international arms markets, including its arms export abilities, is propelled by the continuing growth of its military expenditures. From the late 1990s to 2013, China experienced double-digit real (i.e., after inflation) growth in defense spending nearly every year. In recent years, China's budget growth rate slowed, falling to 7.5 percent in 2019. However, China has moved up to become the second-largest defense spender in the world, outstripping Japan, France, Russia, and the United Kingdom; only the United States currently spends more on defense. Consequently, greater resources have been available to underwrite China's armaments production and technology acquisition—especially foreign technologies—significantly affecting the growth and modernization of the Chinese military-industrial complex and therefore

arms-exports abilities. According to a report by the International Institute of Strategic Studies (IISS), “since 2014, China has launched more submarines, warships, principal amphibious vessels and auxiliaries than the total number of ships currently serving in the navies of Germany, India, Spain, Taiwan, and the United Kingdom.”<sup>2</sup> In other words, “China’s dramatic and continuing expansion in defense spending has meant more money for innovation, more money for R&D, more money to increase procurement (and therefore production runs), and more money to upgrade the defense industrial base with new tools, new computers, and new technical skills.”<sup>3</sup>

And third, China’s advancing position in global arms markets reflects its growing global geostrategic interests and expectations of a “new era” of intensifying strategic competition and major shifts in the global security environment.<sup>4</sup> In this context, China is gradually positioning its arms exports as an instrument of its foreign policy to project presence, power, and influence in areas vital to its interests, such as South and Southeast Asia. Promoting Beijing’s Belt and Road Initiative (BRI) is one way China deepens economic links with developing regions. At the same time, China’s arms export strategy aims to provide an alternative option to markets traditionally dominated by Russian arms exports to select countries in Latin America, Africa, and even Central Asia.

### **Improving Defense Industrial Strategy**

The Chinese DSTI base has undeniably advanced over the past decade and a half in terms of developing and manufacturing new, relatively modern military systems that increasingly meet the widening operational requirements of the PLA. Its progress has reflected Chinese military modernization strategy in a “double construction” approach of mechanization and “informatization” to concurrently upgrade and digitize the PLA.<sup>5</sup> This “two-track” approach has called for both the near-term “upgrading of existing equipment combined with the selective introduction of new generations of conventional weapons”—a so-called modernization-plus approach—together with a longer-term “transformation” of the PLA along the lines of the information technologies-led revolution in military affairs.<sup>6</sup>

In the process, China’s long-term strategic military-technological programs are deeply integrated with its advancing civilian science and technology base, which has been concurrently linked to global commercial and scientific networks.<sup>7</sup> Thus, China is continuously benchmarking emerging technologies and similar high-tech, defense-related R&D programs in the United States, Russia, India, Japan, Israel, and other countries.<sup>8</sup> The key aim is to accelerate China’s “absorptive capacity” to recognize, assimilate,

and utilize external knowledge in the development of China's advanced technologies in both civil and military domains.<sup>9</sup> China calls this strategy "indigenous innovation"—first set in the 2006–20 "Medium- and Long-Term Plan on the Development of Science and Technology" (MLP).<sup>10</sup> By pursuing indigenous innovation, China aims to circumvent the costs of research, overcome international political constraints and technological disadvantages, and leapfrog China's defense industry by leveraging the creativity of other nations. Doing so includes exploitation of open sources, technology transfer and joint research, the return of Western-trained Chinese students, and, of course, industrial espionage—both traditional and, increasingly, cyber exploitation (i.e., systematic hacking).<sup>11</sup>

Notwithstanding these efforts, however, the Chinese arms industry still appears to possess only limited indigenous capabilities for cutting-edge defense R&D. Western armaments producers continue to outpace China when it comes to most military technologies, particularly in areas such as propulsion (aircraft/missile engines), navigation systems and defense electronics, and high-end composites. In retrospect, the confluence of historical legacies of centralized planning coupled with segmented technological, institutional, and management deficiencies—such as overlapping planning structures, widespread corruption, bureaucratic fragmentation, quality control, manufacturing inefficiencies, and process standardization—have precluded the Chinese military-industrial conglomerates from leaping ahead on the innovation ladder. Most importantly, no real internal competition exists, and the industry lacks sufficiently capable R&D and capacity to develop and produce highly sophisticated conventional arms. Confronting these challenges, China has progressively introduced a series of medium- and long-term defense industrial strategies, plans, and institutional reforms that have generally set two broad strategic objectives known as the "two gaps":<sup>12</sup>

- To catch up with the global military-technological state-of-the-art base by fostering "indigenous innovation," thus mitigating foreign dependencies on technological transfers and arms imports while leveraging civil-military integration (CMI) to overcome entrenched barriers to innovation.
- To provide advanced weapons platforms, systems, and technologies that would enable the PLA's transformation into a fully "informatized" fighting force—one capable of conducting sustained joint operations, military operations other than war, and missions related to

China's strategic deterrence to protect China's core national security interests beyond national borders.<sup>13</sup>

Under Xi Jinping, China's strategy to resolve both gaps has focused principally on upgrading civil and military convergence.<sup>14</sup> In particular, since 2003, the conceptual umbrella for leveraging CMI became known as Yujun Yumin—"locating military potential in civilian capabilities," signifying transfer of commercial technologies to military use and calling upon the Chinese arms industry not only to develop dual-use technologies but also to actively promote joint civil-military technology cooperation. Yujun Yumin has been prioritized in the 2004 Defense White Paper, subsequent Five-Year Defense Plans, as well as the 2006–20 MLP.<sup>15</sup> Select dual-use technology development areas, for example, include microelectronics, space systems, artificial intelligence, new materials (such as composites and alloys), propulsion, missiles, computer-aided manufacturing, and particularly information technologies.<sup>16</sup> Initially, China's political establishment envisioned CMI as institutional arrangements, paving the way for a new round of associated management reforms for the defense industry—including allowing select civilian private-sector firms to engage in defense work. These in turn would enable expanding linkages and collaboration between China's military-industrial complex and civilian high-technology R&D sectors.

In 2016, however, President Xi Jinping elevated CMI into a national-level strategy,<sup>17</sup> noting that "the integration of civilian and defense development will involve multiple fields and enable economic progress to provide a 'greater material foundation' for defense construction, while the latter offers security guarantees for the former."<sup>18</sup> In other words, CMI has been projected not only as a key enabler to the PLA's military-technological modernization, but more importantly, as a strategy for China's long-term sustainable growth, efficiency, and productivity gains. Further, the PLA views it as potentially mitigating internal socioeconomic and environmental challenges. Currently, CMI as a national strategy expands the integration of state-owned defense research, development, and manufacturing enterprises; government agencies under the State Council; universities; and private sector firms in order to advance the PLA's military modernization while supporting China's economic growth.<sup>19</sup> In this context, China created new agencies in 2017 such as the Central Commission for Integrated Military and Civilian Development and the Scientific Research Steering Committee, both tasked to advance the R&D of state-of-the-art weapons platforms and systems.<sup>20</sup>

At the same time, China's CMI places strategic importance on foreign acquisition of dual-use technologies, resources, and knowledge in selected priority areas identified in recent defense science and technology plans, such as the "13th Five-Year Defense Science and Technology Industry Plan," "Defense Science and Technology Industry 2025 Plan," and the "Made in China 2025" advanced manufacturing plan."<sup>21</sup> According to the 2015 *China's Military Strategy*, "China will work to establish uniform military and civilian standards for infrastructure, key technological areas and major industries [and] explore the ways and means for training military personnel in civilian educational institutions, developing weaponry and equipment by national defense industries and outsourcing logistics support to civilian support systems."<sup>22</sup>

### **Assessing the Impact of Chinese Arms Transfers**

According to recent data by the Stockholm International Peace Research Institute (SIPRI), Chinese exports of major arms increased by 74 percent between 2012 and 2016, and China's share of global arms exports rose from 3.8 to 6.2 percent—making it the third-largest supplier in the world, following the United States and Russia. The geographic spread and number of recipients of Chinese weapons exports have also increased. From 2012 to 2016, China delivered major arms to 44 countries—more than 60 percent of China's exports went to Pakistan, Bangladesh, and Myanmar, and another 22 percent went to Africa. China also delivered major arms to ex-Soviet states for the first time, including the 2016 delivery of HQ-9 (FD-2000) surface-to-air missile (SAM) systems to Turkmenistan. Meanwhile, China has become less dependent on arms imports, which decreased by 11 percent during 2012–16. While China was the largest importer globally by a wide margin in the early 2000s, it dropped to fourth place in 2012–16. However, China remains dependent on imports of key weapons systems and advanced components, including aerospace engines such as the Russian AI-31FN and RD-33 engines used on the J-10 and FC-1 fighters, respectively. In 2012–16, for example, aircraft engines accounted for 30 percent of China's arms imports, delivered from Russia (57 percent), Ukraine (16 percent), and France (15 percent).<sup>23</sup> These figures represent an ongoing shift in China's position on global arms markets, backed by increasing technological, organizational, and financial capabilities of China's military industrial complex as well as its growing global geostrategic interests.

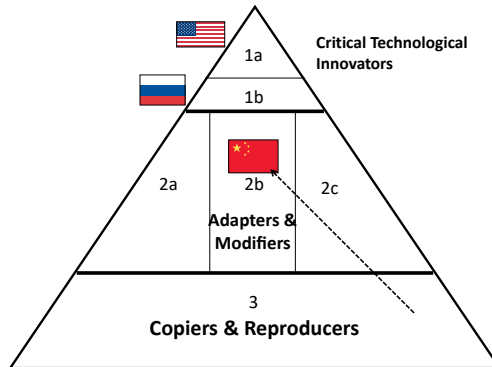
By narrowing the technological gaps with leading Russian and Western suppliers, China has been able to enter new markets with new-generation

military technologies, including Saudi Arabia, Morocco, Venezuela, Ecuador, Peru, Mexico, Nigeria, Kenya, Thailand, and Indonesia. In doing so, China's current arms export strategy has reflected varying "competitive" paths. In the developing countries of Latin America, Africa, and even Central Asia, China is trying to position itself as an alternative to Russian arms exports while counterbalancing the influence of Western powers. Chinese defense contractors compete on price while providing greater flexibility when negotiating the financial terms of arms contracts. However, Beijing's diplomatic relations with Moscow coupled with China's continuing dependence on imports of Russian advanced military technologies arguably precludes Chinese defense companies from fully contesting Russian arms export markets.

To project the impact of China's arms exports as well as its potential future paths and patterns, it is essential to project an analytical framework that may enable an assessment of China's defense innovation dynamics.<sup>24</sup> Indeed, the varying nature and character in the sources, drivers, paths, and patterns of military innovation indicate the need for a comparative approach in assessing China's innovation and arms exports trajectories. A policy-oriented framework, the Pyramid Model, is presented next to analyze the inputs, paths and patterns, processes, and outputs of China's military-technological innovation and prospective future trajectories. The Pyramid Model starts with the assumption that military innovation trajectories can be compared based on a hierarchy of a defense industrial base or "a sector or groups of industries that are dependent to some degree on defense spending and upon which the state is dependent on some degree of self-sufficiency in the production and the means of defense and war."<sup>25</sup> Keith Krause, a professor at the Graduate Institute of International and Development Studies in Geneva, broadly categorizes states' defense industries into three tiers: (1) critical technological innovators—states with a state-of-the-art technological edge in weapons R&D, (2) adapters and modifiers—characterized by a small but advanced defense industry, and (3) copiers and reproducers—low-technology arms producers.<sup>26</sup>

The first tier comprises those states with the capacity for across-the-board development and manufacture of advanced conventional weaponry. This tier consists of just a handful of countries: the United States and the four largest Western European arms producers (Britain, France, Germany, and Italy), as well as Russia. Given the US preponderance of defense-industrial capabilities, it might be more fitting to describe the United States as a Tier 1a country and the others as Tier 1b producer states.<sup>27</sup> The Soviet Union could have been classified as a Tier 1a producer state, but

given the more than 25 years of atrophy in its defense industrial base, Russia is struggling to remain in the first tier (missiles and combat aircraft remain its greatest strengths; even those systems, however, have their roots in Soviet R&D). The second tier consists of a rather small group of countries. Tier 2a comprises those industrialized countries with capabilities for advanced but nevertheless limited arms production (i.e., niche defense production), such as Australia, Canada, Israel, Norway, Japan, and Sweden. The second subgrouping (Tier 2b) consists of developing or newly industrialized countries containing modest (but in some cases, expanding) military-industrial complexes, such as Argentina, Brazil, Indonesia, Iran, South Africa, South Korea, Taiwan, and Turkey. Finally, there are Tier 2c producers such as India; these are developing industrial states with large, broad-based defense industries but still lacking sufficiently capable R&D and industrial capacities to develop and produce highly sophisticated conventional arms. At the bottom of the pyramid are various so-called Tier 3 states, possessing only very limited and generally low-tech arms production capabilities, such as the manufacture of small arms or the licensed assembly of foreign-designed system; countries in this group include Egypt, Mexico, and Nigeria (see figure below).



**China in the hierarchy of global arms industries.** (Developed by Richard Bitzinger and Michael Raska.)

In this framework, China has traditionally fallen into the category between a Tier 3 and Tier 2c arms producer.<sup>28</sup> However, progress in reforming the Chinese military-industrial complex over the past decade or so has been palpably evident in terms of the quality and capabilities of new weapons systems and of the increased tempo of defense development—indicating an ongoing shift toward Tier 2b and, in select areas, toward Tier 2a. At issue, therefore, is how well China’s defense industry is performing vis-à-vis other arms-producing states. This comparative performance is



particularly critical to assess for two reasons. First, the “technological goalposts” when it comes to weapons development are constantly moving; as certain nations—particularly the United States—advance the state of the art in defense technology, they create new metrics for defining what is meant by “advanced” military systems. Hence, the first question to ponder is whether China is keeping pace—or better yet, closing the gap—with the overall progress in military technological-industrial development. Second, a nation’s status in the global hierarchy of arms-producing states is not permanent; positioning is relative, depending on the ongoing performance of a nation’s defense industrial base. Consequently, countries can rise or fall along this scale. Russia is obviously on the fence as a future Tier 1 producer state, while it could be argued that South Korea could eventually become a Tier 2a state capable of producing a limited number of more advanced armaments. When using this model, therefore, the critical question to ponder is whether China is on the verge of becoming a Tier 1b arms producer.

### **Four Waves of Chinese Arms Exports**

In a historical perspective, the technological development of China’s defense industry has progressed gradually in four overlapping waves: (1) the Maoist era (1949–78), (2) Deng’s demilitarization era (1980s–1990s), (3) the reform era (1998–2012), and (4) Xi Jinping’s reform era 2.0 (2012–present).<sup>29</sup> Each era shaped the direction and character of Chinese arms exports. These four waves evolved through varying strategic drivers including ideological (1950s–60s), geopolitical (early 1970s), commercial (1980s), and competitive (2010s).<sup>30</sup>

In the early Maoist era, China’s defense industrial strategy and technological development reflected nearly total dependence on Soviet assistance. At that time, China’s defense sector was at the center of the economy, controlling heavy industrial sectors, and a principal engine driving China’s technological and industrial innovation development. The primary driver for arms exports, however, was ideological (i.e., China providing military assistance to Communist forces in French Indo-China (Vietnam) and to North Korea during the Korean War). From the late 1950s, China began to export its own weapons, based on acquired Soviet designs, to its allies—such as Albania, North Vietnam, and North Korea—as well as to newly independent African nations as part of its efforts to win greater influence among developing countries. Under Mao, China’s defense economy also had two parallel technological and industrial tracks: conventional and strategic weapons development. Innovation, however, diffused primarily in the

strategic sector with key programs such as Liangdan Yixing (2 Bombs and 1 Satellite program). With the Sino-Soviet split of the late 1960s, coupled with China's domestic political upheavals of the Great Leap Forward (1958–62) and the Cultural Revolution (1966–72), China's conventional base atrophied and innovation virtually disappeared.<sup>31</sup>

In the 1960s, China established close ties with Pakistan, which became the largest importer of Chinese weapons and remains so to this day. Establishing a strategic military-political alliance with a capitalist and pro-Western Pakistan marked the beginning of Beijing's Realpolitik strategy in the early 1970s, which prioritized pragmatic geopolitical and military considerations over ideology.<sup>32</sup> In particular, the principal assumption in Deng Xiaoping's Four Modernizations was that China no longer faced Cold War threats and should switch from militarization to economic development, liberalization, and "opening up" reforms. Therefore, China's defense industry should pursue concurrent development of dual-use technologies applicable in both civilian and military needs—principally under the Junmin Jiehe strategy: combining military and civilian activities, peacetime and wartime preparations prioritize military products and let the civilian sector support the military. Under Deng, China also launched the National High Technology Program ("863") in March 1986, aimed at developing seven strategic priority areas: laser technology, space, biotechnology, information technology, automation and manufacturing technology, energy, and advanced materials.

During the Iran-Iraq War (1980–88) China's arms exports were driven increasingly by commercial factors. In this period, China offered large quantities of affordable conventional weapons to both Iran and Iraq. After the breakup of the Soviet Union until 2000, however, China's arms exports fell sharply to about \$800 million a year.<sup>33</sup> Around that time, Chinese-made weapons—based on upgrades and copies of vintage Soviet designs of the mid-1960s—became truly obsolete, and China's defense industry lacked the ability to develop a new generation of weapons systems. Beijing also faced an arms import embargo from the West following the Tiananmen Square protests in 1989. The confluence of these factors forced China to become a net arms importer during much of the 1990s, primarily acquiring a range of modern Russian weapons and defense technologies while initiating defense industry reforms. Consequently, in the early 2000s, China's defense industry began to export advanced military technologies, either licensed or reversed-engineered from Russia or the Commonwealth of Independent States. Moreover, the industry was able to roll out a broad range of domestic new-generation systems. For example, from

2001 to 2005, China sold C-801 and C-802 anti-ship missiles, man-portable SAM systems, K-8 jet trainers, PLZ-45 self-propelled howitzers, and Al-Khalid tanks (Type 90) to Pakistan and Iran.<sup>34</sup>

Since 2005 onward, the product range, technological advancement, and relative quality of the catalog of Chinese-made arms offered for exports—particularly in areas such as aerospace—have made significant progress relative to the archaic offerings of the late 1990s. China introduced two fourth-generation fighters into mass production stage: the FC-1/JF-17 (developed jointly with Pakistan) and the J-10. It increased its presence in international aerospace and defense markets, promoting its new combat trainers (FTC-2000, L-15, K-8), fifth-generation fighter (J-31), missile systems (anti-ship, anti-tank, and man-portable), SAMs (HQ-9), radars (YLC-8B, SLC-2E), transport aircraft (MA60, Y-20), helicopters (Z-9G, Z-10, Z-11, Z-15, Z-19E); UAVs (Pterodactyl WJ-1, CH-4), new versions of the Type 90 tank (VT-3, VT-4, VT-5), a new generation of light armored vehicles (VN-4), self-propelled and towed artillery (PLZ45, PLZ52), multiple rocket launchers (A-100), trucks (CS/VN3), ships (Type 053, 054A, 056), and submarines (S26T/Type 039A).<sup>35</sup>

### **China as an Arms Supplier in the Twenty-First Century**

China has regularly been listed as being among the world's top five arms exporters for the past 20 years, along with such traditional leading suppliers as the United States, Russia, France, and the United Kingdom. The best data we have regarding China's place in the international arms marketplace comes mainly from two sources: SIPRI and the US Congressional Research Service (CRS). SIPRI data for 2014–18 shows China to be the world's fourth-largest arms exporter, with 5.2 percent of the global market. This performance places it behind the United States (the number one arms exporter, with 36 percent of the international arms market) and Russia (with 21 percent) and roughly even with France (6.8 percent), Germany (6.4 percent), and the United Kingdom (4.2 percent).<sup>36</sup>

Congressional Research Service data covers a slightly different time frame but tells a similar story. According to the CRS, China was fifth in terms of *arms deliveries* for the period 2012–15 (valued at US \$9.6 billion); this was good for about 5 percent of the overall international arms market. In 2015 alone, it was fourth in terms of arms deliveries, worth US \$2.9 billion. In comparison, the United States accounted for nearly one-third of total international arms deliveries for the period 2012–15, while Russia was second at nearly 20 percent.<sup>37</sup> In terms of *arms sales agreements*, Chinese overseas arms sales have averaged more than \$3.6 billion a year for

the period 2008–15; this compares quite favorably with the country's experiences as an arms exporter during the 1990s, when Beijing averaged less than \$1 billion annually in arms sales. In 2015 alone, China concluded \$6 billion worth of arms sales.<sup>38</sup>

Nearly all of China's arms transfers are to developing countries, and in this arena the Chinese defense industry has emerged as a formidable competitor to Western and Russian arms exporters. China's main arms markets are in Asia and the Middle East, and about three-quarters of its weapons exports go to countries in these regions. In addition, China has become a leading arms supplier to Africa; in 2012–15, in fact, China was the single largest supplier to Africa, capturing nearly one-third of the continent's overall arms market, surpassing exports from Europe, Russia, and the United States.<sup>39</sup> Major customers for Chinese arms include Algeria, Bangladesh, Egypt, Iran, Myanmar, Nigeria, Pakistan, Sri Lanka, Sudan, Tanzania Zimbabwe, and Zambia. More recently, Venezuela has become a significant customer for Chinese arms, giving China a toehold in Latin America, with deliveries of VN-4 "Rhinoceros" carriers, K-8 trainer aircraft, VN-16 light tanks, and VN-18 infantry fighting vehicles.<sup>40</sup> Many of China's arms deals have been done at "friendship prices" or in Beijing's terms "flexible payment methods," that is, selling arms at a discount or on credit. Such agreements have been made either for political purposes (i.e., cementing alliances or promoting cordial relations) or, increasingly, to secure links with oil- and mineral-rich nations, such as Venezuela, Nigeria, Sudan, and Zimbabwe. For example, according to China Military Online—the PLA's official news website—China agreed to use oil for partial payment in the above-mentioned China-Venezuela arms deal. Also, its exports of armored vehicles to Thailand have been financed with dried foods, and the Chinese FD-2000 long-range air defense missile systems exported to Uzbekistan and Turkmenistan have been exchanged for natural gas.<sup>41</sup>

### ***Recent Chinese Arms Export Activities***

Leading Chinese arms exports currently include the following:

- *Type 039A Yuan-class submarine*: This attack submarine, manufactured by the China Shipbuilding Industry Corp. (CSIC), features a modern teardrop hull and carries both torpedoes and ASCMs, and it may even be equipped with an as-yet-unidentified system for air-independent propulsion. China recently sold eight Yuan-class submarines to Pakistan (export version designated as S20) and three to Thailand (S26T).<sup>42</sup>

- *Unmanned aerial systems and armed drones:* China has quite recently become one of the world's largest manufacturers of various UAVs, ranging from the very small, handheld types all the way up to very large high-altitude, long-endurance (HALE) drones. In particular, China has so far exported at least two types of *armed* drones, the Caihong and the Wing Loong (also called the Pterodactyl) series. The Wing Loong has been sold to Egypt, the United Arab Emirates, and Saudi Arabia.<sup>43</sup> A larger version, the Wing Loong II, is also available. The Caihong (Rainbow) has been sold to Nigeria, Egypt, and Iraq. It has already been used in military operations in Africa against Boko Haram militants, while Iraq has employed the Caihong in attacks on ISIS targets.<sup>44</sup>
- *JF-17 Thunder fighter jet:* The JF-17, also known as the FC-1, is a lightweight multirole combat aircraft similar in design to the US F-20 Tigershark. The JF-17 was co-developed with Pakistan, currently producing the fighter for its air force; estimates are that Islamabad could buy up to 250 of the aircraft. The aircraft is being specifically marketed to developing countries that need to replace aging MiG-21, F-7, or F-5 fighters.<sup>45</sup>
- *C-801/C-802 anti-ship cruise missile (ASCM):* These missiles, also known as the YJ-8 and YJ-82 (YJ stands for "Yingji" or "Eagle Strike"), respectively, are similar to the very effective French Exocet (the C-802 version being equipped with a solid rocket booster for extended range). These ASCMs can be launched from ships, land, or aircraft. Recent customers for these missiles include Algeria, Bangladesh, Indonesia, Iran, Myanmar, Pakistan, and Thailand.<sup>46</sup>
- *K-8 trainer jet:* China has had great success in selling the K-8 light-weight trainer/attack jets, exporting over 300 of these planes since 2000. Its biggest client has been Egypt, which bought 120 K-8s, most of which were assembled locally from kits; Myanmar plans to license/assemble up to 50 of these aircraft. Other customers include Bolivia, Ghana, Namibia, Pakistan, Sri Lanka, Sudan, Tanzania, Venezuela, Zambia, and Zimbabwe.<sup>47</sup>
- *F-7MG fighter jet:* This aircraft is the export version of the PLA Air Force's F-7E, itself an upgraded adaptation of the MiG-21. The F-7MG features a larger wing and, reportedly, a British radar. China has sold more than a hundred of these fighters to Bangladesh, Namibia, Nigeria, Pakistan, Sri Lanka, and Tanzania, according to the SIPRI Arms Transfers database, since the mid-1990s.<sup>48</sup>

- *FD-2000 surface-to-air missile system*: It is the export version of the HQ-9, a primary long-range SAM system of the PLA on land and at sea, analogous in its capabilities to the Russian S-300. It has gained considerable attention since “Turkey selected the FD-2000 in 2015 before US pressure forced Ankara to restart the tender process, resulting in the selection of Russia’s S-400. China, however, exported the FD-2000 to Uzbekistan and Turkmenistan, while Pakistan is reportedly considering its acquisition to counter India’s recent contract with Russia for S-400.”<sup>49</sup>
- *VT4 (MBT-3000) main battle tank*: The VT4 is a 52-ton MBT designed and manufactured by the China North Industries Corporation (NORINCO) specifically for the export market. It integrates the latest PLA technologies within the Type 99A MBT. In 2016–17, China delivered an initial batch of 28 VT4s to Thailand, while Pakistan selected the VT4 in 2018 to modernize its MBT fleet.<sup>50</sup>
- *WZ-551 armored personnel carrier*: Although not a particularly high-tech system, the WZ-551 is notable for being sold widely around the world, including to countries like Argentina, Gabon, Kenya, Kuwait, Nepal, Oman, Sri Lanka, Sudan, and Tanzania.<sup>51</sup>

It is also worth noting that China has sold several types of small and medium-sized transport aircraft, mostly to African states. These include the Y-12 (to Kenya, Nepal, Uganda, and Zambia) and the MA-60 (to Ghana, Nepal, and Zambia).<sup>52</sup> Other military items with considerable export potential include two locally manufactured combat aircraft, the J-10 and the J-31 fighter jets. The J-10 is roughly equivalent in capability to the US F-16C. Development of the J-10 began in the mid-1980s, and it entered service with the People’s Liberation Army Air Force (PLAAF) in the early 2000s. The J-31 is a putative “fifth-generation” combat aircraft currently under development, closely resembling the US-designed F-35 Joint Strike Fighter. It first flew in October 2012. In fact, there has been considerable speculation that the Chinese might try to flood the global arms market with the J-10 and the J-31. Both these combat aircraft could potentially be stiff competition for Western or Russian fighter jets—especially if offered at cut-rate prices—the J-10 competing against smaller, single-engine aircraft such as the Swedish Gripen and the J-31 going up against the Typhoon, Rafale, or the F-35. Pakistan has reportedly agreed to buy 36 J-10s, and Iran is rumored to be interested in the fighter as well.<sup>53</sup> Other potentially marketable products include the YJ-7/C-701 short-range ASCM (already sold to Iran and, reportedly, Hezbollah<sup>54</sup>),

the FN-6 man-portable SAM (exported to Malaysia and Peru, among other countries), and the KS-1A SAM missile (sold to Myanmar and Thailand).<sup>55</sup>

### ***Chinese Armed Drones: A Special Case Study***

As noted previously, China has quite recently but also quite significantly become a key exporter of armed drones (also referred to as unmanned combat aerial vehicles or UCAVs).<sup>56</sup> This is troubling because not only are they a potentially lucrative segment of the arms business that is likely to grow appreciably over the coming decades—and therefore challenging US sales—but armed drones are also a mounting proliferation concern, seeing as they are an extremely effective offensive weapon.

Only a handful of countries presently manufactures dedicated armed drones. China is one of them. Moreover, China is one of the few countries, other than the United States and Israel, perhaps, whose UCAVs have actually been used in combat. In particular, the Iraqi military recently used a Chinese-built CH-4B Caihong (Rainbow) drone to attack an ISIS target—in this case, with a laser-guided missile. It was, Iraq's first-ever drone strike.<sup>57</sup> In fact, largely unnoticed by most observers, China has become a leader in the global sale of armed drones—especially medium-altitude, long-endurance UAVs. It has so far exported two armed drone series, the Caihong and the Wing Loong, manufactured by China Aerospace Science and Technology Corporation (CASC) and Chengdu Aircraft Industry Group (CAIG), respectively.<sup>58</sup> Both bear a striking resemblance to two existing US UCAVs, the MQ-1B Predator and the MQ-9 Reaper. The Wing Loong, designed and built by CAIG, is roughly the same size as the Predator, about 29 feet long and with a wingspan of 45 feet. It carries a much smaller payload, however, about 220 pounds, compared to the Predator's 1,100 pounds. However, the Wing Loong costs about a million dollars per unit, or only one-fourth that of a Predator drone. It has been sold to Egypt, the United Arab Emirates, Saudi Arabia, and, most recently, to Serbia.<sup>59</sup>

The Caihong drone was developed by the CASC, and it is perhaps more disconcerting as a weapons platform than the Wing Loong I and II series. The original CH-3 version, which had been sold to Nigeria, appears to be relatively ineffective as a UCAV; at least one crashed in Nigeria in 2015, ostensibly during operations against the Boko Haram militants.<sup>60</sup> The CH-4, however, is more or less a clone of the MQ-9 Reaper and much more capable. It carries a relatively small payload, about 350 kilograms, but larger, improved versions are on the way. In addition to Iraq, the CH-4

has been sold to Egypt and Saudi Arabia.<sup>61</sup> More importantly, there is a new, larger version of the Caihong drone, the CH-5, being readied for market. The CH-5 has a wingspan of 20 meters (66 feet) and a takeoff weight of about 3 tons. It can carry a maximum payload of around 900 kilograms—about two and a half times more than previous UCAVs in the CASC Rainbow series.<sup>62</sup> Finally, China is reportedly developing a purpose-built, low-observable drone, dubbed “Lijian” (Sharp Sword). Although still a proof-of-concept prototype, the Lijian first flew in 2013 and could be the precursor to a family of Chinese stealth UCAVs.<sup>63</sup>

More nations are acquiring armed drones, and more are building them; consequently, UCAVs are poised to become a significant proliferation concern. The United States is a major drone-producing country, but it has considerable controls over the export of these systems. China, on the other hand, has relatively few scruples when it comes to what and to whom it sells its military wares. Armed drones are one of the few areas of the global arms market where China could carve out quite a lucrative niche for itself, to the potential detriment of the US and its allies. Finally, a large chunk of Chinese arms exports includes small arms and ancillary equipment, such as trucks, uniforms, and field equipment. Particularly when it comes to sub-Saharan Africa, China has become a leading supplier of assault rifles, ammunition, mortars, and the like. In one case, UN inspectors found that high-explosive incendiary cartridges, ostensibly Chinese in origin, were used in Darfur in the early 2010s. At the same time, Beijing has stymied UN efforts to investigate arms flows into Africa.<sup>64</sup>

In this context, China will continue to be an important arms exporter, albeit with limitations. It is unlikely, for instance, that Chinese weaponry will constitute much of a threat to European arms manufacturers. Many of Europe’s key customers will probably remain reluctant to buy Chinese armaments for a variety of reasons. They may have acrimonious or even hostile relations with China and would not wish to employ or depend on Chinese armaments. Conversely, countries may purposely acquire European armaments to strengthen political-military relations with Europe, which they may value more than similar ties with China.

Arms buyers may also prefer European (or other Western or Russian) armaments because they view these weapons to be more reliable and capable than their Chinese counterparts. The J-10, for example, may be a very good aircraft, but since its performance and reliability cannot be independently confirmed, many countries may not want to take the chance. Moreover, countries do not necessarily buy the cheapest weapon systems available—other attributes often count more, such as military effective-



ness and after-sales support. This is especially so when it comes to military products; many countries—particularly the best customers on the global arms markets—given the choice, will still pay a premium price to get a premium product.

That said, there are a few areas where more advanced Chinese weapons systems could challenge European arms exporters. These include diesel-electric submarines (potentially affecting French, German, and Swedish submarine producers); anti-ship, surface-to-air, and anti-tank tactical missile systems (potentially affecting companies like MBDA, Saab Dynamics, and Thales); and (increasingly) UAVs and armed drones (such as the Dassault nEUROn or the Airbus Barracuda)—all segments where China already has demonstrated expertise and has scored prior export sales. Potential *future* areas of competition could include fighter aircraft, defense electronics (such as radar systems), and surface combatants. In this regard—and including small arms—Chinese arms sales successes vis-à-vis their European competitors would probably lie mostly at the low end (i.e., poorer countries for whom money is definitely an issue).

### **Advancing Geostrategic Interests**

Chinese overseas arms transfers have even begun to put a dent into Russian arms export efforts. China competes directly with Russia for arms markets in the developing world, particularly Africa, South and Southeast Asia, and Latin America. Beijing has captured sales in countries that were major customers for the Soviet Union/Russia, such as Algeria (frigates, ASCMs, artillery systems), Cambodia (helicopters, man-portable SAMs), Egypt (combat aircraft, UAVs), Ethiopia (armored personnel carriers, SAMs), Iran (ASCMs, SAMs), Iraq (UAVs), and Venezuela (combat aircraft, multiple rocket launchers, SAMs). China has also scored some minor deals with Russian client states such as Kazakhstan, Syria, and Turkmenistan.<sup>65</sup> However, Russia's most important arms buyers remain unassailable by Chinese arms industries. Countries like India (that accounted for 27 percent of all Russian overseas arms deliveries during the period 2014–18), South Korea, and Vietnam are in inimical relationships with Beijing and thus would probably never buy arms from China (or would not purchase them for political reasons). Ironically, China continues to be one of Russia's biggest arms buyers (and the sixth-largest arms *importer* overall) for 2014–18.<sup>66</sup> It accounted for 14 percent of Russian arms transfers during this period.<sup>67</sup>

For the most part, China's arms industry does not seriously threaten US arms exports, at least not in terms of quantity. Again, according to SIPRI

data, China garnered only 5.2 percent of the total global arms market—only good enough to take the number five spot but still well behind the United States. Moreover, from 2014 to 2018, the bulk of China’s weapons shipments—nearly two-thirds (64 percent)—went to just three countries, namely Pakistan, Bangladesh, and Algeria.<sup>68</sup>

Constraining or limiting the global transfer of conventional armaments is also a challenge for Beijing, especially when it might affect its use of arms sales as a producer of profits or a promoter of strategic influence. China does have a formalized, legal, and regulatory framework for approving and overseeing arms transfers, that is, “The Regulations of the People’s Republic of China on the Administration of Arms Export” (established in 1997 and amended in 2002). According to a publication put out by Saferworld, “This represented a shift from an administratively based system in the form of executive decrees, to a system based on law and regulations that is more thoroughly codified and transparent.”<sup>69</sup> In this regard, the regulations set out the three principles guiding decision-making on Chinese arms transfers: self-defense; peace, security, and stability; and noninterference. Moreover, China has also had a declaratory policy of not transferring weapons to non-state actors.<sup>70</sup> Nevertheless, Beijing does not seem to strenuously advocate for arms control. China, for example, was one of 22 countries to abstain on the April 2013 UN General Assembly resolution to adopt the Arms Trade Treaty. Moreover, it has in the past sold arms to pariah states (e.g., Iran or North Korea) even after it said that it would not, and it has opposed international efforts to impose sanctions and arms embargoes. It also makes little effort to control so-called third-party re-exports of Chinese-made weaponry. Compounding all this is a decided lack of transparency in the Chinese arms export approval process.<sup>71</sup> In 2019, the National People’s Congress Standing Committee began to draft a new law that would impose tighter controls on China’s arms and nuclear technology sales while consolidating the existing fragmented export controls. Under the new law, for example, arms exporters would have to establish an internal compliance review system, while government agencies would also have to assess buyers and take corresponding risk control measures.<sup>72</sup> However, conforming to this new set of regulations would also require increased transparency in the secretive world of Chinese weapons diplomacy, which will likely face considerable internal challenges.

In the long term, China is likely aiming to leverage arms exports as an instrument of its foreign policy to project power, presence, and influence in areas vital to China’s interests, such as in South and Southeast Asia.

Beijing is starting to position state-owned defense enterprises to support the Chinese government's BRI strategy to deepen economic links with developing regions and, in doing so, create new pathways for strategic dependencies. Under the guidance of China's State Administration for Science, Technology, and Industry for National Defense (SASTIND), for example, in May 2019, China State Shipbuilding Corporation (CSSC) and China Poly Group Corporation signed a long-term agreement to collaborate on naval export opportunities integrating military technologies and capabilities in international markets related to the BRI.<sup>73</sup> However, the assertion that Chinese arms sales are an instrument of foreign policy is still open to debate. A recent IISS study notes that there has been no increase in Chinese arms deliveries to core BRI partner countries since 2013: "out of the 74 countries that are directly linked to BRI projects, only 23 of them—31 percent—have received Chinese major weapon systems since 2013."<sup>74</sup> In this view, Chinese arms sales have been largely transactional rather than strategic.

The contending view is that notwithstanding the majority of China's arms exports between 2012 and 2016 going to South Asian countries such as Pakistan (35 percent), Bangladesh (18 percent), and Myanmar (10 percent),<sup>75</sup> these countries provide critical alternative routes of energy supplies from the Middle East to China. Both Pakistan and China also have overlapping territorial claims with India. At the same time, there are indicators that China is trying to counterbalance the US—China's recent major arms exports contracts with Thailand (S26T submarines) and military assistance to the Philippines could be viewed as an attempt to mitigate the inclusion of the United States. In a reverse mode, these countries may seek Chinese defense contracts to solidify security and economic ties with China. Regardless of the range of contending debates about China's political aims and strategic trajectories, the nature of the emerging strategic competition is whether China will have the requisite capabilities to project power in Asia and beyond on par with the United States, and how the United States and its key allies in unison with other major powers will respond to such changes.<sup>76</sup> Consequently, China arguably aims to shape the direction and character of the arms competition—not only through its own military-technological development but also by imposing strategic choices on others to reshape the future balance of power in different geographic areas.

## **Conclusion**

Despite recent glowing sales figures, China's current position in the global arms marketplace remains tenuous. First, it remains a niche player in the global arms market because it sells most of its weapons to very few countries. Moreover, according to SIPRI, while China sold major arms to 53 countries during 2014–18, 39 of them each accounted for less than one percent of total Chinese arms exports.<sup>77</sup> In fact, China faces a continual challenge of remaining viable in the highly competitive business of international arms transfers. China continues to struggle with remaining technologically competitive with the West, particularly when it comes to developing and manufacturing more advanced types of weaponry—such as supersonic combat aircraft, precision-guided weapons, airborne early warning aircraft, and long-range air defense systems. Armed drones, anti-ship cruise missiles, and submarines aside, China can for the most part still offer only a handful of advanced weapons systems that are competitive in the global arms market. Beijing has won very few orders for its most advanced fighter jets, particularly the JF-17 and the J-10. The only sizable sale of the JF-17 has been to Pakistan—and only because Pakistan is producing the plane jointly with China (in addition, Myanmar has ordered 16 JF-17s and Nigeria three); not even the PLAAF has acquired the JF-17, in fact. Also, as of January 2020, no export order for the J-10 (to Pakistan or any other air force) has yet been consummated.

Furthermore, even when countries have purchased Chinese weapons systems, they often throw out Chinese components and replace them with Western systems. This is because China's defense industry is still very weak when it comes to key technologies such as jet engines and electronics. For instance, Algeria acquired corvettes from China but subsequently outfitted them with Western-made radar, fire-control, and communications gear. Pakistani JF-17 jets use a Russian engine, while Thailand turned to Saab to upgrade its Chinese-built frigates.<sup>78</sup>

A second challenge for China is to continue expanding its customer base. For the most part, Beijing has mainly sold military equipment to countries either too poor to buy Western or Russian armaments (such as sub-Saharan African states and Myanmar) or that have been subjected to arms embargoes (such as Iran and Venezuela). Few wealthy, big-spending arms importers (such as the oil-rich Gulf states) have ever been interested in Chinese arms, other than a handful of low-end items<sup>79</sup> (notable exceptions: both the United Arab Emirates and Saudi Arabia have recently acquired armed drones from China). Iran was a major consumer of Chinese arms, but it has not placed a new order with Beijing in several


years. Similarly, China has found relatively few takers for its arms in Latin America, Eastern Europe, or Central Asia. A \$3.4 billion deal to sell air defense missiles to Turkey collapsed under pressure from Ankara's NATO allies.<sup>80</sup>

China may hold the number three slot in the global arms trade, but it is still far behind the United States, with 33 percent of the global market, and Russia, with 25 percent. In fact, China is only slightly ahead of France (5.6 percent), Germany (4.7 percent), and the United Kingdom (4.5 percent). Moreover, China's position in the global hierarchy of arms exporters has been inconsistent. According to SIPRI, during the period 2006 to 2010, China won just 3.7 percent of the total arms market, placing it sixth in overall weapons exports. Nevertheless, China's cumulative political, economic, and military rise is reshaping global as well as regional geopolitics, including strategic alliances and balance of power in East Asia in ways that are inherently detrimental to established great powers (i.e., US interests and its regional strategic partners and allies). While the US continues to maintain superior military-technological advantages and regional presence, its ability to underwrite stability in the Asia-Pacific region is increasingly challenged by China.<sup>81</sup> The resulting Sino-US strategic competition, reflected for example in the emerging US Third Offset Strategy, in turn compels smaller and medium-sized states in Southeast Asia to accelerate military modernization, particularly naval and air forces, to keep vital sea-lanes open, conduct intelligence missions, and perhaps most importantly, provide strategic options to respond in the Sino-US competition.

These trends exacerbate regional "arms competition," characterized by incremental, often near-continuous, improvements of existing capabilities. In a mix of cooperative and competitive pressures, it also includes continued purchases of advanced weapon platforms—including the introduction of new types of arms and, therefore, unprecedented military capabilities.<sup>82</sup> China has a growing capability to shape the direction and character of the arms competition—not only through its military-technological development and diffusion of arms exports, but more importantly, through its strategic choices that influence the contours of strategic alliances and balance of power in different geographic areas. Accordingly, the ongoing struggle for dominance by the region's two major powers (China and Japan); the future of the Korean Peninsula; intraregional competition in territorial disputes in the East China Sea and South China Sea; and, perhaps most importantly, the contours of long-term regional strategic competition and rivalry between China and the United States will be

inherently shaped by attendant consequences of China's defense industrial strategies aligned with Beijing's geopolitical and economic aspirations.

In summary, Chinese arms exports may have had their beginnings in mostly transactional economic rationales—such as profits and support for the domestic arms industry. However, increasingly overseas arms sales may be seen as a tool to advance Beijing's strategic interests.

As such, they will also increasingly figure in the growing strategic competition with the United States. Beijing's evolving strategy of indigenous innovation in a broader context of civil-military integration constitutes a pathway for China's long-term strategic competition.<sup>83</sup> In doing so, China continues to seek niche technological developments that could potentially revolutionize the PLA's military operations by providing a credible asymmetric edge in regional flashpoints in East Asia (e.g., anti-ship and anti-satellite ballistic missiles, hypersonic cruise missiles, and systems converging cyber and space capabilities). Such technology has been evident in the gradual, dual-track military modernization trajectory of the PLA, characterized by upgrading its existing arsenal of legacy weapons systems and platforms while experimenting with the next generation of design concepts. Notwithstanding these advanced military-technological goalposts, China's strategy will be increasingly influenced by its ability to align its political and strategic goals with corresponding military capabilities.<sup>84</sup> This includes China's ability to alter strategic alliances and balance of power through international arms exports, technology transfers, and defense cooperation. 

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