# The Changes in Import of China's Agriculture and Chip Industry under the Trade Conflict

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**Abstract.** In recent years, China and the United States have had many trade conflicts. This article will mainly focus on the policy and the specific effect that the policy given. The case study is adopted to clarify the changes in China's agriculture and chip industry. This article found that the impact of trade conflicts on the food industry is manageable. There are some ways to solve the problem like choosing other countries to import food. However, the trade war did bring some negative effects to the chip industry like to monopoly of the main technology of chips. The main purpose of this article is to discuss the effect that trade conflict has brought on the agriculture and chip industries. These two fields are being targeted in the trade conflict, so it's quite meaningful to discuss the changes. The article suggests that China should promote the diversification of agriculture, and pay attention to the cultivation of higher talent in the chip industry.

**Keywords:** Trade Conflict, Agriculture, Chip.

## 1. Introduction

In recent years, China is influenced a lot by the "trade protectionism" of the United States, China, and the United States had more than one trade conflict. The United States continues to take actions in science and technology, agriculture, and import tariffs, such as monopoly, tariff increases, and so on. These actions have seriously affected the economic and trade development of the two countries. In the trade war, will the measures and countermeasures taken by China and the US have a big impact on China's import industries? Has China survived the trade war? Based on the above background, it has far-reaching policy significance for the research of typical and important fields such as science and technology and agriculture.

In the field of science and technology, chips and semiconductors are typical cases under the background of today's science and technology. China has long relied on imports of chips from abroad. Under such strained relations, Chinese chips are frequently threatened with monopolies. The impact of the trade war on science and technology, and the measures China can take to counter it, will map the attitude and direction of the development of most of China's high-tech industries in the future.

In the field of agriculture, agriculture represents the "people", that is, "people rely on food", which indicates that food production capacity is a very important part of the country. China, a major grain exporter to the United States, has targeted American agricultural products in the counter-tariff list. As a major food producer and food consumer, China needs to take precautions in agriculture in order to stabilize economic development. In the context of the trade conflict, China has imposed 25 percent tariffs on American agricultural products such as soybeans. American agricultural products cannot reach China quickly. China works as a significant exporter of food to the United States Is it have a significant impact on Chinese agriculture? It is of great theoretical and practical significance to answer these questions. This paper adopts the method of case study to analyze the measures or policies taken by China and the United States in the fields of science and technology, agriculture, and tariff, and summarize their impacts.

## 2. Case Description

### 2.1. Chip Industry

In 2019, the United States government severely suppressed Huawei China and ordered that Huawei China's products be banned from being sold in the United States, that any U.S. company and its service industry cooperate with Huawei China in any form, and that other countries cooperate with Huawei China in any form, and that Huawei uses any U.S. technology, equipment and technology. In this case [1]. The higher the frequency of trade frictions between China and the trading partner, the more trade frictions in relevant industries; The higher the participation of a certain industry in the relative global value chain in China, the easier it is to solve the relevant trade frictions in that industry, which is mainly reflected in the shorter duration of trade frictions. The United States has blockaded China's entire industrial chain, for example, in all aspects of talent, technology, products, market, etc. [2], Huawei's sales amount has declined significantly. American suppliers who rely heavily on Huawei tend to regard Huawei as a major customer. Once Huawei cuts orders or even suspends orders, it will have a great impact on the company's customer distribution and total operating revenue.

The greater the difficulty, the greater the potential, and Huawei's mobile phones are on a counter-trend. Take Huawei's data in 2022 as an example, the sales volume soared by 15%. Last year, the sales volume of folding-screen mobile phones in China increased by 144% year-on-year. Huawei accounted for more than half of the total sales volume and ranked first. According to CINNO Research data, the sales of folding screen mobile phones in the Chinese market reached 2.83 million in 2022, an increase of 144.4% year on year. Huawei ranked first in the market with 1.44 million units, followed by Samsung, OPPO, Xiaomi, Vivo, and Glory. CINNO Research said that the starting price of 12 of the 15 folding products listed in China from last year to now is less than 10000 yuan. With the price of folding mobile phones continuing to decline, their popularity is getting higher and higher, and the market capacity will continue to expand. At present, the sales of domestic folding mobile phones have been increasing year on year for 9 consecutive quarters. China has many deficiencies in chip development. For example, in terms of talent, China's talent gap in the chip industry is about 300000; In terms of capital, the R&D, production, and manufacturing of chips need a large amount of capital chain. Except for Huawei HiSilicon, ZTE Microelectronics, and BYD Microelectronics, most chip companies are mainly small and medium-sized companies, which are seriously insufficient in their capital, which has led to the adverse development of China's chip industry; Finally, in terms of technology, China is very short of higher education development, which leads to the shortage of talents, which is the direct reason for the current shortage of chip development in China [3]. Therefore, China relies on imports, especially in technology and manufacturing. It is precise because of the great weakness of the fine manufacturing industry that the United States has an opportunity to seize the "tail" of China's fine manufacturing industry.

The United States is afraid that China's Huawei technology is leading the world, such as Huawei's Hongmeng system, 5G baseband, Kirin chip, etc. These technologies will become the core competitiveness for the future world to be highly artificial and will lead the application of AI technology. Trade conflicts have accelerated the "rapid development of manufacturing in China",

Chinese chips developed in "adversity", cut off the technical assistance of all equipment in the United States, and developed their chips independently [4].

### 2.2. Agriculture

In March 2018, then US President Donald Trump announced that he would impose 25 percent tariffs on about $50 billion of Chinese imports, and China responded with corresponding tariff measures. The trade war between the two countries is on the verge of breaking out. The two sides have increased tariffs on goods four times, and the trade volume involved has reached 700 billion US dollars. In China's tax list on American goods, agricultural products are the largest [5]. This paper summarizes the changes in soybean production and trade under the background of the trade war.

Our country is an important exporter of the United States (the largest exporter of soybeans, and the second largest exporter of cotton). In terms of trade volume, the top several types of agricultural products imported from the US in 2017 were edible oilseeds, livestock products, and grains, which were mainly land-intensive products. Among them, soybean is the product with the largest scale of Sino-US agricultural trade. The trade volume of soybean imported from the United States accounts for 57.6% of China's total agricultural imports from the United States and 62% of the total soybean exports from the United States [6].

The trade war between China and the United States will lead to a gradual increase in soybean prices, which will feed into the costs of China's farming industry.

There are two main reasons for domestic soybean prices to rise in the short term. First, the rapid growth of demand for South American soybeans will push up local soybean prices in the short term. As of July 25, spot soybean prices in Brazil had risen to 1,100.75 cents a bushel. Second, due to the inertia of the previous Sino-US soybean trade, the US is still the second largest importer of Chinese soybeans, despite the imposition of a 25 percent tariff on soybeans originating in the US in July 2018. So, the price of soybeans may rise because of the tariff adjustment. In addition, there is an obvious volatility agglomeration effect in the futures prices of Chinese and American soybeans, that is, in the short term, the futures prices of Chinese and American soybeans may have a rapid correction after a short decline [7].

Trade conflicts could have implications for Chinese agriculture. As far as soybean production is concerned, the 25% tariff on American soybeans is conducive to the recovery of the domestic soybean industry. On July 5, 2018, the Fei Ma Feng, a ship carrying 70,000 tons of soybeans, sped toward the port of Dalian, hoping to avoid a 25 percent tariff on some U.S. imports before China imposes tariffs on some U.S. imports at midnight. July 6. Despite its desperate dash for life, the Pegasus still missed the deadline. After more than a month at sea, the ship "Fei Ma Feng" finally began to unload on August 12. This is the first shipment of American soybeans to be imported as the trade war between China and the United States intensifies. This is the first shipment of American soybeans to be imported as the trade war between China and the United States intensifies.

The trade war between China and the United States has a certain degree of impact on China's soybean imports, but the impact is limited. Although affected by the trade war between China and the United States, the quantity of American soybeans arriving in Hong Kong is significantly lower than the historical average, the current market season of South American soybeans is concentrated, and the cost of South American soybeans arriving in Hong Kong is still at a low level, and the cost of imported soybeans from China has not risen significantly. In order to cope with the possible shortage risk of imported American beans in the second half of the year, domestic soybean buyers have purchased a large amount of South American soybeans in advance for storage, and the purchase of South American soybeans has covered the third quarter of this year. In the third quarter, the supply of imported soybeans in China has been guaranteed and the quantity is sufficient.

In the short term, even if the trade war between China and the United States develops in-depth, the adverse impact of the trade war between China and the United States on China's soybean import will be within a limited and controllable range due to the comprehensive effect of sufficient quantity of soybeans to Hong Kong, diversified supply system of imported soybeans, macro-control of national policies and off-season of traditional soybean products consumption [8].

The countermeasures in this paper suggest that a diversified supply system of imported soybeans could be expanded. Expanding from areas with high growth potential.

## 3. Comparing the Chip Industry and Agriculture

### 3.1. Product Imports

Compared with the chip industry and agriculture, both rely on imports to a certain extent, but the two are fundamentally different.

First of all, as far as agriculture is concerned, China has a large say in imports, and imports are not monopolized. In the context of the trade war, China can solve it by importing food to countries other than the United States. Figure 1 shows that since the 2018 trade war, China's grain imports have changed from an initial increase to a decline, partly due to rising food prices and partly due to a decline in domestic demand for feed grains [9]. At present, in the "Outline of the Strategic Plan for Expanding Domestic Demand" issued by the Central Committee of the Communist Party of China, it is mentioned that China will promote the steady increase and stable production of grain, and deeply implement the strategy of storing grain in the land and storing grain in technology, adhere to the strictest cultivated land protection system, strictly abide by the red line of 1.8 billion mu of cultivated land, resolutely curb the "non-agriculture" of cultivated land, and strictly control the "non-grain" [10]. This shows that whether it is grain output or reserves, China's domestic management is very refined in all aspects, and there is no shortage of output and reserves. Based on this, the paper argues that China's agriculture has not been overly affected, with only minor changes in the volume of imports.

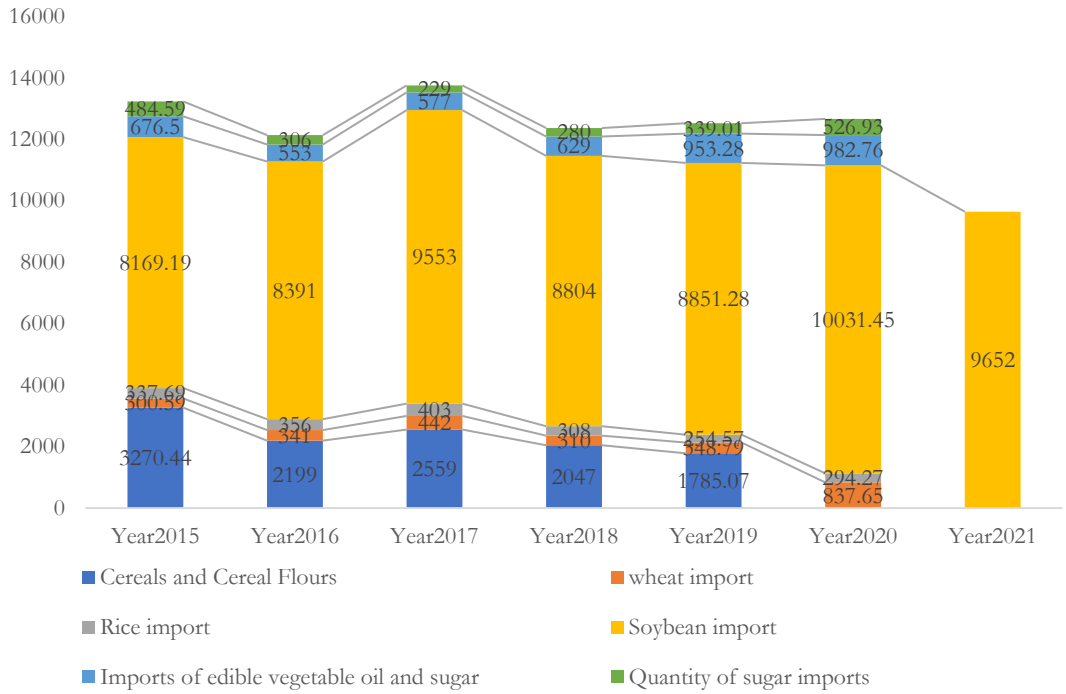



**Figure 1.** Histogram of accumulated grain imports in the past seven years
Data source: China Grains Network
Photo credit: Original

In contrast, China's chip imports are very large, and most of the high-end chips need to be imported from abroad. The US-China trade war has tightened U.S. restrictions on chip exports, leading to a reduction in China's chip imports. Especially in the field of high-end chips, it has a great impact on China's science and technology industry chain and innovation capabilities. In the early days of the trade war in 2018, the number of chips imported from China fell sharply due to the US chip control policy against China. After 2019, chip import production has increased explosively [10]. For China, such a special period is also a very good opportunity and challenge. In recent years, China's chip development has been continuously updated and has achieved rapid development. In 2019, the sales of China's chip industry were 756.23 billion yuan, a year-on-year increase of 15.8%. In 2020, the sales of China's chip industry were 884.8 billion yuan, a year-on-year increase of 17%. On the whole, the market size of China's chip industry is constantly rising [11]. In chip manufacturing, it has conquered the research and development and manufacturing of 28mm and 14mm chips, which shows that Chinese companies are also constantly improving and continuing to work hard for the innovation of key technologies.

### 3.2. Supply Chain

The Sino-US trade war has also had varying degrees of impact on the supply chain in the agricultural sector, but because China has a huge agricultural market and domestic agricultural production capacity is also improving year by year, China's self-sufficiency in the agricultural supply chain is relatively high, and the impact of foreign suppliers is not catastrophic. Figure 2 shows that the major countries that import grain from China, do not only rely on the United States but also Brazil, Argentina, Australia, and so on.

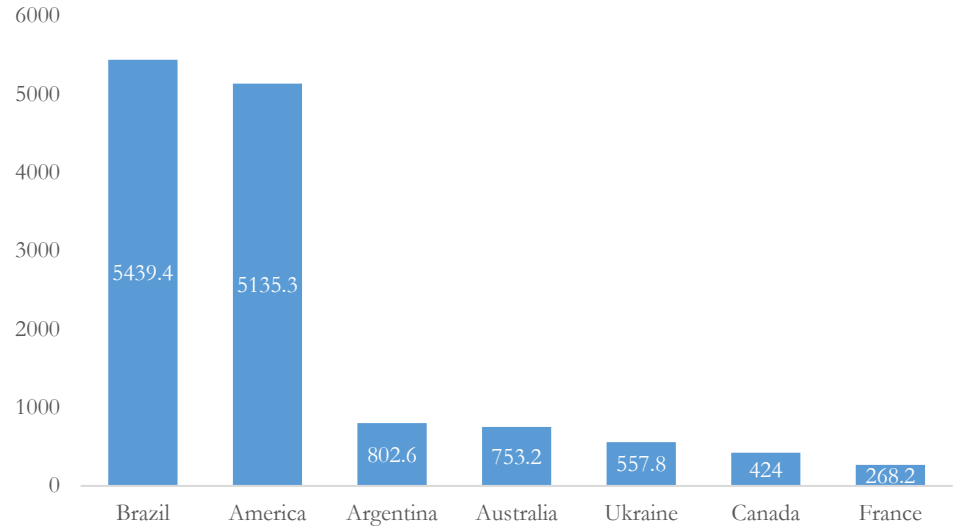



**Figure 2.** China's main grain importing countries and quantity
Data source: China Grains Network
Photo credit: Original

According to the data of the American Semiconductor Industry Association, China's chip imports accounted for 72.5% of global imports, and 538.4 billion integrated circuits were imported in 2022, 97 billion pieces less than in 2021, and in terms of value, China's integrated circuit imports were $415.6 billion, a decrease of 5% from 2021, so it still had a certain impact on China (please see Figure 3) [12].

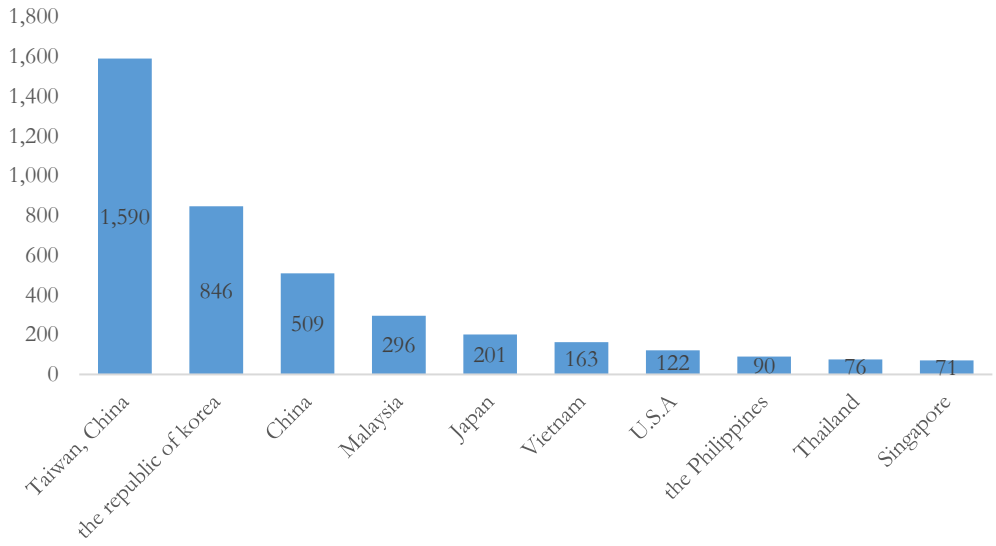



**Figure 3.** Histogram of import countries and quantities of integrated circuits
Data source: General Administration of Customs, P.R. China
Photo credit: Original

### 3.3. Core Technology

In agriculture, whether it is the fine processing of grain or planting technology, China's science and technology are at the forefront of the world. For example, on November 2, 2020, the double-season yield test of hybrid rice led by Yuan Longping in Qingzhu Village, Hengnan County, Hengyang City, Hunan Province, reached 1530.76 kg per mu, exceeding the expected target of 1500 kg. In addition, many examples prove China's leading position in the world's agricultural development.

In contrast, China's chip industry is not optimistic and is in a passive situation. Due to the monopoly of technology, China has not yet been able to independently develop and produce more advanced chips, so it is very dependent on imports. This has led to a passive position in the trade war. As can be seen from Table 1, the main chip design technology is still firmly in the hands of the United States, and China can only take the initiative to yield profits or implement other practical methods to seek chip imports.

**Table 1.** Major countries and regions of chip design and manufacturing

| Rank | Chip Design | Country or Region | Chip manufacturing | Country or Region |
|---|---|---|---|---|
| 1 | Qualcomm | USA | TSMC | Taiwan, China |
| 2 | Broadcom | USA | Samsung | South Korea |
| 3 | NVIDIA | USA | Semiconductor Manufacturing International | USA |
| 4 | MediaTek | Taiwan, China | UMC | Taiwan, China |
| 5 | AMD | USA | Semiconductor Manufacturing International | Mainland China |
| 6 | Cerebras Systems | USA | Tower Semiconductor | Israel |
| 7 | Marvell Technology Group | USA | Vanguard International Semiconductor | Taiwan, China |
| 8 | Realtek Semiconductor | Taiwan, China | Powerchip Semiconductor | Taiwan, China |
| 9 | MediaTek | Taiwan, China | Hua Hong Semiconductor | Mainland China |
| 10 | Synaptics | USA | Dongbu HiTek | South Korea |

Data source: General Administration of Customs, P.R. China

The Sino-US trade war has strengthened US restrictions on chip exports, forcing China to accelerate the improvement of independent research and development capabilities and production technology levels, strengthen independent innovation and core technology research and development capabilities, and achieve sustainable development of the chip industry chain. In the long run, this will help force China to achieve more independent and independent development in the field of chips.

If you want to develop the chip industry, you must break through the most critical equipment in the chip manufacturing industry (such as lithography machines). At present, ASML (Advanced Semiconductor Material Lithography) in the Netherlands, Nikon in Japan, and Samsung in South Korea almost monopolize the market of medium and high-end global lithography machines, while ASML fully monopolizes high-end extreme ultraviolet lithography machines (EVUs), but under the blockade of the Wassenaar Agreement, ASML's high-end lithography machines are prohibited from being sold to China, and only some backward lithography machines can be sold to China.

## 4. Conclusion

To sum up, the trade conflict between China and the United States has brought huge challenges to China's agriculture and chip industries. China does not have a complete chip research and development capability. China is too relied on imports and still lacks expertise in the chip industry. It quickly fell into a passive situation due to technological monopoly and lack of chip manufacturing

technology. China should gradually develop its chip production capacity in the future to prevent the adverse effects of technological monopoly.

In agriculture, after the United States announced tariffs on 50 billion goods, China imposed 25 percent more tariffs on American agricultural products such as soybeans, which also caused short-term fluctuations in soybean prices. However, China's food is becoming independent, and the output of imported food has been declining since 2015, which also shows that China's dependence on imported food is declining. In the future, whether it is a trade war or other scenarios, China should pay attention to the diversity and autonomy of agriculture, and adopt strategies such as increasing food production to deal with potential risks. In the chip industry, China should take relevant measures to gradually reduce its dependence on foreign chips, such as training high-end talents in the chip field and increasing research funds.

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