The Causes of Agricultural Trade Growth between China and Central Asia under the Background of "the Belt and Road" -- An Empirical Analysis Based on CMS Model

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Abstract: Central Asia is rich in land, solar and thermal resources, as well as its agricultural labor force. It has superior conditions for agricultural production, which has strong complementarity with China in the agricultural field. Under the current complex international economic and political situation, strengthening cooperation between the two sides in the agricultural field can achieve win-win cooperation, which is also conducive to reversing the situation that developed countries restrict China's agricultural trade. The constant market share model (CMS) is used in this paper to empirical analyze the causes of agricultural trade growth between China and Central Asia from 1995 to 2021 based on UN COMTRADE data. The results show that the interaction between the promotion of the import scale of agricultural products and the improvement of its competitiveness is the main reason for the growth of agricultural exports of both sides; For classified agricultural products, the factors affecting the growth of export volume are different. The main factors restricting export volume growth of China and Central Asia are insufficient competitiveness and unreasonable export commodity structure respectively. In the new era, both sides should strengthen communication and cooperation, adjust the export structure of agricultural products and stabilize the competitiveness of it to further improve trade volume growth.

Keywords: China; Central Asia, agriculture products, trade growth, CMS.

1. Introduction

Central Asia refers to a region with a high degree of political and cultural commonality gradually formed by the five independent countries of Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan and Turkmenistan after the collapse of the Soviet Union. The geostrategic position of Central Asia is very important. It is located in the center of the Eurasian continent and at the junction of Russia, China, India and other major countries. It has always been a necessary place to go anywhere in Eurasian continent. Central Asia is rich in agricultural natural resources. Agriculture plays an important role in its national economy, mainly dominated by planting and animal husbandry. It is also an important cotton producing area in the world. While China has abundant labor force, agricultural technology management and capital advantages, which indicates that the two sides complement each other well in this agricultural sector [1]. Cooperation in agricultural trade between China and Central Asia has a long history, while it has entered a new era full of opportunities since 2000: one is that the

establishment of the Shanghai Cooperation Organization takes agriculture as the priority direction and major field of economic cooperation, which has built a good and in-depth platform for agricultural trade cooperation; The second is the establishment of strategic partnership. Central Asia has become the only region where China has established strategic partnership with all countries in the region, adding stability and predictability to agricultural trade cooperation; The third is the proposal of the "the Belt and Road" initiative, whose development takes central Asia as the core area, radiating its peripheral area and providing a broad development space for agricultural trade cooperation. With a good historical foundation and development opportunities, the agricultural trade relationship between China and Central Asian has ushered in a new stage of development. Cooperation between the two parties is still being deepened in trade, investment, and production capacity of agriculture. They are committed to building a China-Asia community of shared future. The growth potential of agricultural trade between two parties is growing.

At the same time, our world is shrouded in the shadow of the COVID-19, the sluggish global economic recovery, the complicated geopolitics, and the contentious global trade environment have all presented difficulties to the growth of China's agricultural commerce. As a traditional leading industry in agriculture, Central Asia is rich in land, solar and thermal resources, as well as sufficient agricultural labor force, it has the superior conditions for agricultural production. It is entirely possible to strengthen agricultural cooperation, and use the Central Asian market to reverse the situation that developed countries restrict China's agricultural trade, which will also improve the long-term deficit of China's agricultural trade in the international market. Therefore, a correct understanding of the growth of two parties and the causes of it is of great significance to further increase trade volume in agricultural products and the improvement of "the Belt and Road" initiative.

2. Literature Review

The research results on the agricultural trade between China and Central Asia are rich, while they mainly focuses on three aspects: first, the evaluation and calculation of the current trade situation, such as Qi Xiaohui and Liu Yi [2], Ding Cunzhen and Xiao Haifeng [3] used Trade Intensity Index, Product Similarity Index, GL Index and other indicators to comprehensively measure the current trade situation, which shows that the agricultural trade between China and Central Asia is highly complementary and less competitive. The level of intra industry trade is low. In addition, Yang Lihua [4] and others used the TC index to calculate the competitiveness of agricultural products between China and Central Asia, and came to the conclusion that the overall competitiveness of agricultural products between two sides is high, but the competitiveness of classified agricultural products is quite different. Yan Lu et al. [5] analyzed the export quality of China's agricultural products to Central Asian with reference to the quality level indicators constructed by predecessors. The research showed that the export quality was constantly improving, and that it was much greater for agricultural items that required more land to produce than those that required more labor.

The second is the analysis of the drivers of trade fluctuations. For example, Gong Xinshu and Zhang Xiaoqian [6] believe that from 2001 to 2012 the growth of China's agricultural exports to Central Asia mainly depends on the expansion of the import scale of the Central Asian market through the decomposition of the CMS model. Wei Wei and Yu Zichao [7] calculated the bilateral trade volume from 2005 to 2019 through the CMS model, and believed that the main influencing factors of China's export fluctuations had changed from structural effects to competitive effects, and China's agricultural export competitiveness should be actively improved. Shaoshuai and buwajian Abra [8] used the same method to further verify that there are obvious differences in the factors affecting China's export growth to Central Asia for different types of agricultural products. Zhu Jing et al. [9] used binary marginal decomposition to conclude that the instability of China's export growth of agricultural products to Central Asia mainly stems from the intensive marginal part of export growth.

Some scholars also use the ternary marginal decomposition method for research: Yang Fengmin and Ding Jianjiang [10] have studied that the growth of China's agricultural exports is mainly realized along the price margin. In terms of China's agricultural imports to Central Asia, Ge Tao and Li Jinye [11] have studied that their growth is mainly realized along the expansion margin.

The third is the analysis of trade potential and export efficiency. Tanjingrong et al. [12] calculated that the agricultural trade between two parties have great potential by using the gravity model. However, this method ignores non-efficiency terms such as trade friction, which only yields the average value of trade potential. Lu Xiaoying and others [13] further used the stochastic frontier approach (SFA) to measure trade potential and export efficiency, which shows that China's agricultural export efficiency to Central Asia is constantly improving at any time, but it is still at a low level among all the countries in "the Belt and Road" initiative, which also means that the trade potential is still great.

The existing papers have done a lot of research on the agricultural trade between two parties, they mainly focus on the measurement of the characteristics of agricultural trade and trade potential, while papers analyzing the trade growth, both total trade growth and classified trade growth, are insufficient and most of them are in a certain but single perspective, which is China's agricultural exports to Central Asia. The research using CMS model only focuses on China's export fluctuations to Central Asia instead of both export and import perspective. In the meantime, whether the COVID-19 has an impact on the growth of agricultural trade also needs to be studied urgently. Therefore, on the basis of summarizing the development and changes of agricultural trade between two parties, this paper focuses on using CMS model to calculate the causes of the total and classified growth of agricultural products trade between two parties, aiming to discuss the challenges faced by it in the future.

3. Research Methods and Data Description

3.1. CMS Model

The constant market share model (CMS model for short) was originally built by Tyszynski [14] when studying the trade of industrial manufactured goods. After continuous modification and improvement with Jepma (1986) and Milana [15], it has become an important method to study the fluctuation factors of foreign trade. With the increasingly mature application of this model, domestic scholars have been widely used in the study of export competitiveness of agricultural products, import and export trade fluctuations and the causes of trade deficit. The CMS model assumes that "as time changes, a country's share in the world market will remain unchanged", so the difference between a country's actual exports and exports that maintain the original market share is decomposed into three factors: growth effect, structural effect (including market effect and commodity effect) and competition effect (including overall competition effect and specific competition effect). Because this paper studies the growth of bilateral agricultural trade between China and Central Asia, that is, only focusing on the single import source market, the growth of bilateral trade between two parties is simplified into three factors: growth effect, commodity effect and competition effect (including overall competition effect and specific competition effect). Referring to domestic scholars (Wang taixiang et al. [16], 2014, Wang Ruyu et al. [17], 2022), the decomposition form of the constant market share model is as follows:

First-level decomposition:

$$\Delta q = \underbrace{\sum_i S_i^0 \, \Delta Q_i}_{\substack{\text{structural} \\ \text{effect}}} + \underbrace{\sum_i \Delta S_i \, Q_i^0}_{\substack{\text{competitive} \\ \text{effect}}} + \underbrace{\sum_i \Delta S_i \, \Delta Q_i}_{\substack{\text{second-order} \\ \text{effect}}} \tag{1}$$

Second-level decomposition:

$$\Delta q = S^0 \Delta Q + \left(\sum_i S_i^0 \Delta Q_i - S^0 \Delta Q\right) + \Delta S Q^0 + \left(\sum_i \Delta S_i Q_i^0 - \Delta S Q^O\right) + \left(\frac{Q^t}{Q^0} - 1\right) \sum_i \Delta S_i Q_i^0 +$$

<div style="text-align:center">growth effect   commodity effect   overall competitive effect   specific competitive effect   pure second-order effect</div>

$$\left\{ \sum_i \Delta S_i \Delta Q_i - \left(\frac{Q^t}{Q^0} - 1\right) \sum_i \Delta S_i Q_i^0 \right\} \tag{2}$$

dynamic residual effect

Where: q represents the export volume of agricultural products from China (Central Asia) to Central Asia (China); Q represents the world's total agricultural exports to Central Asia (China); Q_i represents the world's total export of class i agricultural products to Central Asia (China); S represents the share of China's (Central Asia) agricultural exports to Central Asia (China) in the world's total agricultural exports to Central Asia (China); S_i represents the share of China (Central Asia) to Central Asia (China) class i agricultural exports in the world's total exports of such agricultural products to Central Asia (China); Δ represents the change between two stages; Superscript 0 represents the beginning year; Superscript t represents the ending year; The subscript i represents the category of agricultural products.

Among them, in the second level of decomposition, the growth effect refers to the increase of China's agricultural exports to Central Asia (Central Asia to China) due to the expansion of Central Asia (China) agricultural imports; Commodity effect refers to the change of export volume caused by the change of export product structure of China (Central Asia); The overall competitive effect refers to the change of export volume caused by the change of the overall competitiveness of agricultural products in China (Central Asia); Specific competitive effect refers to the change in export volume caused by the change in the competitiveness of specific agricultural products exported by China (Central Asia); Pure second-order effect means the change of export volume caused by the interaction between the change of export competitiveness of China (Central Asia) and the change of import scale of Central Asia (China); Dynamic residual effect refers to the change of export volume caused by the interaction between the change of export competitiveness of China (Central Asia) and the change of demand structure of agricultural products in Central Asia (China) [17].
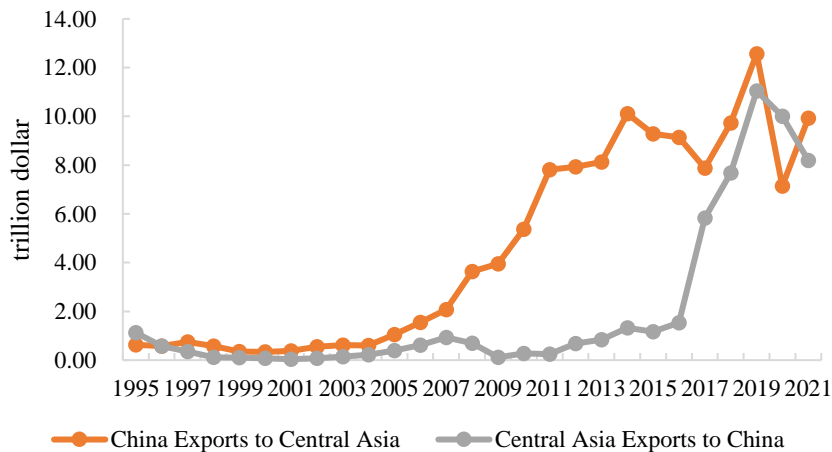
Data source: obtained according to the UN Comtrade database collation

Figure 1: Changes in agricultural trade volume between China and Central Asia.

3.2. Data Source and Processing

Considering that the classification of agricultural products is basically based on HS code and SITC code, and HS code is issued for service trade statistics and tax management, which is more trade oriented and widely used [1], with reference to Ding Cunzhen and Xiao Haifeng (2019) [18], the scope of agricultural products is determined by hs1992 code, and agricultural products are divided into animal products (Chapter hs01-05), fruit and vegetable products (Chapter hs06-15) Food products (Chapter hs16-24) and textile products (Chapter hs50-53). The agricultural export trade data of China, Central Asia and the world from 1995 to 2021 required by the study are all from the UN COMTRADE database established by the United Nations Statistical Office.

As shown in Figure 1(above), the changes of agricultural trade volume between two parties do show some stage differences. Combined with the graphic law of trade volume changes, we need to pay attention to important events which are closely related to the trade between two parties: the Asian financial crisis in 1997, China's accession to the WTO and the establishment of the Shanghai Cooperation Organization in 2001, the global financial crisis in 2008, the proposal of "the Belt and Road" initiative in 2013, and the outbreak of COVID-19. Then we divide 27 years into four stages: the post crisis export recession period from 1995 to 2001, the annual average growth rates of China's and Central Asia's exports to each other were -7.98% and -43.23% respectively; During the period of high-speed export growth after China's accession to the WTO and the establishment of SCO from 2001 to 2008, the annual average growth rates of China's and Central Asia's exports to each other were 38.06% and 51.86% respectively; In the period of slow export growth after the financial crisis from 2008 to 2013, the annual average growth rates of China's and Central Asia's exports to each other were 17.44% and 3.56% respectively; In the period of uneven export growth after the "the Belt and Road" initiative was put forward from 2013 to 2019, the annual average growth rates of China's and Central Asia's exports to each other were 7.53% and 53.79% respectively; During the post epidemic export reduction period from 2019 to 2021, the annual average growth rates of China's and Central Asia's exports to each other were -11.12% and -13.86% respectively.

4. Empirical Analysis

4.1. Analysis of the Growth of Total Agricultural Products Trade between China and Central Asia

Exports from China to Central Asia. In 2021, exports from China to Central Asia increased by $931 million compared with 1995. This growth was mainly contributed by the second-order effect, that is, the export volume increased due to the interaction between the import scale and structural changes of agricultural products in Central Asia and the export competitiveness of China's agricultural products, indicating that the types of goods imported by the Central Asian market and the types of goods exported by China have a large matching degree, which mainly affects the change of trade volume. Among them, the impact of the pure second-order effect is greater. The change of import scale in Central Asia and the change of China's export competitiveness affect each other, increasing China's export volume by $349 million, accounting for 37.55%.

In terms of stages, exports from China to Central Asia increased steadily in the middle three stages, except for the first and fourth stages, which were affected by the Asian financial crisis and the global COVID-19 respectively. From 2001 to 2019, the growth of exports was mainly driven by structural effects, in which the growth effect has been positive, but the proportion has gradually decreased, while the commodity effect has changed from negative to positive, and the proportion has gradually increased, indicating that the expansion of the import scale of Central Asian countries has always been a positive driver for exports from China to Central Asia, but the types of agricultural products

exported by China in the early stage of China's accession to the WTO do not quite match the types of commodities that expand rapidly in the import demand of Central Asian countries, Thus, the commodity effect is negative, which hinders the growth of exports from China to Central Asia. With China's WTO membership progressing and "the Belt and Road" initiative being proposed , China's openness has also deepened, and the structure of export commodities has been adjusted to meet the types of commodities with rapid growth in Central Asia's import demand. The deepening of the degree of fit has gradually made the commodity effect exceed the growth effect, making a greater contribution to the increase of exports in China. At the end of 2019, the COVID-19 broke out. Although the adjusted and reasonable commodity structure still drove the export growth by $89 million, the sharp decline in import demand in Central Asian countries made the overall structural effect negative, compared with the positive competitive effect, which significantly hindered the decline of export in China's agricultural .

In terms of competitive effect, the competitiveness of China's agricultural products has been significantly enhanced. The overall competitive effect from the first stage hindered the increase of China's exports to the fourth stage significantly boosted exports, indicating that the establishment of the SCO and other policies have played a positive role and enhanced the competitiveness of China's overall agricultural products. However, the continuous decline in the competitiveness of specific commodities has increasingly become an adverse factor impeding the increase of China's exports. After the outbreak of the COVID-19, thanks to the active domestic prevention and control policies, the overall competitiveness of China's agricultural exports increased instead of decreased, and its impact on exports exceeded the structural effect, becoming the main influencing factor of China's export trade fluctuations to Central Asia in the new era.

Exports from Central Asia to China. In 2021, the export volume of agricultural products from Central Asia to China increased by $707 million compared with 1995. This growth was mainly due to the pure second-order effect, that is, the change of China's import scale and the interaction of Central Asia's export competitiveness, which increased the export volume of Central Asia by 2.479 billion US dollars, accounting for 350.47%, significantly boosting exports. At the same time, the dynamic residual effect presents an equally strong blocking effect on the export of agricultural products in Central Asia, that is, the interaction between the structural change of China's import commodities and the competitiveness of Central Asia hinders the export of agricultural products in Central Asia. The combined growth effect is significantly positive, the commodity effect is negative, and the specific competitive effect should be positive, indicating that the strong competitiveness of specific commodities in Central Asia drives the increase of their export volume, and on this basis, it interacts with the significant increase of China's import scale, It has become the main reason for the growth of Central Asia's agricultural exports, and it also shows that the structure of Central Asia's export commodities does not match the types of commodities that expand rapidly in China's import demand, which greatly hinders the growth of Central Asia's agricultural exports. In terms of stages, the commodity effect has also been an adverse factor hindering the export of agricultural products in Central Asia, showing the characteristics of a gradual decline in the matching degree of import and export commodities.

In terms of competitive effect, on the whole, the changes in overall competitiveness of Central Asia are hindering their exports growth. The overall competitive effect of agricultural products in Central Asia at different stages shows the characteristics of stimulating and hindering exports alternately: under the stable international economic situation and the stimulation of relevant international policies, for example, in the second and fourth stages, due to the stable price of domestic productive material and favorable policies, the overall competitiveness is strong, and the competitiveness of specific commodities is stable and strong, driving the growth of exports; When the international economy fluctuates, such as the first, third and fifth stages, other commodities other

Table 1: Analysis of agricultural exports from China to Central Asia based on CMS model ($100 million, %)

metric	1995-2021		1995-2001		2001-2008		2008-2013		2013-2019		2019-2021	
	volume	share	volume	share	volume	share	volume	share	volume	share	volume	Share
China exports agricultural products to Central Asia												
Actual export growth	9.31	100.00	-0.25	100.00	3.26	100.00	4.49	100.00	4.44	100.00	-2.64	100.00
Structural effects	1.94	20.88	-0.17	68.24	1.60	49.07	3.71	82.51	3.41	76.79	-5.57	210.97
Growth effect	1.98	21.29	-0.07	28.29	1.65	50.67	2.10	46.79	1.16	26.12	-6.46	244.58
Commodity effect	-0.04	-0.41	-0.10	39.95	-0.05	-1.60	1.60	35.72	2.25	50.66	0.89	-33.62
competitive effects	1.11	11.88	-0.18	71.47	0.26	8.01	0.35	7.82	0.60	13.42	7.05	-267.00
Overall competitive effect	1.76	18.92	-0.20	80.68	0.30	9.24	1.51	33.73	2.87	64.65	7.85	-297.24
Specific competitive effect	-0.66	-7.04	0.02	-9.21	-0.04	-1.24	-1.16	-25.90	-2.28	-51.23	-0.80	30.24
second-order effects	6.26	67.24	0.10	-39.71	1.40	42.92	0.43	9.66	0.43	9.79	-4.12	156.04
Pure second-order effect	3.49	37.55	0.02	-7.94	1.13	34.72	0.20	4.52	0.09	1.92	-3.62	137.13
Dynamic residual effect	2.76	29.69	0.08	-31.76	0.27	8.20	0.23	5.15	0.35	7.88	-0.50	18.91
metric												
Central Asia exports agricultural products to China												
Actual export growth	7.07	100.00	-1.09	100.00	0.66	100.00	0.13	100.00	10.21	100.00	-2.85	100.00
Structural effects	2.90	41.03	-0.01	0.56	0.09	14.28	0.66	489.32	0.08	0.75	-1.26	44.33
Growth effect	9.37	132.46	-0.02	1.53	0.09	13.56	0.87	650.17	0.22	2.12	-0.12	4.30
Commodity effect	-6.47	-91.44	0.01	-0.97	0.00	0.71	-0.22	-160.85	-0.14	-1.37	-1.14	40.03
competitive effects	2.98	42.09	-1.09	99.93	0.34	51.36	-0.31	-233.86	13.36	130.86	-0.74	26.06
Overall competitive effect	-0.25	-3.48	-1.09	99.95	0.17	25.49	-0.33	-245.42	7.94	77.70	-2.76	96.77
Specific competitive effect	3.22	45.57	0.00	-0.02	0.17	25.86	0.02	11.56	5.43	53.16	2.02	-70.72
second-order effects	1.19	16.89	0.01	-0.49	0.23	34.37	-0.21	-155.46	-3.23	-31.62	-0.84	29.61
Pure second-order effect	24.79	350.47	0.02	-1.48	0.81	122.77	-0.39	-290.39	3.47	33.98	0.01	-0.29
Dynamic residual effect	-23.59	-333.58	-0.01	0.99	-0.59	-88.41	0.18	134.93	-6.70	-65.59	-0.85	29.90

than specific commodities lose their comparative advantages, and the overall competitiveness of Central Asia declines, hindering exports.

4.2. Analysis of the Growth of Classified Agricultural Products Trade between China and Central Asia.

Exports from China to Central Asia. Animal products are agricultural products exported from China to Central Asia with the least increase in export volume, with an increase of only $9 million in 2021 compared with 1995. The main factor causing the growth is the increase in the import scale of agricultural products in Central Asia, with a growth effect contribution of 144%. From 2001 to 2008, the export volume increased by $56 million. China's opening-up has been deepening since China's accession to WTO. The enhanced competitiveness of such products interacted with the increased import demand in Central Asia to jointly drive export growth. From 2008 to 2013, the export volume continued to increase, the import demand of agricultural products in Central Asia increased, and this product became a commodity with rapid growth in its import demand, driving the export volume to increase by $34 million. During this period, the competitiveness of such products in China declined, which has begun to hinder the increase of export volume. From 2013 to 2019, the export volume decreased by $76 million. The overall competitiveness of such products in China has further decreased in comparison to other nations along "the Belt and Road", and the competitive effect hindered exports, accounting for 97%. From 2019 to 2021, mainly driven by dynamic second-order effects, the export volume decreased by $5 million.

Fruit and vegetable products are the category with the largest increase in the export volume of China's agricultural products to Central Asia, with an increase of $431million in 2021 compared with 1995. The import scale of such products in Central Asia has increased, and China has improved its export structure and concentrated on exporting such products. The above interaction with the enhancement of the competitiveness of such products in China has made the second-order effect the main reason for the increase in export volume. From 1995 to 2019, the import demand of agricultural products in Central Asia continued to increase, and China's export structure was more concentrated on such agricultural products, making the structural effect the main factor driving the growth of exports during this period. From 2019 to 2021, although the reduction of the import scale of agricultural products in Central Asia has become the main cause for the decline of China's export volume, such products are still products with relatively concentrated exports in China, and the contribution of commodity effect to the decline of export volume is -176%. In terms of competitiveness, except for the decline in the competitiveness of such products from 2008 to 2013, which hindered the increase of export volume, the competitive effect in the rest of the period was relatively stable, driving the growth of export volume, and the contribution was stable at about 13%. During the epidemic period, the export volume increased by $120million, which became the main factor hindering the decline of export volume.

Food products increased by $90 million in 2021 compared with 1995. The increase in the import scale of Central Asia and the enhancement of the competitiveness of China's export products are the main reasons for the increase in export volume. From 1995 to 2013, the structural effect was the main factor affecting the growth or decrease of export volume. Before China's accession to the WTO, China's export volume of such products decreased. The main reason was that the import scale of Central Asia was small and such products were not the products with relatively concentrated exports of China; After China's accession to the WTO, the increase in exports of such products is also due to the above two reasons. In terms of competitiveness, from 1995 to 2013, the competitive effect reduced the export volume, indicating that the competitiveness of such products in China was low during this period, weakening the pulling effect of structural effect on the export volume. After 2013, compared with other countries along the "the Belt and Road", such products in China have strong

competitiveness, which has become the main factor affecting the change of export volume. During the epidemic, the export volume of Labrador increased by $217 million.

Textile products have always been the main trade products between two parties. Exports from China to Central Asia in 2021 increased by $401 million compared with 1995. The increase in the import scale of such products in Central Asia and the strong competitiveness of such agricultural products in China are the main reasons for the increase in exports. In addition to the second stage, the change of import demand in Central Asia is the main factor affecting the export volume, and the contribution is stable at about 85%. In terms of competitiveness, before China's entry into the WTO, the low competitiveness of such products in China reduced the export volume. After China's entry into the WTO, the competitiveness increased slightly. From 2001 to 2013, the export volume increased positively, but the contribution became smaller and smaller. After 2013, the competitiveness further decreased, which had a negative impact on the export volume.

Exports from Central Asia to China. Animal products are the commodities with the least increase in exports from Central Asia to China, with an increase of $100 million in 2021 compared with 1995, and the growth of exports is mainly after 2013. The main reason is the increase in China's agricultural imports, and the adjustment of export agencies in Central Asia is just in line with this increase in demand, resulting in the structural effect driving central Asian exports increased by $624 million. From 1995 to 2013, the increase in China's import of agricultural products was the main cause for the increase in Central Asian exports. The second-order effect from 2013-2019 became the main cause for the increase in exports. In terms of competitiveness, before China's accession to the WTO, the competitiveness of such products in Central Asia was low, driving down the export volume, after China's entry into WTO, its competitiveness has gradually increased, steadily driving the increase of exports. 2019-2021, the outbreak of higher production prices and other factors reduce the competitiveness of such products, competitive effect become the main factors affecting exports decline, contribution to 96%.

The export of fruit and vegetable products from Central Asia to China in 2021 increased by $125million compared with 1995. The increase of China's agricultural product import scale is the main reason for the increase of export volume. At the beginning of China's accession to the WTO, the opening of China's market gradually deepened, and the rapid increase in the scale of China's imported agricultural products became the main reason to drive the export volume of Central Asia, and then the impact became smaller and smaller; The competitiveness of agricultural products in Central Asia has become the main factor affecting the export volume in the late stage of China's entry into WTO.

The export of food products from Central Asia to China increased by $15 million in 2021 compared with 1995. The interaction between the increase of the import scale of China's agricultural products and the enhancement of the competitiveness of such products in Central Asia makes the pure second-order effect drive the export of $115 million, which has become the main reason affecting the export volume. In terms of competitiveness, the competitive effect of such products in Central Asia has changed from negative to positive, and the greater the contribution to the growth of export volume, which has become the main factor affecting the change of export volume since 2013. During the epidemic, the competitive effect reduced the export volume by 90%. The commodity effect has been negative, indicating that such products exported by Central Asia to China are not agricultural products with rapid growth in China's demand, which hinders the growth of Central Asia's export volume, and the degree of obstruction is gradually deepening.

Textile products are the commodities with the largest increase in exports from Central Asia to China, with an increase of $557 million in 2021 compared with 1995. The competitiveness of such products in Central Asia is strong, and the competitive effect has been the main factor affecting the export volume in various periods. During the epidemic period, the textile products exported by

Central Asia to China increased instead of decreased, of which the competitive effect drove the export volume to increase by \$254 million, making a great contribution to the export volume growth.

Table 2: Analysis of China-Central Asian Classified Agricultural Products Trade Growth in 1995-2021 ($100 million, %)

metric	C to CA		CA to C		C to CA		CA to C	
	volume	share	volume	share	volume	share	volume	share
	Animal products				**Fruit and vegetable products**			
Actual export growth	0.09	100.00	0.10	100.00	4.31	100.00	1.25	100.00
Structural effects	0.11	127.32	6.24	5995.71	1.49	34.43	0.30	23.95
Growth effect	0.13	144.64	1.74	1676.06	0.25	5.77	2.06	164.91
Commodity effect	-0.02	-17.32	4.50	4319.65	1.24	28.66	-1.76	-140.97
competition effects	0.00	1.70	0.00	-0.72	0.12	2.81	-0.09	-7.32
Overall competition effect	0.00	-3.51	0.00	-1.97	0.78	18.05	-0.06	-5.00
Specific competition effect	0.00	5.21	0.00	1.24	-0.66	-15.25	-0.03	-2.32
second-order effects	-0.03	-29.02	-6.13	-5894.98	2.71	62.76	1.04	83.37
Pure second order effect	0.02	19.96	-0.60	-579.25	0.51	11.85	-1.09	-87.65
Dynamic residual effect	-0.04	-48.98	-5.53	-5315.73	2.20	50.91	2.14	171.02
metric	**Food products**				**Textile products**			
Actual export growth	0.90	100.00	0.15	100.00	4.01	100.00	5.57	100.00
Structural effects	0.09	10.30	0.06	37.59	0.88	22.08	0.38	6.80
Growth effect	0.55	61.51	0.19	129.41	1.01	25.32	0.59	10.54
Commodity effect	-0.46	-51.21	-0.14	-91.82	-0.13	-3.25	-0.21	-3.74
competitive effects	-0.29	-32.31	0.18	121.73	0.15	3.63	3.33	59.74
Overall competitive effect	0.16	18.24	-0.01	-4.00	0.17	4.15	3.04	54.63
Specific competitive effect	-0.45	-50.55	0.19	125.73	-0.02	-0.53	0.28	5.11
second-order effects	1.10	122.01	-0.09	-59.32	2.98	74.30	1.86	33.46
Pure second-order effect	-0.32	-35.86	1.15	772.89	2.47	61.60	2.12	38.09
Dynamic residual effect	1.42	157.87	-1.24	-832.21	0.51	12.70	-0.26	-4.63

Note: Due to the limited layout, only the CMS breakdown results of the trade growth of classified agricultural products from 1995 to 2021 are listed.

5. Conclusion and Suggestions

On the whole, the main reasons for the increase of exports from China to Central Asia are the increase in the import scale of Central Asia's agricultural products and the enhancement of the China's competitiveness; The increase in the export volume of agricultural products in Central Asia is also the result of the interaction between the increase in the scale of China's agricultural imports and the strengthening of the competitiveness of agricultural products in Central Asia. However, the competitiveness of specific commodities continues to decline, which has increasingly become an adverse factor hindering the increase of China's export volume; The structure of Central Asia's export commodities does not match the types of commodities that expand rapidly in China's import demand, which greatly hinders the growth of Central Asia's agricultural exports.

From the perspective of classified agricultural products, in terms of animal products, the growth of the import scale of agricultural products of both sides is the main cause for export volume growth

of animal products of both sides. In terms of fruit and vegetable products, the increase in the import scale of such products in Central Asia, the reasonable export structure of China, and the strong competitiveness of such products in China are the main reasons for the increase in the export of such agricultural products in China; The increase of China's import scale has become the main reason to drive the export volume of fruit and vegetable products in Central Asia. In terms of food products, the increase in the import scale of both sides and the enhancement of the competitiveness of their export products are the main reasons for the increase in the export volume of food products of both sides. As the main product of agricultural trade between the two sides, textiles in Central Asia have strong competitiveness, which has made great contributions to the increase of textile exports in Central Asia; The interaction between the increase of textile imports from Central Asia and the strong competitiveness of Chinese textiles is the main cause for the increase of China's exports.

So far it can be concluded that the increase in the export volume of agricultural products of both sides is mostly the result of the interaction between the improvement of the import scale of both sides and the enhancement of the competitiveness of agricultural products of both sides. However, in terms of some agricultural products, such as animal products and textile products, the competitiveness of corresponding products has shown a downward trend since the proposal of "the Belt and Road", and the competitive advantage is not strong compared with other countries along the route. For Central Asia, the competitiveness of animal products and food products is seriously affected by the international economic situation. The deterioration of the international economic situation will affect the price of productive material, so that the competitiveness of related products will decline, which will become the main cause for the exports decrease; While the competitiveness of textile products in Central Asia is relatively stable, which reversely drives the growth of textile exports under the deteriorating international situation. At the same time, with regard to the import and export commodity structure of both sides, China has gradually adjusted its commodity structure to match the products with rapid growth in the import demand of agricultural products in Central Asia. By contrast, the export structure of agricultural products in Central Asia is not reasonable, which increasingly hinders the growth of its export volume. Therefore, with the continuous deepening of the construction of "the Belt and Road", Central Asian should seize the opportunities brought by market opening, further expand bilateral agricultural trade and improve the stability of agricultural market competitiveness by constantly adjusting the export structure of agricultural products and adapting to changes in import demand of agricultural products of the other side. China should pay attention to improving the competitiveness of its own goods, so as to achieve mutually beneficial growth of agricultural trade between two parties.

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