

# Exploring the Development Path of High-end Manufacturing Industry in Shanghai based on the Background of Sino-U.S. Trade War

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**Abstract.** On May 19, 2015, the State Council officially issued "made in China 2025", which takes building a manufacturing power as a strategic goal, and clearly states that "we should aim at the strategic priorities of the new generation of information technology, high-end equipment, new materials, biomedicine, etc., guide the gathering of all kinds of social resources, and promote the rapid development of advantages and strategic industries." Under the guidance of strategic objectives, China has been steadily promoting the development of high-end manufacturing industry. However, since 2018, the U.S. government has held high the banner of "new trade protectionism" and formulated a series of tariff policies to suppress the development of China's high-end manufacturing industry in accordance with the "2025 plan" of China's manufacturing industry construction, triggering a Sino-U.S. trade war. In this context, Shanghai, as the center of China's high-end manufacturing industry, has been significantly impacted by this. How to highlight the "encirclement" and find the development path is particularly important.

**Keywords:** Sino US trade war; High-end manufacturing industry; Development path.

## 1. Introduction

Premier Keqiang Li proposed at the Symposium of the Ministry of industry and information technology on June 15, 2015 that the core of "Made in China 2025" should be "China Equipment". If China's economy wants to maintain medium and high-speed development in the long term, it must move towards the upgrading of medium and high-end manufacturing and accelerate the promotion of "Made in China 2025". The core of made in China 2025 is to realize the intelligent upgrading of manufacturing industry. Since March 2018, the United States has formulated a series of policies aimed at China's high-end manufacturing industry, triggering a Sino US trade war.

As the center of China's high-end manufacturing industry, Shanghai's high-end manufacturing industry is in full swing, and its export volume accounts for a large proportion. Therefore, the trade war between China and the United States, Shanghai bear the brunt.

## 2. The Outbreak of Sino US Trade War

On March 22, 2018, the United States announced to levy \$50 billion in tariffs on China, marking the beginning of the Sino US trade war. The exposed tax list made the stock prices of enterprises engaged in photovoltaic optoelectronics, steel manufacturing, machinery manufacturing and other industries in Shanghai fluctuate sharply, and the first wave of large-scale stock declines occurred in 2018. On April 3, 2018, the U. S. announced that it would prohibit U.S. companies from selling technology, software and hardware products and technologies to ZTE in China within seven years. The first round of U.S. attack also marked the official start of the Sino-U.S. trade war. On June 15, 2018, the United States announced to impose 25% import tariff on 818 categories of Chinese goods worth 34 billion US dollars, and issued. On July 11, the U.S. government announced a 10% tariff on about 200 billion U.S. dollars imported from China, and on August 2, it raised the tariff to 25%. On September 18, the U.S. government announced the implementation of measures to impose tariffs on approximately \$200 billion of goods imported from China. The tariff rate will be 10% from September

24,2018, and increased to 25% from January 1, 2019. In terms of the products for which tariffs are imposed on Chinese goods, there are medical devices, high-speed rail equipment, biomedicine, new materials, agricultural machinery equipment, industrial robots, information technology, new energy vehicles and aviation equipment. It can be basically clear that the goal of the United States is to target the "made in China 2025" plan. [1] Under the deadlock between the two sides, the trade war finally shows a trend of intensified trade war in the alternation of easing and warming up. The scale of commodities involved in US trade sanctions against China has reached US\$250 billion.

### **3. Overview of Shanghai's High-end Manufacturing Industry**

#### **3.1 Concept and Classification of High-end Manufacturing Industry**

The high-end manufacturing industry is the stage after the manufacturing industry develops to a certain level. It refers to the emerging industry with high-tech content, high added value and strong competitiveness. It is a sub industry of manufacturing industry. According to the plan for industrial transformation and upgrading (2011-2015) (hereinafter referred to as the plan), we should seize the key links of industrial upgrading, focus on improving the research and development of key basic components, basic processes, basic materials, basic manufacturing equipment and system integration level, accelerate the upgrading of machine tools, automobiles, ships, power generation equipment and other equipment products, and actively cultivate and develop intelligent manufacturing. New energy vehicles, marine engineering equipment, rail transit equipment, civil aviation and aerospace and other high-end equipment manufacturing industries, to promote the equipment manufacturing industry from big to strong.

According to "Made In China 2025", "13th five year plan of Shanghai manufacturing industry transformation and upgrading" and "13th five year plan of Shanghai promoting the development of high-end equipment manufacturing industry", this paper holds that nine strategic emerging industries in "13th five year plan of Shanghai manufacturing industry transformation and upgrading" basically include the high-end manufacturing industry in Shanghai, that is, the new generation of information technology, intelligent manufacturing equipment and health. Physical medicine and high-end medical equipment, new energy and intelligent Internet vehicle, aerospace, high-end energy equipment, new materials, energy conservation and environmental protection, microelectronics and Optoelectronics Equipment, advanced rail transit equipment, high-tech ships and marine engineering equipment. [2]

#### **3.2 Current Situation of High-end Manufacturing Industry in Shanghai**

##### **3.2.1 Construction of Economic Development Zone**

In the catalogue of China Development Zone audit announcement issued by the national development and Reform Commission, the Ministry of science and technology, the Ministry of land and resources, the Ministry of housing and urban rural development, the Ministry of Commerce and the General Administration of Customs in 2018, there are 2543 development zones, including 552 National Development zones and 1991 provincial development zones. A total of 59 development zones in Shanghai were included in the catalogue of this announcement, including 20 national development zones and 39 provincial development zones. The leading industries of these development zones are all high-end manufacturing industries without exception.

At the same time, the number of registered enterprises with high-end manufacturing as the leading industry in Shanghai is 221, accounting for 0.51% of all registered enterprises in Shanghai, and the number is growing.

In conclusion, Shanghai's high-end manufacturing industry is in full swing.

##### **3.2.2 Strong Development**

International Competitiveness: in the 2017 Shanghai Key Industries International Competitiveness Report series press conference and seminar (advanced manufacturing industry special session) released on May 16, 2018, the international competitiveness evaluation of Shanghai high-end manufacturing industry pointed out that the international competitiveness of Shanghai high-end

equipment manufacturing industry in 2017 maintained a strong competitive advantage while the overall development was stable.

International Performance of the industry: Although the share of the international market of the industry has declined slightly, the demand for electronic information products in the overseas market remains strong due to the rising price and quality advantages of the export products, thus promoting the rise of the international performance of the industry.

Value chain improvement index: the export volume of core products accounts for the export proportion of the whole industry, and other indicators show a trend rise, driving the overall trade competitiveness of the industry to strengthen, with the most obvious increase in processor, controller, memory, hard disk drive and other products.

Impact of Sino US trade war on Shanghai's high-end manufacturing industry

## **4. Impact of Sino US Trade War on Shanghai's High-end Manufacturing Industry**

### **4.1 The Overall Impact of Sino US Trade War on Shanghai's High-end Manufacturing Industry**

As the center city of China's high-end manufacturing industry, Shanghai, under the guidance of China manufacturing "2015 plan", pays special attention to the construction and development of high-end manufacturing industry such as re materials and professional equipment manufacturing. After two years of construction, Shanghai's high-end manufacturing industry has begun to take shape. At this time, the United States will impose tariffs on China's high-tech products, which will inevitably affect Shanghai's high-end manufacturing industry to varying degrees. First of all, it is not conducive to the transformation and upgrading of high-end manufacturing industry in Shanghai. The increase of tariffs in the United States increases the sales cost and reduces the profits of relevant manufacturing industries. However, due to the characteristics of high-end manufacturing, such as long innovation cycle, high R & D cost, and slow speed of new products entering the market, if there is no high profit, the enthusiasm of relevant enterprises in R & D and technology improvement will inevitably decline, so the total output will also decrease. It will drop and directly impact the high-end manufacturing industry in Shanghai. Secondly, the international competitiveness of the products of the relevant manufacturing enterprises in Shanghai is reduced. The increase of tariff makes it difficult for the high-end manufacturing products in Shanghai to go out of the country due to the rise of the price. The competitiveness in the international market is reduced, the global market share is reduced, and the profit of the producers is reduced, which leads to the decline of the innovation willingness of the enterprises, the extension of the innovation cycle, the slow speed of new products entering the market and the difficulty of export. So as to form a vicious circle and directly hinder the further development of high-end manufacturing industry. Then, the foreign capital of related enterprises in Shanghai will flow back to the United States. If the United States imposes tariffs, the production cost of enterprises will rise, and the foreign capital of departments will flow back to the United States.

### **4.2 Research on the Impact of Sino US Trade War on Shanghai's High-end Manufacturing by Industry**

#### **4.2.1 Impact on Shanghai New Material Industry**

Under the guidance of China's "make 2025" plan, Shanghai's new materials industry is in a good market, with the share price rising steadily in the second half of 2017 and the first quarter of 2018. However, on April 23, 2018, new materials such as alloy heat-resistant steel, alloy silicon electric steel and alloy tool steel were subject to additional duties in the list of additional duties published by the United States, and the stock price of new materials enterprises in Shanghai fluctuated sharply. On April 27, China's major new material development project will start to focus on superconducting graphene, which will give relevant new material enterprises a shot of "heart strengthening". Therefore, after the opening of the market on April 28, Shanghai new material enterprises' share price continued

to rise. However, under the influence of the follow-up tax policy of the United States, the stock price of the new material industry is still gradually low. At the same time, under the influence of US policy, Shanghai's export volume of materials and technology products, excluding the influence of "dividend" of last year's orders, is also generally in a downward trend.

#### **4.2.2 Impact on Shanghai Medical Manufacturing Industry**

On June 28, 2018, according to the "Manufacturing 2015" plan of China, the United States imposed high tariffs on a series of medical equipment services such as ECG core, magnetic resonance instrument, ultrasonic scanning electronic diagnostic instrument, electric diagnosis patient monitoring system, and medical commercial appliances such as tubular metal needle and needle for medical suture, making Shanghai and even the whole country. The market value of China's medical manufacturing industry fluctuates greatly. As of February 10, 2019, the Shanghai Stock Exchange trading index shows that the market value of Shanghai's relevant medical manufacturing industry has been declining all the way, and the net outflow of funds has been rising all the way. At the same time, the policy announced by the United States in June also led to a sharp decrease in the export volume of medical devices in Shanghai.

#### **4.2.3 Impact of Sino US Trade War on Shanghai Optical Optoelectronic Industry**

At the end of January 2018, the United States decided to take safeguard measures for imported photovoltaic electronics through 201 investigation on the basis of protecting domestic industries, which made the stock price of relevant enterprises in Shanghai drop rapidly. Due to the lack of specific measures for the optical optoelectronics industry in the United States during the period from February to May, coupled with the state's macro-control and policy support, Shanghai Optical optoelectronics industry experienced a low in January, and its share price slowly picked up. However, on June 15, in the list of additional tariffs released by the United States, optical optoelectronic products were listed as an important subject of additional tariffs. As soon as the news came out, the national uproar broke out, the optical optoelectronic industry in Shanghai was quickly affected, and the stock prices of relevant enterprises fell again and again. Although from March to August 2018, the export volume of optical and optoelectronic products in Shanghai showed an upward trend, but this is only the "illusion" caused by the order bonus in previous years. Excluding this influence factor, the export volume of optical and optoelectronic products in Shanghai actually decreased. Influenced by the relevant policies of the United States, the total industrial output value of Shanghai in June 2018 decreased by 1.3% compared with that in 2017, and the growth rate decreased by 4.6% compared with that in May. Among them, the output value of optical and optoelectronic manufacturing industry was 52.468 billion yuan, down by 1.4% compared with that in May. The year-on-year growth rate decreased by 3.3%.

## **5. International Experience: Japan US Trade War**

### **5.1 Introduction to Japan US Trade War**

Looking back on the last round of large-scale trade war with wide influence, it should be the Japan US trade war from 1960s to 1990s. Compared with Japan and China, we can find the following similarities between the two countries in the trade war: first, the direct cause of the trade war lies in the huge trade deficit with the United States; second, they are both in the important stage of industrial structural transformation.

**Table 1. Detailed description of the trade war between Japan and the United States**

Time	Field	Content
1968-1972	Textile warfare	The United States passed several bills restricting Japanese textiles, and Japan compromised to withdraw from the textile market
1976-1977	Color TV war	Japan's home appliances occupy 30% of the U.S. market. The U.S. International Trade Commission has adopted an anti-dumping and anti subsidy investigation, requiring Japan to take the initiative to restrict the export of color TV sets to the U.S., and the Japanese government has to encourage local enterprises to make overseas investment.
1976-1978	Steel war	The steel trade deficit between the United States and Japan is becoming increasingly serious. The U.S. asked Japan to voluntarily restrict the export of steel to the U.S. and put pressure on Japan through 1977 anti-dumping lawsuit and 301 clause.
1979-1981	Automobile warfare	Japanese cars are popular all over the world, while American car industry is declining. The United States launched an automobile trade war with Japan, asking Japan to voluntarily restrict automobile exports and open its domestic market, and asking Japanese automobile manufacturers to invest and build factories in the United States, and Japan compromised.
1987-1991	Currency War	Us, Japan, Germany, France and UK finance ministers and central bank governors held a meeting to reach a joint intervention in the international foreign exchange market and sign a Plaza Agreement to induce the orderly depreciation of the US dollar against major currencies (including the Japanese yen).
1987-1999	Semiconductor war	The U.S. prohibits Japanese enterprises from investing and merging in the U.S. through 301 clauses and anti-dumping litigation clauses, and imposes sanctions on Japanese semiconductor industry.

## **5.2 Inspiration from Japan US Trade War**

### **5.2.1 Fair Trade for Win-win**

In this trade war, the trade between China and the United States is still mutually beneficial and win-win in nature. Therefore, the government should still promote cooperation between the two countries, create a good policy environment in trade protection, intellectual property protection and other aspects, and guarantee the development of high-end manufacturing industry in Shanghai.

### **5.2.2 Enhance Economic Independence**

Japan's manufacturing industry is excessively dependent on exports. The export of light textile products, steel, home appliances, automobiles and semiconductors in the 1960s and 1990s has driven the rapid economic growth. However, Japan lacks the understanding of the domestic consumer market, so its domestic demand is insufficient. Shanghai's high-end manufacturing industry can focus on domestic and international markets to reduce the industry wide crisis caused by international trade friction.



## **6. Development Path of High-end Manufacturing Industry in Shanghai**

### **6.1 Shaping Competitive Advantage**

#### **6.1.1 Improve Product Development Speed**

Schumpeter pointed out that innovation is the main source of economic development in the theory of economic development, which was first published in 1912. Porter put forward in his competition theory that if we want to establish a strong and lasting competitive advantage through production factors, we must develop advanced production factors (such as modern infrastructure, higher education and research institutions, etc.) and professional production factors (such as professional technical personnel, professional knowledge and facilities for an industry, etc.) related to industry and industrial cluster.

Compared with developed countries such as the United States, Shanghai's high-end manufacturing industry is slightly behind. However, with the implementation of the strategic policy of talent introduction in Shanghai in 2018, the talent pool in Shanghai has provided fresh vitality for the talent selection market of enterprises. At the same time, as a major cultural center in China, Shanghai has numerous universities and research institutes. In this context, Shanghai's high-end manufacturing industry can select talents, actively cooperate with universities and research institutes in Shanghai, improve the speed of product research and development, build a strong competition of integration of production, learning and research, strengthen the construction of international competitiveness of enterprises, and remain invincible in the trade war.

#### **6.1.2 Cost Reduction**

Compared with the products of developed capitalist countries such as the United States, one of the major characteristics of China's manufacturing is its high quality and low price. Under the Sino-U.S. trade war, the U.S. policy of suppressing China also focuses on increasing tariffs to increase the sales price of high-end manufactured products in the United States. Shanghai's high-end manufacturers can reduce the cost of goods to improve their international competitiveness. Combined with Ricardo's comparative cost theory, the Russian factor endowment theory and Shanghai's actual situation, Shanghai's enterprises can reduce costs by means of industrial clusters and industrial structure optimization, and lock the competitive advantage in production cost control and market share occupation.

#### **6.1.3 Diversified Production**

Under the background of Sino-U.S. trade war, U.S. economic sanctions against China are mainly limited to high-end manufacturing industry, which undoubtedly has a great impact on high-end manufacturing industry in Shanghai. At this time, high-end manufacturing enterprises in Shanghai can avoid risks and increase market share through diversified production, so as to build the competitive advantage of enterprises and even the industry.

### **6.2 Give Full Play to Comparative Advantages**

#### **6.2.1 Develop a Wider Overseas Market**

Compared with European and American markets, Shanghai's high-end manufacturing enterprises can turn their perspective to a broader overseas market, among which, combined with other powerful factors such as policies, they can focus on developing markets in Asia and Africa. In recent years, the state has vigorously developed the economic construction of the "New Silk Road", from infrastructure to market promotion, laying the foundation for Shanghai's high-end manufacturing industry to move towards the maritime Silk Road in the new era and countries along the land silk road. As a result, Shanghai's high-end manufacturing industry will open up national markets along the "New Silk Road", cater to national policies, conform to the trend of the times, play its comparative advantages, and survive in the melting pot of the economic market.

### 6.2.2 Cultivate Domestic Market

Porter believes that compared with the international market, the change of customer demand in the domestic market is more likely to be explored by enterprises as early as possible, and the picky customers in the market help to stimulate enterprises to continuously improve and develop new fields, so as to bring the power to create competitive advantage for enterprises. Therefore, Shanghai's high-end manufacturing industry can further study the domestic market demand, improve the comparative advantage of products in similar products, promote the continuous improvement of the whole industry, make up for the losses in the U.S. market, and then promote the survival and development of enterprises.

The above synthesis is as follows:

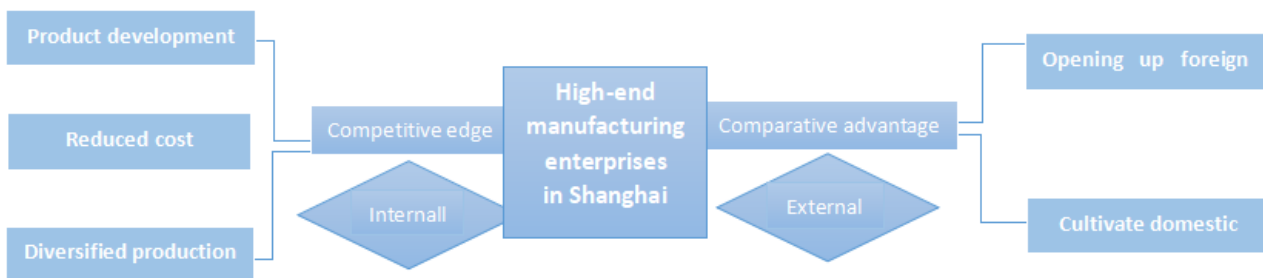


Fig 1. Comprehensive summary of the paragraph

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