Analysis of Chinese Agricultural Product Trade

Yijun Zhang

Qinghai University, Xining 810000, Qinghai Province, China

Abstract: This paper clarifies the status of Chinese agricultural product trade through the calculation of Chinese agricultural product trade competitive advantage index for a total of 21 years from 1999 to 2019.

Keywords: Agricultural products; Trade status; Trade competitive advantage index

1 Preface

China has now developed into a large agricultural trade country with a high reputation in the world. Through detailed analysis of the comparative advantages of Chinese agricultural product trade, it finds out the existing problems in Chinese agricultural product trade, and proposes strategies to promote the development of Chinese agricultural product trade.

2 Current status of Chinese agricultural trade

Chinese agricultural product trade exhibits the following characteristics under the combined effects of national macro-control, international environment, natural climate and other factors:

Table 1. Status quo of Chinese agricultural trade

Year	Total agricultural imports and exports	Total agricultural exports	Total agricultural imports	Total agricultural trade balance
1999	221.3	138.7	82.6	56.1
2000	268.2	156.2	112.0	44.2
2001	279	160.7	118.3	42.4
2002	305.9	181.4	124.5	56.9
2003	403.6	214.3	189.3	25.0
2004	514.2	233.9	280.3	-46.4
2005	558.3	271.8	286.5	-14.7
2006	630.2	310.3	319.9	-9.6
2007	775.9	409.7	366.2	43.5
2008	985.5	583.3	402.2	181.1
2009	921.4	395.9	525.5	-129.6
2010	1219.6	494.1	725.5	-231.4
2011	1540.4	601.3	939.1	-337.8
2012	1757.7	632.9	1124.8	-491.9
2013	1867	678.3	1188.7	-510.4
2014	1945	719.6	1225.4	-505.8
2015	1875.6	706.8	1168.8	-462
2016	1845.6	729.9	1115.7	-385.8

2017	2013.9	755.3	1258.6	-503.3
2018	2168.1	797.1	1371	-573.9
2019	2300.7	791	1509.7	-718.7

Unit: USD 100 million

Note: Data source "China Statistical Yearbook"

2.1 The overall scale of Chinese agricultural imports and exports is on the rise

Table 1 shows that the total import and export trade of China's agricultural products has increased from 22.13 billion US dollars in 1999 to 230.07 billion US dollars in 2019, an increase of 940%, with annual growth rates of 21.2%, 4.0%, 9.6%, 31.9%, 27.4%, and 8.6%. %, 12.9%, 23.1%, 27.0%, -6.5%, 32.4%, 26.3%, 14.1%, 6.2%, 4.2%, -3.6%, -1.6%, 9.1%, 7.8%, 6.1%; of which 1999 ∼ The growth rates of exports in 2019 were 12.6%, 2.9%, 12.9%, 18.1%, 9.1%, 16.2%, 14.1%, 32.0%, 42.3%, -32.1%, 24.8%, 21.7%, 5.3%, 7.2 %, 6.1%, -1.8%, 3.3%, 3.5%, 5.5%, -0.8%. With the increase in export value year by year, the growth rate of import value of agricultural products has been even more dramatic. From 1999 to 2019, they were 35.6%, 5.6%, 5.2%, 52.1%, 48.1%, 2.2%, 11.7%, 14.5%, and 9.8. %, 30.7%, 38.1%, 29.4%, 19.8%, 5.7%, 3.1%, -4.6%, -4.5%, 12.8%, 9.9%, 10.1%, which are all higher than the total growth of trade volume and total export volume in each year Growth rate.

2.2 Chinese agricultural trade balance is gradually decreasing

Table 1 shows that from the perspective of trade balance, Chinese agricultural trade has gradually reduced from a surplus of $5.61 billion in 1999 to a deficit of $71.87 billion in 2019. In the same period, China's overall product balance was 29.23 billion U.S. dollars in surplus in 1999 and 422.74 billion U.S. dollars in surplus in 2019. The overall trend is that the trade surplus is strengthening. It can be seen that the overall advantage of Chinese agricultural products is weakening, and agricultural products have been hit by higher than industrial impacts since entering the WTO.

2.3 The share of agricultural products trade in Chinese total trade has declined

Although Chinese agricultural product trade has grown rapidly, the share of agricultural product trade in Chinese total foreign trade has shown a declining trend. The proportion of agricultural products trade in China's total trade from 1999 to 2019 was 6.1%, 5.7%, 5.4%, 4.9%, 4.7%, 4.4%, 3.9%, 3.6%, 3.6%, 3.8%, 4.2%, 4.1%, 4.2%, 4.6%, 4.5%, 4.5%, 4.7%, 5.0%, 4.9%, 4.7%, 5.0%, an overall decrease of 1.11 percentage points within 21 years.

3 Discrimination and analysis of the comparative advantage of agricultural products

3.1 Overview of comparative advantage theory

Comparative advantage means that if the opportunity cost of producing a product in a country (measured by other products) is lower than the opportunity cost of producing the product in other countries, then the country has a comparative advantage in producing the product. Compared with other industries, trade in agricultural products is more dependent on resource endowments and their determined comparative advantages. At the same time, the comparative advantage of agricultural products is not static or static, especially when the resource endowment structure changes, the comparative advantage will dynamically evolve over time. Dynamic comparative advantage provides the possibility to avoid falling into the trap of comparative advantage[1]. The traditional comparative advantage theory ignores technological progress and time factors, which damages the broadness and applicability of the theory to a certain extent, making it unable to make a satisfactory explanation for the changes in the contemporary international trade pattern[2]. Therefore, the calculation indicators of agricultural products in this article are all using dynamic comparative advantage indicators, which is also in line with the current trend of increasing emphasis on dynamic comparative advantages.

According to the principle of comparative advantage, the geographical division of labor should abide by the principle: no matter whether its production has absolute advantages or disadvantages compared with other regions, each region should produce products with relative advantages through foreign trade or Domestic trade, import or transfer of products with relative disadvantages can achieve the best regional and national resource allocation efficiency and the largest welfare[3].

3.2 Index selection

A representative indicator of the comparative advantage of

agricultural trade is the Trade Competitive Advantage Index (TC), which is widely used to measure intra-industry trade advantages. It is mainly determined by the ratio of the import and export trade balance of a certain agricultural product to the total trade volume in a certain period of time. The specific formula is:

$$TC=(X-M)/(X+M) \tag{1}$$

In the formula, X is the export value of a certain agricultural product in a certain period, and M is the import value of a certain agricultural product in a certain period. The value range of TC is $-1 \leq TC \leq 1$. When $-1 \leq TC < -0.8$, the industry has a very obvious comparative disadvantage; when $-0.8 \leq TC < -0.5$, the industry has a relatively obvious comparative disadvantage;- When $0.5 \leq TC < 0$, the industry is in an unobvious comparative disadvantage; when $0 \leq TC < 0.5$, the industry is in an unobvious comparative advantage; when $0.5 \leq TC < 0.8$, the industry has a relatively obvious comparative advantage; $0.8 \leq$ When $TC < 1$, the industry has a very obvious comparative advantage.

3.3 Scope of agricultural product research and analysis

The article selects 9 types of agricultural products from 2 representative categories from the Standard International Trade Classification (SITC) for analysis. They are (00) live animals, (01) meat and meat preparations, (02) dairy products and birds' eggs, (03) fish, crustaceans, molluscs and aquatic invertebrates, and preparations thereof, (04) cereals and cereal preparations, (05) vegetables and fruits, (06) sugar, sugar preparations and honey, (07) coffee, tea, cocoa, spices, and manufactures thereof; SITC4 animal and vegetable oils, fats and wax.

3.4 Analysis of discriminant results

According to the selection of the above indicators and the determination of the scope of analysis, the competitive advantage index of Chinese agricultural products trade from 1999 to 2019 is shown in Table 2. From Table 2, the following points can be derived:

Table 2. Competitive advantage index of Chinese agricultural products trade

Year	Live animals	Meat and meat preparations	Dairy products and birds' eggs	Fish, crustaceans, molluscs and aquatic invertebrates, and preparations thereof	Cereals and cereal preparations	Vegetables and fruits	Sugar, sugar preparations and honey	Coffee, tea, cocoa, spices, and manufactures thereof	Animal and vegetable oils, fats and wax
1999	0.711	0.161	0.000	0.376	0.447	0.778	-0.130	0.925	-0.812
2000	0.762	0.083	-0.074	0.304	0.513	0.731	-0.011	0.913	-0.776
2001	0.816	0.169	-0.066	0.321	0.348	0.695	-0.414	0.925	-0.736
2002	0.733	0.029	-0.167	0.295	0.539	0.720	-0.105	0.920	-0.872
2003	0.472	-0.080	-0.225	0.283	0.680	0.708	-0.047	0.915	-0.916
2004	0.201	0.195	-0.313	0.268	-0.268	0.676	-0.143	0.928	-0.927
2005	0.502	0.117	-0.267	0.203	0.141	0.687	-0.038	0.913	-0.842
2006	0.680	0.043	-0.304	0.201	0.234	0.677	-0.144	0.897	-0.819
2007	0.672	-0.350	-0.240	0.160	0.501	0.696	0.076	0.867	-0.917
2008	0.660	-0.488	-0.169	0.174	0.130	0.703	0.230	0.857	-0.896
2009	0.519	-0.381	-0.509	0.308	-0.043	0.588	0.234	0.884	-0.918
2010	0.256	-0.382	-0.663	0.337	-0.283	0.585	0.011	0.834	-0.920
2011	0.205	-0.521	-0.684	0.326	-0.363	0.552	-0.246	0.794	-0.910
2012	0.077	-0.614	-0.718	0.347	-0.672	0.455	-0.336	0.728	-0.917
2013	0.146	-0.714	-0.812	0.353	-0.678	0.465	-0.239	0.795	-0.894
2014	-0.175	-0.664	-0.834	0.363	-0.742	0.408	-0.074	0.755	-0.868
2015	0.043	-0.731	-0.690	0.356	-0.837	0.388	-0.142	0.729	-0.844

2016	0.243	-0.598	-0.856	0.477	-0.656	0.456	0.181	0.379	-0.812
2017	0.214	-0.545	-0.891	0.422	-0.640	0.434	0.203	0.461	-0.809
2018	0.138	-0.593	-0.896	0.288	-0.551	0.325	0.216	0.414	-0.759
2019	0.012	-0.755	-0.913	0.117	-0.468	0.247	0.158	0.368	-0.781

Note: Data source "China Statistical Yearbook"

3.4.1 The competitiveness of Chinese agricultural products is generally declining

The average competitiveness index of Chinese agricultural products from 1999 to 2019 is 0.273, 0.272, 0.229, 0.232, 0.199, 0.069, 0.157, 0.163, 0.163, 0.133, 0.076, -0.025, -0.094, -0.183, -0.175, -0.203, -0.192 , -0.132, -0.128, -0.158,-0.224 shows that the overall comparative advantage is declining. Niu Baojun (1977) studied the comparative advantage of agricultural products trade in the past ten years and concluded that the comparative advantage of the world's agricultural products is a "U"-shaped curve trajectory that first declines and then rises. The reason is that as the process of industrialization continues to intensify, the country's economic policy has gradually shifted from focusing on supporting industry to focusing on supporting agriculture. Therefore, the comparative advantage of agricultural products first declines to a certain level and then rises. It can be seen from this that Chinese agricultural products are in a steady but declining stage.

3.4.2 The competitiveness of Chinese agricultural products

Products with all positive TC values and comparative advantages are (00) live animals, (03) fish, crustaceans, molluscs and aquatic invertebrates, and preparations thereof, (05) vegetables and fruits, (07) coffee, tea, cocoa, spices, and manufactures thereof. 4 major types of agricultural products. It can be seen that China has a comparative advantage in these four products, especially vegetables and fruits have a stable and strong comparative advantage. From the perspective of product advantage, (05) vegetables and fruits, (07) coffee, tea, cocoa, spices, and manufactures thereof, have strong comparative advantages, and the competitiveness of the two agricultural products is gradually strengthening. (03) fish, crustaceans, molluscs and aquatic invertebrates, and preparations thereof have insignificant comparative advantages; (04) cereals and cereal preparations of two agricultural products of cereals and products are declining. The advantages of (00) live animals have changed significantly. The obvious advantage in 2014 decreased, and the significant advantage in 2014 and 2015 decreased and increased.

The products with comparatively negative TC values are (02) dairy products and birds' eggs, which have insignificant comparative disadvantages; (06) sugar, sugar preparations and honey have insignificant comparative disadvantages and fluctuate development; SITC4 animal and vegetable oils, fats and wax have Stronger than disadvantaged.

The agricultural products with positive and negative TC values are (01) meat and meat preparations, and (04) cereals and cereal preparations. Except for the comparative advantage of (01) meat and meat preparations that turned from advantage to disadvantage in 2003, the remaining years showed insignificant comparative advantages; (04) Cereals and cereal preparations showed a strong increase in comparative advantage before 2003. But cereals were at a disadvantage in 2004.

3.4.3 Chinese agricultural products are measured in terms of intensity

The advantages of labor-intensive products have increased, while the advantages of land-intensive products have decreased. According to data from the United Nations COMTRADE database, agricultural products that are land-intensive include (02) dairy products and birds' eggs, (04) cereals and cereal preparations, (06) sugar,sugar preparations and honey, and SITC4 animal and vegetable oils, fats and wax. The labor-intensive products include (05) vegetables and fruits, (07) coffee, tea, cocoa, spices, and manufactures thereof.

Chinese products with obvious comparative advantages are labor-intensive products and their advantages are on the rise, while Chinese land-intensive products show comparative disadvantages and their disadvantages are increasing.

3 Conclusion

Through the calculation and analysis of the comparative advantage index of agricultural products trade, the following conclusions are drawn:

3.1 Advantages of Chinese agricultural product trade.

In Chinese agricultural product trade, the advantageous trade products are mostly labor-intensive products, and the inferior products are mostly land-intensive products;

3.2 The overall competitiveness of Chinese agricultural products is weakening, and the comparative advantages of labor-intensive products are increasing, but the increase is lower than the increasing disadvantages of land-intensive products.

3.3 The overall scale of Chinese agricultural trade is expanding, but at the same time the trade balance has turned from a surplus to a deficit.

In the agricultural product trade, a large number of imported products are land-intensive products and exported are labor-intensive products.

4 Policy recommendations

4.1 For agricultural products that already have comparative advantages, gradually open their degrees of freedom, and let the market stimulate the enthusiasm of farmers and expand their output.

Specific measures: It can reduce the middle chain from farmers to the market, realize the two-way transparency of information from the market to the farmers, and let the market directly guide the farmers' planting behavior.

4.2 For agricultural products that do not have comparative advantages, the main point of attention is to improve the quality of agricultural products.

The government subsidies will stimulate the enthusiasm of farmers and reduce the level of disadvantages. The government can take appropriate subsidies within the scope of the "green box" and "yellow box" permitted by the WTO to stimulate farmers' production and reduce farmers' market risks. In agricultural research and selection of fine varieties, such products should emphasize the advantages of quality.

4.3 The main actors of agricultural products are farmers.

In addition to policy guidance, farmers should also cultivate their ability to participate in the market and respond to the market. Such as: encourage farmers to conduct one-stop production and marketing, improve farmers' information processing and analysis capabilities, and speed up the construction of rural industry organizations such as rural cooperative organizations, agricultural product export associations, agricultural product insurance organizations, etc.

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