

The Influence of Sino-US Trade Friction on U.S. Soybean Export

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Abstract. With the increasingly close trade between China and the United States, a large number of soybeans grown in the United States were exported to the Chinese market, and the trade volume gradually increased. After decades of expansion, Sino-US agricultural trade has entered a competitive situation. And agricultural trade frictions between the two countries have intensified since 2018 when China imposed a 25 percent tariff on soybeans imported from the United States. Taking export volume of U.S. soybean as the research object, through horizontal and longitudinal comparison, supplemented by data analysis, this paper studies the plight of US soybean export caused by the trade war. The consequences of trade frictions include lower incomes for farmers, economic and political deterioration in farm states, loss of market advantage for United States processed soybeans for a short time. In order to alleviate the above difficulties, it is necessary to improve the emergency mechanism, expand the export destination of soybeans, and develop trade with other agricultural products in China, which can also provide reference for export risk control and agricultural product structure improvement.

Keywords: Sino-US trade; Trade frictions; Soybean export.

1. Introduction

With the development of China's economy and the improvement of people's living standards, the intake of protein and oil in families and catering industry continues to increase. In terms of food protein intake, both soybean and soy products showed a spurt growth. Soybeans originated in China and were first grown in the United States in the 19th century. Taking 1996 as the watershed, China's soybean international trade experienced a rapid transformation from a large number of exports to a large number of imports [1]. Since the 1990s, China has gradually transformed from the world's largest soybean producer into an importer, and soybean imports have reached more than 60% of the global total [2]. Meanwhile, the world's largest agricultural exporter is the United States. Soybeans are an important component of U.S. agricultural exports. According to the U.S. Soybean Export Association, soybean exports account for about 17 percent of U.S. agricultural exports, much higher than cotton, wheat and corn.

However, things have changed since 2018, with China's imports of US agricultural products falling significantly. The reason is that in addition to the relatively low prices of agricultural products, China has tried to avoid U.S. products in the face of trade frictions. On April 4, 2018, the Office of the United States Trade Representative released a list of recommended tariffs on Chinese products. On the same day, China announced tariff countermeasures against the United States, deciding to impose a 25% tariff on American goods, including soybean. In the context of the "trade war" between China and the United States, China's purchase demand dropped as well as the US soybean futures. In the face of the changing pattern of global soybean trade, how does China's countermeasures put pressure on U.S. soybean exports? Will the price of soybean processed products go up with it? Do American farmers who receive government subsidies still face declining returns? After the signing of the first stage trade agreement between China and the United States, how is the soybean trade recovering? To answer these questions, the connection between the soybean trade and American politics, as well as the consequences of repeated trade frictions between China and the United States should be considered. These have important practical significance to improve the dependence of the export market of the United States and stabilize the international competitiveness of agriculture.

2. Literature Review

Before agricultural exports, trade controls and barriers must be considered. Trade frictions usually have a massive impact on a country's soybean exports. In such fields, methods and conclusions made by scholars from different countries, especially those from China and the United States, provide a basis for the exploration of other scholars. Most existing literature concentrated in the possible impact of "trade war" and even "decoupling" on international soybean prices, factors affecting contemporary Sino-US agricultural trade, and the competitiveness and potential of American soybean in China and other markets.

2.1 The Complementarity of Sino-US Soybean Trade

Soybean trade is in line with people's needs and market orientation. Chen found that there is a huge difference in total factor productivity between China and America [3]. The United States is far ahead in soybean production per unit area and dominates trade. Wei noted that the United States, Brazil and Argentina have been the main sources of China's soybean imports, and that the three countries have a high market share in China, with a combined market share of more than 90% for a long time. From the soybean import market of the world, China is the largest importer of soybean. Wan and Zheng calculated the market share and trade competition index of American soybean in China, and found that not only the per unit yield of American soybean was always at a high level in the world, but also it had a high competitiveness in China's import market [4]. Cai predicted that from 2019 to 2023, China's domestic soybean production will be in short supply, and the per capita soybean production in the United States is far higher than the world level and continues to grow, resulting in an oversupply of soybeans [5]. The supply and demand of soybeans match between China and the United States.

2.2 Changes in Agricultural Income and Welfare

Trade wars lead to reduced trade volumes and consequent welfare losses. Archana pointed out that the proposed tariff elimination by the US and China on its import from each other would lead to some tariff revenue loss to the government. The effect of tariff policy retaliation would be reflected in a significant reduction in the US and Chinese allocative resources [6]. Liu set the scenario according to the four degrees of decoupling in which the bilateral intermediate goods trade between China and the United States declined. The results showed that compared with the medium-high technology industries such as electrical and computer industries, chemicals and chemical products, agriculture, forestry, animal husbandry and fishery were the most impacted industries in the United States. American agriculture, by contrast, is more broadly affected by trade frictions, but not necessarily permanently [7]. Jiang and Wu analyzed the impact of tariff control policies on soybean trade and geographical distribution, and concluded that the geographical concentration of soybean export trade plummeted while the United States lost the world's largest consumer market, which damaged the interests of producers at the same time [8].

2.3 Impact on Agricultural Price and Cost

Some scholars take the Relative Prices of Substitutes (RPS) approach to estimate the trade disruption caused by China's retaliatory tariffs on world soybean markets [9]. Hakan and Jeff constructed an integrated supply chain model for the US broiler industry, including corn and soybean meal, feed mills, value-added processing, and international trade. They analyzed the impact of Chinese tariffs on corn and soybeans. The analysis shows that feed prices have fallen while supply has increased, which has reduced production costs for breeders and growing farms [10].

2.4 Summary

The above literatures mainly focus on the comparative study of supply and demand. In the long-term dimension, the impact factors of Sino-US trade in agricultural products, especially soybeans, are

also evaluated. However, facing challenges to global integration today, the risks of industrial decoupling are considered by many countries. It is probable to produce imitation effect between different countries, resulting in a large number of substitutable phenomena in the trade of agricultural products and industrial products between economies. It is difficult to consider the real situation of trade frictions affecting Chinese and American industries. Overall, current researches have analyzed the factors involved in American soybean export, which provide ideas for subsequent studies. At the same time, from the background of trade friction, these literatures show how the study of soybean trade can be carried out, so as to provide reference for the targeted research.

3. Influence of Trade Friction on Soybean Export

From the perspective of US soybean export, this part, by using the relevant databases of major soybean import and export countries and the United Nations in recent years, will make clear the changes of Sino-US soybean trade structure since 2018 and analyze the main factors affecting US agricultural product export, to more reliably study the current situation and potential of Sino-US soybean trade.

3.1 China's Soybean Import from Two Major Markets

With the deepening of exchanges between the two major countries and China's accession to the World Trade Organization (WTO) after a long effort, the United States began to conduct multi-field, normalized and market-oriented commodity exchanges with China. For example, China's import tariffs on agricultural products dropped from 22.77 percent in 2001 to 15.2 percent in 2015, enabling a steady flow of American agricultural products to reach the Chinese people's dinner tables. Unconsciously, the trade between the two countries has passed from the honeymoon period to the period of competition and contradiction, and the agricultural products, which occupy an important position in the surplus of Sino-US agricultural trade, will inevitably become the victim of Sino-US trade friction. Trade frictions have virtually halted U.S. soybean exports to China, which has turned to lower-quality but much cheaper Brazilian soybeans (Figure 1). From the end of July 2018 to the end of 2018, less than 500,000 tons of U.S. soybean cargoes were shipped to China. In comparison, nearly 18 million tons of US soybeans were shipped to China between August and November of 2017, which represents a decrease of more than 95% over the same period in 2018.

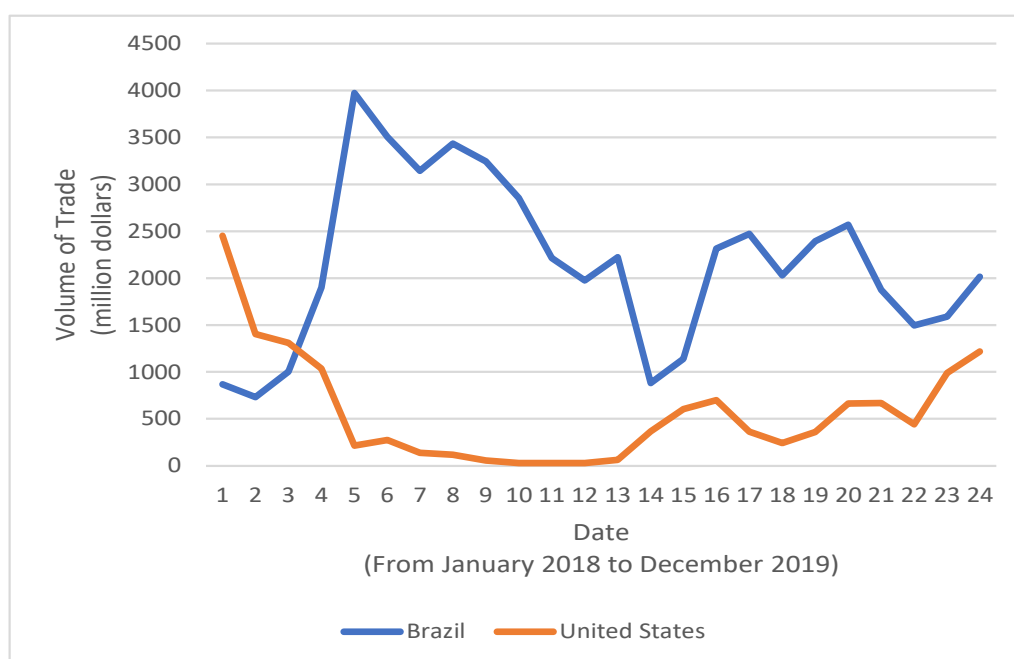


Fig. 1 Comparison of China's soybean import (January 2018—December 2019)

With the easing of trade frictions, soybean exports between China and the United States have recovered to some extent. China and the United States signed the Phase I trade agreement on January 15, 2020. The agreement calls for China to increase its total agricultural purchases from the United States by 52 percent in 2020 compared with 2017. It is true that China is already fulfilling its trade agreement and importing large quantities of American soybeans again. In March 2020, after China essentially eliminated the additional tariffs imposed on soybean imports from the US through tariff exclusion approval, its purchase from the US became more market-oriented. After October 2020, to prevent its economy from suffering, Brazil followed Argentina in imposing export controls on its agricultural products and closing the soymeal export channel, and the United States returned to its position as a major importer of China.

Then, driven by the Phase I Economic and trade Agreement between the United States and China, which expires on 15 January 2022, US soybean trade to China resumed, reaching 32.3 million tons at one point in 2021, 25.0% more than the previous year. But for all of 2021, us soybean supplies to China are extremely tight (Figure 2). Although production was high, domestic crushing was also large and the stock-consumption ratio has decreased.

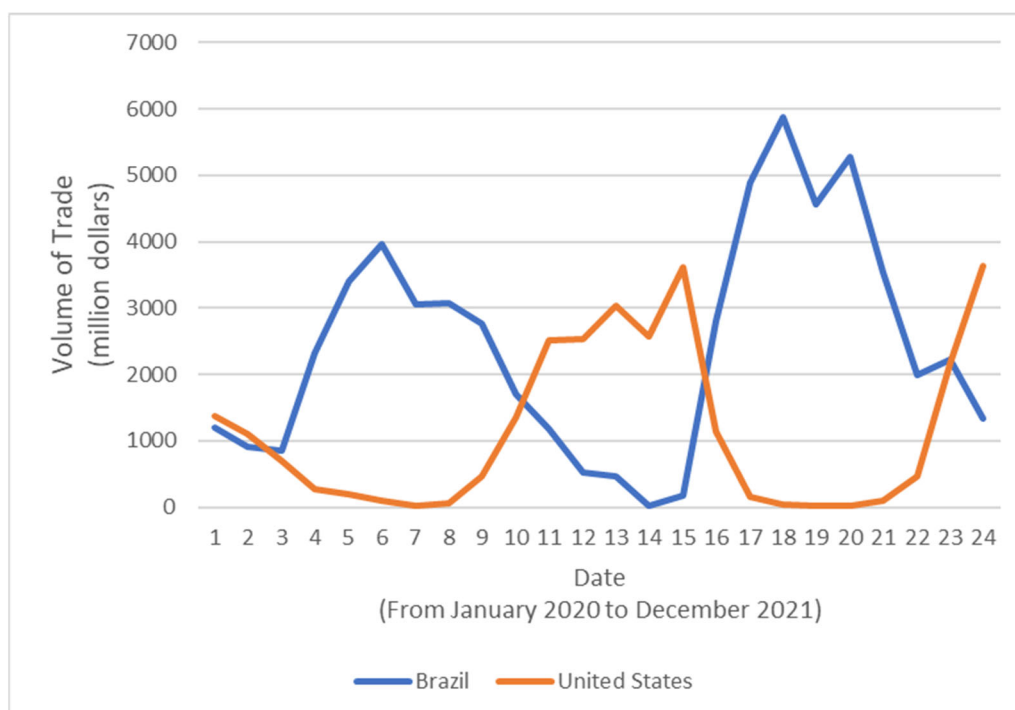


Fig. 2 Comparison of China’s soybean import (January 2020—December 2021)

In 2022, the traditional South American soybean export season, Brazil suffered soybean production due to adverse weather, and the port basis price rose. The competitiveness of South American soybeans was weakened, and the global food crisis spread, leading Chinese buyers to switch to the United States soybeans again. As the Fed’s policy of raising interest rates in 2022 led to heavy selling of US Treasuries, the Chinese consortium bought soybeans to cushion the risk. As a result, American soybeans have regained popularity in the Chinese market. But Asian soybean imports, including China, due to slowing economies, weak soybean meal demand and COVID-19-related restrictions, were falling in 2022 overall (Figure 3). According to the data before August, Brazilian soybeans are still favored by China.

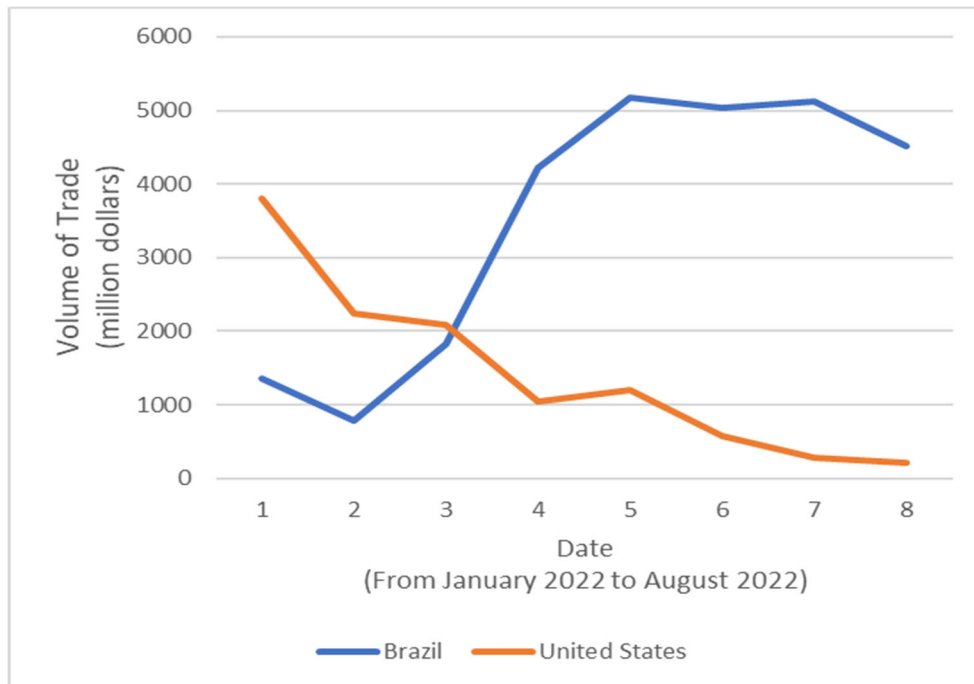


Fig. 3 Comparison of China's soybean import (January 2022—August 2022)

3.2 Reduced Market Share

Over the past decade, China has constituted to be the most important destination for US soybean sales (Figure 4). The total volume of soybean trade is twice that of the next largest country, Mexico. In 2021, for example, China became the largest buyer of U.S. soybeans, about seven times that of the next largest country (Table 1). Farmers who lose the Chinese market are bound to suffer considerable losses.

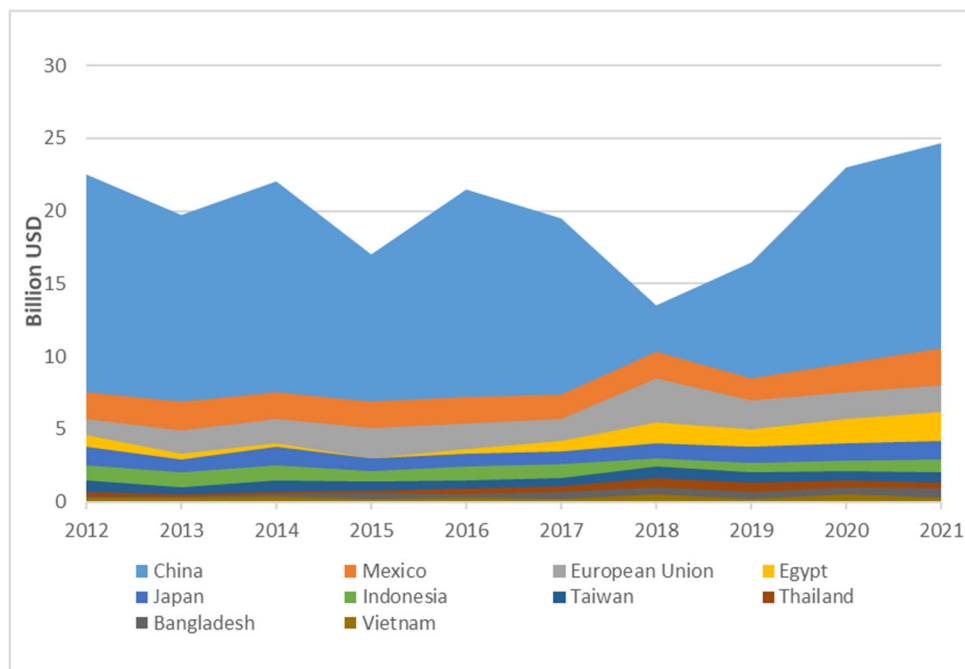


Fig. 4 US Top 10 Soybeans Export Markets (from 2012 to 2021)

While tariff barriers in trade frictions are reflected in price increases, the biggest importer of soybean has turned to another booming source. Tariff control policy has produced significant trade diversion effect. Brazil is also a major source of soybean imports to China, who competes fiercely with the United States for the Chinese soybean market. Abundant supplies of Brazilian soybean,

which are usually cheaper than US soybean, have overtaken the US several times in recent years as the main importer of soybean to the Chinese market. As the trade friction between China and the United States continues, the relative decline of American soybeans. The US has been overtaken by Brazil in terms of acreage and production [11]. Due to trade frictions with the US, China's import of US soybean plunged 27 per cent year-on-year in March 2018, while imports of Brazilian soybean increased by a third, according to the General Administration of Customs of China. American soybean export to China have plummeted and the terms of trade have deteriorated, while Brazilian soybean market share in China has increased rapidly. The elasticity of import side is relatively large, and the impact of tariff control policy on China is relatively small. Therefore, most of the bad effects of tariff are borne by American exporters.

Table 1. Top 10 markets for US soybean in 2021

Numble	Total Value (USD)
China	14.12 Billion
Mexico	2.62 Billion
European Union	2.27 Billion
Egypt	1.42 Billion
Japan	1.35 Billion
Indonesia	1.08 Billion
Taiwan	732.21 Million
Thailand	468.85 Million
Bangladesh	449.09 Million
Vietnam	393.07 Million

3.3 Fallen Income for US Farmer

Although the United States does not have a long history of soybean exports, the United States is the world's largest producer of soybeans, accounting for one-third of the global total. This is because it has the advantage of low input cost and large output per mu. Soybean export accounted for the largest proportion of U.S. agricultural export and became the largest agricultural export of the United States in 2021(Figure 5).

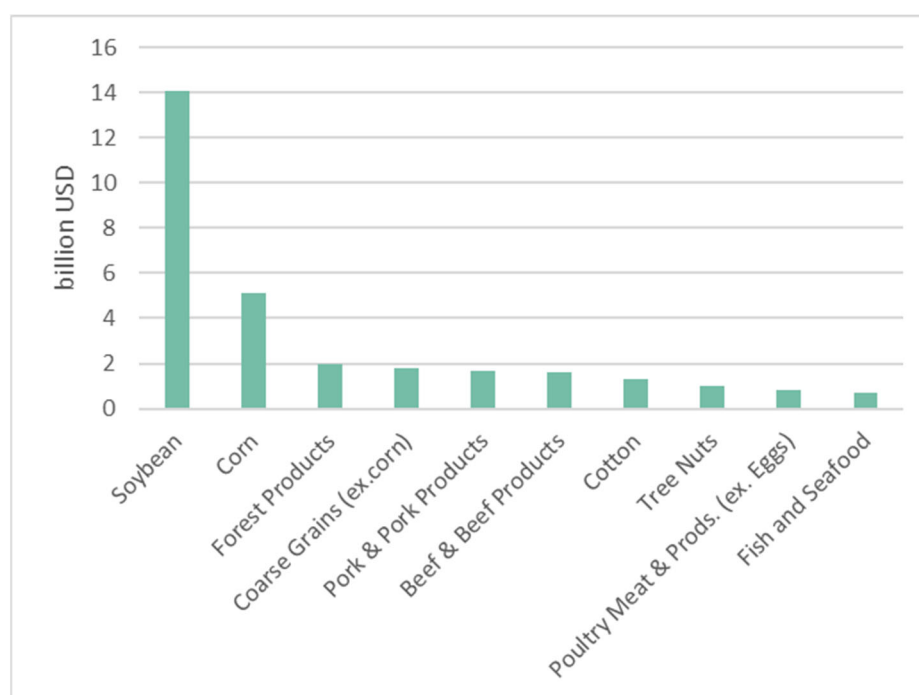


Fig. 5 US Export value by commodity in 2021

It is not difficult to find that low soybean export in 2019 and 2020 dragged down the average of nearly three years. Trade frictions continued for two years. Initially, the tariffs came at a time when the U.S. was planting soybeans in the spring, and the Chinese tariffs on imports of U.S. soybeans discouraged U.S. farmers from planting them. The willingness of U.S. farmers to plant soybeans was further reduced, which will lead to a decline in annual U.S. soybean production, and farmers' income. The addition of American soybean tariff would significantly increase the ending inventory of soybean, reduce the export volume and the purchase of exporters from farmers [12]. The possible inventory overstock will hurt the interest of farmer.

Unlike corn, soybeans are susceptible to moisture and difficult to be kept well. Storage costs, especially better barn locations, are high before export. Trade frictions have brought U.S. soybean exports to China to nearly a halt. With plenty of soybeans suddenly devoid of big buyers, U.S. farmers were opting to store their harvest in hopes of getting a better price next year. The nearly \$8.5 billion in estimated USDA trade assistance to U.S. soybean producers is about \$5.4 billion more than the cost of the tariff.

3.4 Worsening Election Situation in Farm States

Farmers' losses are likely to translate into dissatisfaction with existing policies, and when discontent and agitation spread, it will affect the economic and political processes in their states. China's sanctions on soybean trade can be said to hit the nail on the head and make the US agriculture suffer pain. The Sino-US soybean trade friction occurred during the Trump administration (2016-2020). The \$16 billion subsidies promised by then-President Trump did not go entirely to farmers, but to big grain merchants and barn owners like ADM. Farmers may even have to give in to the fact that they are charging more for storage, the exact opposite of the original Trump campaign. Instead of needing government subsidies, local farmers just want to sell their soybeans.

From 2012 to 2016, the top 10 states of total soybean production in the United States were Illinois, Iowa, Minnesota, Indiana, Nebraska, Missouri, Ohio, North Dakota, South Dakota and Arkansas, accounting for 78.58% of the total soybean production in the United States. In the 2016 election, eight farm states voted for Trump. Farm states are an important constituency for Trump as he seeks re-election in 2020. In Trump's vision, he would try to win over hard-pressed farmers with the trade commitments he negotiated with China. But in mid-2019, the U.S. trade representative team finished consultation in Shanghai with little to show for it. China has announced countermeasures that Chinese companies would suspend purchases of US agricultural products. The federal government has introduced MFP payments to offset tariff retaliation against state economies. Transfers come from taxes, the burden of which affects all citizens, so the financial pressure on major states increases. The political implications of domestic responses to a series of trade frictions are complex, and it is not unusual for some interests to be sacrificed. That set the stage for an election the following year [13].

3.5 Less Dominant Soy Products

Soybean meal is the by-product of soybean pressed into oil. It is the main source of protein for the global feed industry. Thanks to the advantage of science and technology, the U.S. agriculture industry can provide so many affordable soybean products to meet the demand for high-quality protein products. To reduce feed costs, soybean buyers prefer American soybean meal, which is of high quality and cheap. For China, the price of soy products in the international market is far lower than the price of domestic ones. That's why U.S. manufacturers earn foreign exchange from China on processed soybean.

Tariff barriers and trade restrictions will inevitably exclude US products from the preferred options of the Chinese, reducing the advantage of US products. Chinese people are still in the stage of gradually improving the quality of life, and China's protein consumption is in the process of rigid growth. Even if China imposes tariffs on soybean from the US, leading to higher prices for processed goods, it will hardly lead to a significant drop in demand. In this case, Chinese buyers are considering

alternatives to American products. This will directly lead to the U.S. soybean processed goods inventory growth, and lower market quotes.

4. Conclusion and Countermeasure

Trade frictions have a direct impact on soybean import and export. The above analysis shows that Sino-US soybean trade has experienced a significant trough since the 2018 tariffs were imposed. The yield of American soybean has reduced. The price is too high, resulting in low popularity. Increasing competition from other countries especially Brazil, turn the soybean trade into a weak pattern on both the supply and demand sides. Even the first phase of the US-China trade agreement represented the efforts to force an increase in the country's soybean import, those were hampered by the influence of rivals. The international market share of U.S. soybeans has shrunk, as have soybean products. Farmers' income sources and national welfare lessened. The poor agricultural economy is even reflected in the election results. Additionally, cost control is also a challenge. China's retaliatory tariff, and even import suspension, have led to a buildup of U.S. soybean stocks. Farmers pay more for storage and get less profit. Tariffs also affect the rise and fall of soybean products, reducing the competitive advantage of soybean related products.

Instead of being obsessed with the soybean trade, American farmers can respond to such threats by planning more agricultural land and finding marketable alternatives to soybeans. When avoiding the overhang of agricultural products, it is possible to better escape the shadow of trade frictions. Under the global food crisis, soybeans, a cash crop, will be favored with the sell-off of national bonds, the increase of cash and the spread of risk aversion. Farmers and producers are suggested to ensure the harvest of crops and give play to the unique advantages of the country's agricultural modernization, to ensure that soybean exports can meet the unstable market demand. As global financial and commodity markets continue to plunge due to the novel coronavirus pandemic, global economic conditions in 2022 are more fragile than previously thought. The United States, for its part, suggested stabilizing the exchange rate and reducing trade fluctuations. What's more, it is necessary to continue to expand exports to other countries (regions) like Mexico, the European Union, and to fully tap the huge purchasing potential of these regions. Both the U.S. government and U.S. exporters should actively expand their soybean exports and reduce their concentration of trade, which is a wise choice to combat systemic risk.

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