STRENGTHS AND WEAKNESSES OF CHINA'S DEFENSE INDUSTRY AND ACQUISITION SYSTEM AND IMPLICATIONS FOR THE U.S.

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Introduction

Major technological progress is taking place across the Chinese defense industry's entire spectrum that is narrowing the gap with the U.S.

Understanding the state, reforms, and prospects for China's defense industry and acquisition system is of critical importance to the U.S. and regional states because China represents a 'pacing threat' to the U.S. and is its chief long-term defense technological competitor

How has the defense acquisition system supported China's development of its defense science and technology (S&T) capabilities?

Key Advantage of the Chinese Defense Acquisition System: Absorption

Distinguishing feature of China's defense acquisition system is that it is a predominately absorptive model of technology development

Absorption-oriented acquisition systems are organized and operate differently from innovation systems like the U.S.:

- Absorption is low-risk, high reward because development path has already been mapped out
- Absorptive systems prioritize investment in engineering, especially reverse engineering, and less on research and development (R&D)

Advantages of Absorption in Defense S&T Development

Primary benefits from absorption are significant cost savings and time reductions

This has allowed China's defense establishment to narrow, and in some cases eliminate, technological gap with competitors

Biggest beneficiaries have been in aviation, naval shipbuilding, select precision strike missile sectors

Without these technological achievements that are being translated into operational capabilities, the PLA's shift to a more regionally assertive posture would have been more limited

Several Characteristics of China's Accelerated Defense Acquisition Process

Concurrent development, testing, and low rate initial production: Compression, overlapping, or skipping of various phases of acquisition process to get programs into production and deployment as quickly as possible; some of this compression occurs with concurrent technology maturation and risk reduction as well as concurrent production and deployment

Accelerated research and engineering development, but delays in early production phases: Weapons programs rushed through initial R&D phases, but then spend extended periods undergoing prototyping or demonstration testing

Several Characteristics of China's Accelerated Defense Acquisition Process

High-level leadership attention and intervention: Chinese authorities focus on select number of strategic weapons to be critical national priority and devote extra oversight mechanisms to allow top-level civilian and military leaders to be involved in program oversight

Small trial production runs followed by rapid upgrading: Several Chinese weapons programs (especially naval ships) have initially been manufactured in small batches (1-2 examples) that are put into service, followed with upgraded variants also made in small numbers until end-users satisfied and make larger orders

Acquisition Cycles for 4 Chinese Fighter, Transport Aircraft, and Warship Programs

	J20 Fighter	Luyang-Class 052C/D DDG	J-15 Fighter	Y-20 Transport
Preliminary Research to Milestone A	9 Years (1998-2007)	052C: 4-5 Years (1997/8-2001)	2-3 Years (2005-2007/8)	8 Years (2000-2007)
Technology & Engineering Development to Milestone B	9-10 Years (2007-2016/7) Maiden Flight 2011	052C: 7 Years: Initial 2 Years (2001-2003) Followed by Another 5 Years (2005-2010)	9-10 Years (2007/8-2016) Maiden Flight 2009	9 Years (2007-2016) Maiden Flight 2012
Manufacturing Status	MRL 7 LRIP Forecast 2017	052D: MRL 9-10 FRP Begun 2015	MRL 7-8 LRIP Forecast 2020	MRL 7-8 LRIP Begun 2016
Field Deployment	Forecast 2018	052C: 2005 052D: 2014	Pilot Training & Testing since 2015; Operational Deployment 2020	First Aircraft Accepted by PLA Air Force in 2016
Foreign Inputs	Indigenous Platform, Foreign Engines	Indigenous Platform and Armaments, But Heavily Influenced by Russian Designs and Armaments (SAMs)	Reverse Engineered Version of Russian Su-33	Design & Technology Inputs from Ukraine & Russia, especially from IL-76
Upgrading	None Yet	5 Year Gap Between 052C #2 & #3; 052D #1 Followed Immediately After 052C #6	Reports of Electronic Warfare Variant	None Yet
Total Acquisition Period	18-19 Years	052C: 11-12 Years	11-13 Years	17 Years

Latest and Biggest Example of Chinese Rapid Acquisition: First Indigenous Aircraft Carrier

Keel only laid in late 2013, and originally was expected to take 5-6 years for construction, but launched in April 2017

Next Stage in China's Defense Technological Transformation

13th Defense S&T 5 Year Plan (FYP) begun in 2016 and sets out key tasks to 2020:

1) Facilitate 'leapfrog' development of weapons
2) Promote innovation capabilities in turnkey areas
3) Improve overall quality and efficiency
4) Optimize defense industry for civil-military integration (CMI)
5) Accelerate arms exports

This plan has sharper focus on development of high-technology weaponry and CMI than previous plan and signals shift from absorption and re-innovation to giving greater emphasis to original innovation

Critical Enabling Factors for Continuing Chinese Progress

At industrial level, advances that China's defense industry has accomplished over past 2 decades have been impressive, but can they continue at such a rapid pace and in which direction will they lead?

If 2 critical enabling factors that have been instrumental to this progress are still in place, then the prospects look encouraging for China's continued defense technological transformation:

- **Leadership support:** Xi Jinping will almost certainly stay at the leadership helm until the 20th CCP Congress in 2022, so leadership support for the defense industry will remain strong

Critical Enabling Factors for Continuing Chinese Progress

- **Threat environment:** China's external security environment will remain complicated because of sovereignty disputes and structural competition with the U.S. and regional neighbors such as Japan -moreover, the PLA's efforts to build up its long-range power projection capabilities to support its increasingly global ambitions look set to continue

These factors make it likely that the generous levels of funding that the defense industry has received will continue at least over the course of the 13th FYP to 2020 and beyond

Implications for the U.S.: Geo-Strategic Competition

Emergence of Chinese defense industry and acquisition system as increasingly capable and peer competitor has enormous implications and challenges for the U.S at geo-strategic, industrial, and acquisition levels

In geo-strategic domain, U.S. and China are increasingly engaged in escalating arms competition

Third Offset Strategy's top challenge over next 25–30 years comes from the 'great powers' of Russia and China, although China viewed as "more enduring strategic challenge" (Bob Work)

Implications for the U.S.: Chinese Structural Weaknesses

Continued progress in China's defense technological development rests on troubled foundations though

Structural weaknesses makes Chinese defense industry at serious risk of falling into a trapped transition, whereby key components are left unreformed or only partially reformed because of strong opposition from powerful interest groups

Negative consequences from this selective reform process masked by abundance of resources flowing into the defense industry, but tightening in budgets because of slowing economic growth could expose fragilities of this fragmented system

Implications for the U.S.: Competition for Costs, Schedule, Performance, Innovation

At defense acquisition level, impact and implications of Chinese developments for U.S. revolves around competition in 4 areas: cost, schedule, performance, and innovation

Chinese acquisition system today is competitive or ahead in cost and schedule, and behind but narrowing gap in performance and innovation

If U.S. able to maintain lead of at least a generation in technological capability and innovation of weapons systems, this offsets China's advantages in schedule and cost

Implications for the U.S.: Competition for Costs, Schedule, Performance, Innovation

If China can narrow performance capability and innovation gap to within 1 or half a generation and maintain decisive edge in schedule and cost, it will have upper hand in acquisition competition with U.S.

Central reason why China has kept costs down and accelerate pace of acquisition is because of its absorption-based, good enough model

As China moves to innovation-based, higher end model, risks grow significantly and this will impact on costs and pace of acquisitions

Implications for the U.S.: Competition for Costs, Schedule, Performance, Innovation

China's underdeveloped defense acquisition system could find itself overwhelmed and lacking expertise, experience, and organizational, business, and management tools to manage an advanced technology and innovation enterprise, at least initially

Key exception is select number of projects that come under special attention and oversight from the highest levels of the leaderships