



**Statement before the U.S.-China Economic and Security
Review Commission**

***“FACTORS INFLUENCING THE ADVANCEMENT
OF CHINA'S MILITARY TECHNOLOGY”***

A Statement by:

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China's economic model has, until recently, been the most successful in the world in terms of sustained development. The elements of the Chinese economic model are:

- Heavy government investment in human capital and in infrastructure;
- Subsidies and non-tariff barriers first implemented to attract foreign investment and now used to build national champions
- Weak regulatory barriers to business activity (in part because of rampant corruption) and a flexible labor market;
- Illicit acquisition of foreign technology.

The next decade will see world class Chinese products enter the global market. These will be high quality products offered at lower prices and sometimes supported by heavy government subsidies and by non-tariff barriers to trade. Unwillingness by Western countries to press China to comply with its WTO commitments creates an opportunity that China has been quick to seize, but even if it complied fully, Chinese firms would still be formidable competitors in a growing range of industries.

Even as late as a decade ago, Chinese weapons systems were not globally competitive. China used to service the "bottom feeders" in the global arms market. This is changing as China's weapons improve. But sustained investment in R&D and in defense acquisitions (along with a healthy dose of espionage) changed this. While most Chinese weapons are not yet as good as top of the line western systems, they are good enough for many buyers and priced significantly lower. China has used this model – national champions with strong government support offering good-enough products at much lower cost - to capture global markets in other industries.

We can assess China's defensive industrial base by examining its performance and improvement in eight areas that are crucial for building modern weapons. These are:

- A strong R&D base, especially for basic research
- An ability to turn R&D into innovations and new products
- An ability to turn commercial innovation into military equipment
- Integration and manufacturing skills
- Databases and experience in weapons production
- Access to a robust national and international supply chain for components and technology
- Access to advanced technology for manufacturing, material, sensors, software, microprocessors and other advanced technologies.
- Doctrine and training to incorporate new technologies into military operations and benefitting from new technology.

China has shown improvement in all of these areas, but the most important factors for explaining China's improved weapons production are its improved manufacturing capability and its access to international sources for components and technology, through commercial channels and through espionage. It is the improvement in China's indigenous production capabilities in combination with access to foreign technology that drive the increased quality of Chinese products. Except in a few areas, such as missiles, Chinese indigenous applied research development capabilities are not yet sufficient to build modern weapons, but their manufacturing

capabilities are no longer an obstacle to production. This reflects a larger trend in the Chinese economy, where Chinese companies that seek to compete in the global market have steadily improved and are likely to continue to do so.

Improved manufacturing quality results from transfer of skills. Foreign Direct Investment (FDI) has been the largest source of technology transfer for China and has helped to teach China to build to global standards.

China's improvements in building military aircraft is reinforced by close commercial relationships with key arms suppliers in Russia, Israel and Europe. It is also accelerated by a program of intensive industrial espionage aimed at the U.S, Russia and European manufacturers.

These transfers have been reinforced by an energetic espionage program that began with China's economic opening to the West in the early 1980s and moved into cyberspace at least twelve years. The Chinese discovered that the internet gave them unparalleled access to poorly secured western networks.

China is a leading global practitioner (although by no means the only practitioner) of cyber espionage, but its forte is economic espionage. Cyber espionage has been and continues to be a godsend to China's economic and technological modernization. For military equipment, a 2012 Defense Science Board report identified a range of systems as compromised by Chinese espionage. These included the PAC-3 Patriot missile system, Terminal High Altitude Area Defense (THAAD); the Aegis ballistic-missile defense system, the F/A-18 fighter jet, the V-22 Osprey, the Black Hawk helicopter, the F-35 Joint Strike fighter and the Littoral Combat Ship (LCS). These targets not only improved China's own manufacturing capabilities, but provided it insight into air and air defense system most likely to be used in combat a maritime and air combat and allowed China to try to develop countermeasures to evade or defeat US missile and air defense.

This is by no means complete list. There are reports of successful efforts to acquire technology related to air-to-air missiles, helicopters, submarine technologies, sensors and nuclear weapons. Cyber espionage is accompanied by collection efforts by human agents, both in China and in other countries, but over time the most rewarding collection programs have shifted from human agents targeting western facilities located in China to cyber espionage. Military, research and economic policy making bodies can task collection.

The sanctions on arms exports imposed after the Tiananmen massacre pose less of an obstacle to China's defense industrial improvements very year. The most important reason that Tiananmen sanctions have less effect is that they do not stop the sale of advanced commercial technologies than can contribute to military production.

Many countries have tried to build advanced arms and failed. It is not an easy task. But if a country is willing to spend billions of dollars for decades and is ruthless in acquiring technology, it can succeed. Of all the developing countries, China is the only one to show signs of succeeding. This is perhaps a legacy of the Party's Leninist inheritance and the priority Lenin gave to defense production. But we need to recognize that as China's economy modernizes, so

will its defense industrial capabilities, with or without foreign assistance or Chinese espionage.

Congressional action to compensate for China's growing defense production capabilities could occur in four areas.

- Congress could look for ways to make the U.S. a more business friendly environment. .
- Congress could create incentives and penalties to encourage American companies to increase their network defenses. s.
- Congress could provide sustained funding for the hard sciences.
- Congress and the Administration need to take steps to reduce economic espionage. .

China can be independent, rich and powerful without being antagonistic, but this would require significant change in the Party's thinking about international affairs. A renewed U.S. partnership with China remains possible, but will require energetic and assertive diplomacy.