

The Influence of American Manufacturing Strengthening Policies and China's Countermeasures

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Abstract. Recently, the United States has issued a series of manufacturing development strategies and research reports to defend the hegemony of its manufacturing industry. This paper analyzes the core objectives, major measures of the relevant US policies, and the four major challenges brought to the development of China's manufacturing industry. Based on this, this paper proposes relevant countermeasures and suggestions.

Keywords: American leadership; Advanced-Manufacturing; Defense Industrial Base; Supply Chain Resiliency.

1. Introduction

At the beginning of the 21st century, the US domestic manufacturing industry outflow further to the newly industrialized countries. The “industry hollowing out” situation gradually became serious. In 2010, China's manufacturing output exceeded the United States and ranked first in the world. With the changes of the times, the United States has to adopt policies to defend the hegemony of its manufacturing industry. Particularly in 2018, the United States successively issued two manufacturing development strategies: Strategy For American Leadership In Advanced Manufacturing, and Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States . The presentation of relevant strategies shows two direct goals of the United States. One goal is to promote the return of manufacturing to the United States to improve the economic situation and expand employment; the other is to squeeze the industrial development space of developing countries (especially China) and cause economic impact. Under such circumstance, how should China respond to it becomes a very urgent research issue.

2. US Intends to Reshape Manufacturing Leadership

The relevant policy targets issued by the United States are clear. The following will analyze the main contents of the two reports in the United States from three aspects: strategic objectives, core content and major measures.

2.1 The Strategic Goal is to Promote Manufacturing Returns and Strengthen Manufacturing Leadership.

After the 1950s, the US manufacturing industry was affected by the rise of the domestic service industry, and the proportion in the industrial structure declined, resulting in “industry hollowing out”, affecting domestic low-end employment, economic development and social stability. After the outbreak of the world financial crisis in 2008, the US government believed that high-end industries were the key to maintaining the current development and long-term prosperity of the United States[1]. The two standards for high-end industries are that each industry worker's R&D expenditure exceeds \$450, or is located in the top 20% of the industry; and the number of STEM (Science, Technology, Engineering, and Mathematics) degrees in the industry team must be higher than the national average. Level, or the proportion in the industry reached 21%. According to this standard, the United States has a total of 50 high-end industries, of which 35 are in advanced manufacturing, with a ratio of 70%. The publication of the above two reports shows that the Trump administration's intention to ensure “US priority” in the manufacturing sector through trade protectionism is becoming clearer.

2.2 The Core Content is to Focus on Key Technology Areas and Assess Supply Chain Security

The "Strategy" report believes that advanced manufacturing is the engine of the US economic strength and the pillar of national security. The development and transformation of new manufacturing technologies is the focus of the implementation of the strategic plan. It is necessary to focus on five areas of technology, namely the Future of Intelligent Manufacturing Systems, World-Leading Materials and Processing Technologies, Medical Products through Domestic Manufacturing, Electronics Design and Fabrication, Food and Agricultural Manufacturing.

The "assessment" report believes that the US industrial base faces uncertainties in fiscal deficit reduction and government spending, the reduction of key markets and suppliers, the aggressive industrial policies of competing countries, and the loss of vital skilled workers in the domestic workforce. The challenge. In particular, the US defense industry has a supply chain of more than 280 products that is heavily dependent on foreign countries, especially for China's rare earths and spare parts. These challenges erode the foundations of manufacturing and defense industries, threatening the ability of the United States to cope with the power of the powerful countries and the ability to prepare for "tonight's battle."

This series of initiatives and recommendations shows that in order to expand employment and ensure the security of domestic supply chain, the United States is no longer only concerned with higher-margin product design and high-end manufacturing technology, but also pays attention to the development of general and low-end manufacturing in its country.

2.3 The Main Measure is to Reshape the Lead Through Policy Combination

In order to achieve the above objectives, the two reports of the Strategy and the Assessment mainly implement four major initiatives. The first is to provide stable funding for the 2018 and 2019 fiscal years through the "2018 Bipartisan Budget Law" to improve the stability of the budget in the advanced manufacturing sector in the near future; the second is to develop and transform new manufacturing technologies, including the capture of intelligent manufacturing systems. In the future, developing world leading and materials and processing technologies, ensuring access to medical products through domestic manufacturing, maintaining leadership in electronic design and manufacturing, and strengthening opportunities in food and agricultural manufacturing; and third, educating, training and agglomerating manufacturing labor, These include attracting and developing future manufacturing labor, updating and expanding career and technical education pathways, promoting apprenticeships to obtain industry-recognized certificates, matching appropriate industries and skilled workers; and fourth, expanding domestic manufacturing supply chain capabilities, including strengthening The role of small manufacturers, encourage manufacturing innovation ecosystems, strengthen the defense manufacturing base, and promote the development of advanced manufacturing in rural communities.

3. The Strategic Goals of the United States May not be Fulfilled

First, the existing series of initiatives have not produced much effect. The Strategy and Assessment are just a continuation of previous policies. After 2008, the US government has successively issued a series of industrial policies aimed at "revitalizing the US manufacturing industry". Among them, there are many measures to promote employment, raise wages, stimulate investment and reduce trade deficit, and also increase investment in R&D and strengthen Innovative ability to strengthen the demand for leading position in the US advanced manufacturing industry. However, despite the relocation of individual companies into the United States, the general trend of "manufacturing returns" has not occurred.

Second, the United States still has important constraints on re-industrialization. At present, although the United States has advantages in energy, taxation, and business environment, there are shortcomings in skilled workers' reserves, labor costs, vocational skills education and training, which restricts the implementation of the "re-industrialization" strategy. At the same time, although technologies such as artificial intelligence have brought new opportunities to the US high-tech manufacturing industry, the focus of high-tech manufacturing is not on production and manufacturing,

but on the “service” of manufacturing, such as R&D and design [2]. Therefore, high-tech manufacturing may not necessarily lead to an increase in employment opportunities, and the result may be to further stimulate the development of the service industry.

Third, the latest data shows that US manufacturing performance is still sluggish. At the end of 2018, the US Markit manufacturing PMI final value for October was 55.7, which was lower than the previous value (55.9) and expected (55.8). In October, the US Supply Management Association (ISM) new order index also hit a new low since April 2017. The data shows that although the US government has introduced a series of important measures since 2008, the performance of manufacturing companies operating in the United States is still not optimistic.

4. US Manufacturing Strategy Brings four Major Challenges to CHINA’S Manufacturing

Manufacturing is the main body of the real economy, and it is the main battlefield for China's economy to achieve innovation-driven, transformation and upgrading. A series of measures in the United States will bring four major challenges to the development of China's manufacturing sector.

4.1 Threatening Supply Chain Security

According to the survey conducted by the Ministry of Industry and Information Technology on more than 130 key basic materials in more than 30 large enterprises across the country, 32% of key materials are still blank in China, 52% rely on imports, and most computer and server general-purpose processors are 95% high-end dedicated chips. More than 70% of intelligent terminal processors and most memory chips rely on imports. Major companies such as ZTE, Fujian Jinhua, and Huawei have been greatly affected by the US intervention [3]. Therefore, we must realize that Sino-US trade frictions and future trends in China's manufacturing restrictions are highly uncertain. If the United States continues to expand restrictions on core technologies such as basic materials and chips, the development of China's manufacturing sector and the realization of related goals is by no means an easy task.

4.2 Narrowing Technology Import Channels

In July 2018, the US Congress passed the Export Control Act and the Department of Commerce's Industrial Security Administration issued a list of 14 types of cutting-edge technology blockades, with the proposed export control of 14 core cutting-edge technologies such as biotechnology, artificial intelligence and machine learning. Afterwards, the US Department of Commerce’s Bureau of Industry and Security announced that it had blocked 44 Chinese companies on the grounds that “the US government believes its actions violate US national security and foreign policy.” The 44 entities include 8 groups and 36 subsidiaries. It also claims that future exports involving sensitive goods and technologies need to be approved in advance by the US Department of Commerce [4]. This move will further strengthen the export blockade of China's technology.

4.3 Restricting Corporate Cross-Border Investment

According to data from the Rhodium Group, from January to May 2018, China's venture capital (VC) investment in the United States has reached nearly 2.4 billion US dollars, equivalent to the annual investment amount in 2015. In November 2018, the US Foreign Investment Committee of the Ministry of Finance officially strengthened the foreign investment review of core technology industries such as aerospace, biomedicine, and semiconductors in accordance with the Foreign Investment Risk Review Modernization Act passed by the US Congress[5], with a focus on reviewing 27 core highs. In the technology industry, the bill also stipulates that the US Secretary of Commerce submits to the Congress every two years reports on "direct investment by Chinese business entities in the United States" and "state-owned enterprises investing in the US transportation industry." The bill has brought about no small impact on the international development of China's advanced manufacturing sector.

4.4 Compressing Talent Exchange Space

According to the latest data released by the US State Department, the number of visas issued to foreign students in the United States in 2018 has dropped significantly, and the number of Chinese students studying in the United States has dropped by 24%. At the same time, the United States mainly focuses on science, technology, engineering, mathematics and other Chinese students to re-tighten the length of visas issued, and some professional foreign student visas have been shortened from five years to one year. The US Department of Commerce also lists a list of companies that need to be closely reviewed. If Chinese citizens want to go to these companies for research or management, they must obtain permission from various US departments to obtain a visa. And every visa approval can take up to several months. In addition, the restrictions on Chinese scholars to the United States have become stricter. The current restrictions have been extended to the Chinese thousands of scholars in the United States, and the field is no longer limited to high-tech industries, and even spread and affect the normal exchanges of scholars in other disciplines.

5. Suggestions on Breaking the Technical Blockade

Although the United States has adopted a series of measures to limit the development of China's manufacturing industry, we should also base ourselves on technological breakthroughs and adopt various measures to break the US technical blockade.

The first is to sort out the key technical shortcomings and take stock of the core technology of the "card neck" that needs to be overcome. Organize the sixth national technology forecasting research work, strengthen technical research and judgment in key areas, and provide forward-looking research on technology early warning and technical security. Through "finding the bottom-investigation-selection", we select the key core technologies and "card neck" technologies that will affect China's economy, society and national security in the next 5-15 years.

The second is to strengthen research and development and application promotion to strengthen supply chain loopholes. Optimize collaborative innovation on the supply side and demand side of the technology for key nodes that hinder development. Continue to give play to the main body and guiding role of the central government in the investment of basic research, and actively guide enterprises to strengthen the application of basic research. We are highly concerned about disruptive technologies that may cause existing investments, talents, technologies, industries, and rules to "return to zero", and look forward to the development of cutting-edge technologies for emerging industries. Scientifically formulate a roadmap for the development of science and technology in the manufacturing field, and focus on key components, high-end equipment, advanced technology, software and hardware coordination, etc., to break through the bottleneck constraints and fundamentally change the situation in which key core technologies are subject to people.

The third is to fully understand the strategic challenges of the US "re-industrialization" and bypass the "talent, technology" blockade. The United States regards "re-industrialization" as an important strategy to reshape competitive advantage, and to play a "combination boxing" of technology, trade and talents, weaken the competitive advantage of China's manufacturing, and reconstruct the competitive landscape of manufacturing through the rapid development of artificial intelligence and digital manufacturing technology. We should adhere to the development of independence, maintain development independence, deepen the new round of opening up, do not exchange core interests, adhere to the bottom line, and use the strategy of opening up for openness and market for market, so that scientific and technological exchanges and talent exchanges will enhance strategic mutual trust. And It's an important way to promote mutual benefit and win-win. Pay attention to and strengthen cooperation with technology and R&D in key small countries such as Belgium and the Netherlands with superior technologies to enhance China's technological strength.

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