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Study on the Dynamic Evolution of the Trade Structure of Fish Products between China and Russia

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Abstract: The commodity structure effect is the dominant factor in the growth of China's fish exports to Russia, followed by the market demand effect. The growth of Russia's fish exports to China is mainly driven by the effect of commodity structure, while the price competition effect has a small contribution to the growth of the two countries' fish products trade, and even plays a blocking role in Russia's export to China. Therefore, the two countries should adjust the export structure according to market changes and consumer demand, strengthen cooperation and exchanges, and seize the historic opportunity of the China-Russia fish trade. Improve China-Russia fish products trade cooperation mechanism; promote the standardization of production of fish products and realize the transformation from price competitiveness to non-price competitiveness of fish products.

1. Introduction

After China acceded to the WTO, the international trade of fish products has developed rapidly, and the trade scale between China and Russia has increased considerably. According to the ITC database, China has become Russia's largest trading partner, largest export destination and seventh largest import source of fish products; Russia has also become China's seventh-largest trading partner, seventh largest export destination and first largest import source of fish products. In recent years, domestic and foreign scholars have not much literature on the dynamic evolution of the trade structure of fish products as the direct research object, but there are many related academic achievements such as aquatic products trade, which can be used as a reference for this study. In addition, there are plenty of research results on the theme of dynamic evolution law. The research perspectives, research ideas and research methods are different and similar. The academic achievements at home and abroad are summarized as following.

The first is the status quo of the related research on the trade of fish products. Overseas research on aquatic products trade started earlier, from Adams & Behrman to Asche to analyze the influencing factors of aquatic products trade [1-2]. Natalia et al calculated comparative advantage analysis, and found that the international competitiveness of water products in various countries [3]. At present, the trade of aquatic products in China is mostly on some fish products and aquatic products. There are insufficient studies on the trade of fish products. Yin Yan [4], Zhang Ying and

Du Wenting studied the export competitiveness of China's aquatic products [5]. According to the current situation of China's aquatic products export trade, using the detailed data of aquatic products export, this paper analyzed and summarized the fluctuation law of China's total export of fish products From the perspective of competitiveness, this paper puts forward some suggestions to slow down the fluctuation of total export growth and promote the stable growth of China's aquatic products export. Yao Fangfang [6], Tong Guangji [7], Shao Guilan and Feng Xiaoshan analyzed the current situation of aquatic products trade in the world's major aquatic products exporting countries [8], calculated and compared the international competitiveness of aquatic products, and studied the interaction between Intra industry trade and international competitiveness of aquatic products.

Second, the research status of the dynamic evolution of the trade structure. In recent years, more and more foreign scholars have studied the dynamic evolution of the trade structure. The research content, it mainly combines the dynamic evolution of trade structure with the macro-economy, industrial economy and trade environment to analyze and solve specific practical problems. Guinea, Sergei, Klimenko and Mikhail use the dynamic incomplete contract model to explain the time structure of trade agreements and the characteristics of trade facilitation investment [9], to analyze the dynamic evolution of trade structure. Mulder, Peter and Yu RI Kim studied the trade structure by linking the dynamics of sector structure with the changes of global production patterns under the influence of international trade and specialization [10-11]. From the perspective of research methods, it mainly uses theoretical analysis and empirical models such as the error correction model, CMS model and gravity model to analyze the dynamic evolution of China's trade. Pham Thi Tuyet Trinh and kulwinder Singh analyzed the dynamic evolution of trade structure with the help of error correction model [12-13], constant market share model, and static and dynamic trade gravity model. From the research content, Zhao Yang [14], Ye Yongmei and Xu Wei analyzed China's trade as a whole from the perspective of macro-economy [15-16], industrial economic and trade environment. With the help of the trade index and constant market share (CMS) model, this paper focuses on the periodic characteristics of regional export trade and the dynamic changes of product competitiveness. Gao Songhua [17], Liu Xiaoxue and Yang Wei go to the level of a certain kind of products, deeply analyze the current situation and sources of their export fluctuations [18-19], analyze the problems and reasons in export trade, and finally put forward some countermeasures and suggestions for promoting China's export trade. From the perspective of research methods, scholars such as Ju Xiaoyan [20], Jiang Yunfeng and Liu Xuan mainly use theoretical analysis and empirical models such as the CMS model [21-22], partial equilibrium model and VAR model to analyze the dynamic evolution of China's trade.

At present, there are numerous studies on China's aquatic products trade and comparative advantage, but there are still some deficiencies. First, the research on the comparative advantage of Chinese aquatic products tends to measure the traditional indicators of comparative advantage, and less systematically analyzes the dynamic distribution of comparative advantage; Second, it is rare to combine the comparative advantages of Chinese fish products with the technical complexity to study how "quantitative change" causes "qualitative change". Third, most of the studies are confined to aquatic products or seafood categories and do not summarize and study fish products separately. In recent years, with the development of China's foreign trade facing more and more uncertain and unstable factors. Domestic comprehensive factor costs are rising, orders and industrial transfer are still fast, China's fish products export is still facing many difficulties and challenges, and the task of maintaining the export stable and good momentum is still arduous. However, considering the rapid upgrading of China's residents' consumption, the obvious increase of domestic consumers' demand for high-quality and green fish products, coupled with the government's tightening of resource protection, China's continued reduction of import tariffs on fish products in 2018 and other factors, it is expected that China's import of fish products will continue to grow

throughout the year, and the annual trade surplus will narrow, Therefore, it is of great significance to study the dynamic evolution of trade structure between China and Russia, the largest trading partner of fish products, for the development of China's fish products trade and the promotion of the transformation and upgrading of fishery structure.

2. Trade Structure of Fish Products between China and Russia

2.1. Trade is Growing Rapidly and the Trade Deficit Is Increasing

From 2002 to 2019, the scale of Sino Russian aquatic products trade has been increasing after a slight fluctuation. The trade volume of fish products between China and Russia increased from 72 million dollars to the US $1.605 billion, an increase of about 22 times in 18 years, with an annual growth rate of close to 117.24%. But the growth rate was less than that of China's foreign trade in fish products in the same period. The financial crisis in 2008 had a significant impact on the trade of fish products between the two countries. In 2008, the growth rate of China's trade in Russian fish products dropped 68.23% year on year; In terms of export, from 2002 to 2019, China's export of fish products to Russia increased from US $13 million to US $280 million, with an average annual growth rate of 114.10%; In terms of imports, during the same period, China's imports of fish products from Russia increased from US $60 million to US $1.325 billion, with an average annual growth rate of 117.13%. The status of the trade-in fish products between the two countries in their respective foreign trade has been significantly enhanced. However, the trade of fish products between China and Russia has always been in deficit, and the trade volume of Chinese fish products imported from Russia has always been higher than that of Chinese fish products exported from Russia. From 2002 to 2006, the trade deficit of fish products between China and Russia continued to increase, of which the trade deficit was 47 million US dollars in 2002 and rose to 63 million US dollars in 2006; From 2007 to 2008, affected by the financial crisis, the trade deficit between China and Russia decreased; After 2008, the trade deficit fluctuated slightly, and the overall deficit continued to increase, reaching the maximum of US $1.045 billion in 2019. The increase in aquatic product deficit between China and Russia is related to Russia's increasing export of fish products to China.

2.2. Trade Structure Tends to be Consistent, with High(→A High) Overlap between Import and Export of Important Fish Products

In 2002, the top three fish products exported by China to Russia were fish products (12 million US dollars), frozen fish (2004 million US dollars) and dried fish (002 million US dollars), accounting for 95.54%, 3.03% and 1.43% of China's fish products exports to Russia respectively. In 2019, the absolute and relative volume of China's exports of frozen fish, fish products and live fish to Russia will increase at the same time, with exports of 187 million US dollars, 93 million US dollars and 004 million US dollars respectively; Compared with 2002, the export of dried fish increased to US $003 million, and the proportion of fish products to Russia decreased to 0.14%; The export of frozen fish increased rapidly from US $004 million in 2002 to US $187 million in 2019, and the export proportion increased from 3.03% to 66.53%. In 2002, the top two fish products imported from Russia were frozen fish, fresh fish, chilled fish and dried fish, with a total import of 60 million US dollars, accounting for 99.91% of the total import of fish products from Russia. Among them, frozen fish is the largest imported fish product, with an import value of 59 million US dollars, accounting for 98.24%. The highest three fish products are frozen fish, dried fish and fish products, with a total import of US $1.325 billion, accounting for 99.98% of the total import of fish products from Russia. Frozen fish is still the largest imported fish product, and its import status is

rising. The import proportion in 2019 is 99.82%, up 1.58 percentage points compared with 2002. Frozen fish has become the principal imported fish products. The trade structure of fish product between China and Russia tends to be consistent, and the import and export of essential fish products are highly overlapped, with obvious substitutability.

3. Decomposition of Growth Factors of Fish Products Trade between China and Russia

3.1. Modified CMS Model

The constant market share model, originally proposed by tyszynski in 1951, is mainly used to study trade fluctuation and international competitiveness of export products. CMS model has been modified and improved by learner, stern, Milana and others many times, and has gradually become the main model to study the source of foreign trade growth of a country (region). By further modifying the CMS model, this paper decomposes the factors affecting a country's export growth into three parts: market demand induced effect, export commodity structure effect and export price competition effect.

The formula is as follows:

The export change formula of country a's fish product I is as follows:

$$\triangle Qi=Xi\ (t)-Xi\ (0)=mi\ Xi(0)+Xi(t)-Xi(0)-miXi(0) \quad (1)$$

According to formula (1), the fluctuation formula of total export volume of fish products from country a to country B is as follows:

$$\begin{aligned}\triangle Q&=X(t)-X(0)=\sum Xi(t)-\sum Xi(0)=\sum miXi(0)+\sum Xi(t)-\sum Xi(0)-\sum miXi(0)\\&=m\sum Xi(0)+\sum miXi(0)+\sum Xi(t)-\sum Xi(0)-m\sum Xi(0)-\sum miXi(0)\\&=m\sum Xi(0)+\sum[(mi-m)Xi(0)]+\sum[Xi(t)-Xi(0)-miXi(0)]\\&=mX(0)+\sum[(mi-m)Xi(0)]+\sum[Xi(t)-Xi(0)-miXi(0)]\end{aligned} \quad (2)$$

Where x (T) represents the total export volume of fish products from the country A to the country B in phase t; Xi (T) represents the export volume of fish products I of the country A to the country B in phase t; X (0) represents the total export volume of fish products from the country A to the country B in phase 0; Xi(0) represents the export volume of fish products I of the country A to the country B in phase 0; ΔQ represents the change in the export of fish products from country a to country B from phase 0 to phase t; ΔQi is the change in the export of fish products I exported by the country A to the country B from phase 0 to phase t; M is the average growth rate of total import of fish products in the country B from period 0 to period T; Mi represents the growth rate of import of fish products I in country B from phase 0 to phase t.

From equation (2), we can see that the fluctuation of the total export volume of fish products from the country A to the country B can be decomposed into three effects:

The market demand effect is mX (0). It reflects the fluctuation of the total export of agricultural products from the country A to the country B due to the increase or decrease of the import of fish products from the country B. If this item is positive, it indicates that the increase of market demand for fish products in the country B has a promoting effect on the export of fish products from the country A to the country B; If this item is negative, it indicates that the decrease of market demand for fish products in the country B will hinder the export of fish products from the country A to the country B.

The commodity structure effect, i.e. $\sum[(mi-m)Xi(0)]$, reflects the extent to which the export of fish products from the country A to the country B is concentrated in the fish products whose growth percentage is higher than the average import growth rate of the country B from stage 0 to stage t. If

this item is positive, it indicates that the category of fish products exported from the country A to the country B includes more fish products with larger demand from the country B, and excludes fish products with smaller demand from the country B; If it is negative, it indicates that most of the fish products exported from the country A to the country B are those with less demand from the country B, and the market space is insufficient.

As the remainder of the competitiveness effect, namely ∑[Xi(T)-Xi (0)-mixi(0)], based on the derivation and analysis of Wang Yuanbin and Zheng xuedang (2014), it reflects the increase and decrease of export caused by the increase or decrease of the competitiveness of export fish products in the international market due to the fluctuation of fish product prices. It should be noted that since fish products are primary products with no or low commercial added value, and the consumer demand is large, the global buyers are all price-sensitive customers, and the competitiveness mainly comes from price fluctuations. Therefore, this paper analyzes a comprehensive effect of the competitive effect caused by price changes, but does not study what causes the price changes.

3.2. Definition of Fish (→ The Fish) Product Range

In this study, fish products were classified according to HS code. According to the 6-digit code of HS in the ITC database, 126 products in Chapter 3 are defined as primary fish products (excluding ornamental fish products), and 12 products in Chapter 16 are defined as fish products. To facilitate the analysis, the fish products were divided into five categories: live fish, fresh fish or chilled fish, frozen fish, smoked fish and fish products.

3.3. Treatment of Research Time

Depending on the ITC database, the trade data of fish products between China and Russia were collected. Based on the collected trade data, the year 2002-2019 is divided into six stages: the first stage 2002-2004, the second stage 2005-2007, the third stage 2008-2010, the fourth stage 2011-2013, the fifth stage 2014-2016, and the sixth stage 2017-2019. The average trade value of fish products in each stage is adopted. In this way, the inter annual fluctuation of fish products trade can be eliminated to a certain extent, and the data can be relatively stable. According to the modified CMS model, this paper decomposes the growth factors of bilateral fish products export between China and Russia, and the results are shown in tables 1-4.

3.4. Model Results and Analysis

3.4.1. Market Demand Effect

From each stage, the market demand effect of China's exports to Russia is expanding, and the contribution of export growth is also increasing, from US $03 million in the first stage to US $161 million in the sixth stage, and the contribution also rises from 69.56% to 251.50%. From 2014 to 2016, Russia's import demand for Chinese fish products did not show obvious advantages. On the contrary, due to the change of demand structure, the contribution of fish products was - 65 million US dollars, which indicated that Chinese fish products did not adapt to the Russian market demand to a large extent. From the perspective of segmented fish products, the demand effect of fish products and frozen fish is the largest in 2002-2019, with our $354 million and US $66 million respectively, contributing 79.21% and 14.95% to the market demand respectively. This was accompanied by dried, salted or brine fish (US $26 million), live fish (US $005 million), fresh or chilled fish (- US $220 million). The increasing demand effect of fish products and frozen fish on Russia's export shows that the Russian market has a strong demand for Chinese fish products and

frozen fish products.

Table 1: Decomposition of growth factors of China's fish products export to Russia

Unit: US $100 million; %

	2002-2004		2005-2007		2008-2010		2011-2013		2014-2016		2017-2019	
Growth factors	Amount	Proportion	Amount	Proportion	Amount	Proportion	Amount	Proportion	Amount	Proportion	Amount	Proportion
Total effect	0.05	100.00%	1.91	100.00%	0.12	100.00%	1.74	100.00%	-1.7	100.00%	0.46	100.00%
Market demand effect	0.03	0.6956	0.8	0.4155	0.64	5.189	2.5	1.4331	-0.65	0.3842	1.16	2.515
Effect of commodity	0.64	1308.00%	3.67	191.65%	0.5	409.08%	-0.01	-0.69%	-0.04	2.14%	-0.18	-39.33%
Structure Competitiveness effect	-0.63	-12.7756	-2.55	-1.332	-1.01	-8.2798	-0.74	-0.4262	-1.01	0.5944	-0.52	-1.1217

Data source: Collected and collated according to the ITC database

Table 2: Decomposition of growth factors of China's export of segmented fish products to Russia

Unit: US $100 million

Product category		Live fish	Fresh or chilled fish	Frozen fish	Dried, salted or marinated fish	Fish products
2002-2004	Market demand effect	0	0	0.03	0.02	-0.02
	commodity structure effect	0	0	0.3	0.31	0.03
	competitiveness effect	0	0	-0.28	-0.29	-0.06
2005-2007	Market demand effect	0	0	0.33	0.17	0.3
	commodity structure effect	0	0	0.73	-0.06	3
	competitiveness effect	0	0	-0.63	-0.08	-1.84
2008-2010	Market demand effect	0	0	-0.11	0	0.74
	commodity structure effect	0	0	0.78	-0.02	-0.26
	competitiveness effect	0	0	-0.25	-0.04	-0.72
2011-2013	Market demand effect	0	0	0.4	0.02	2.08
	commodity structure effect	0	0	0.12	0.01	-0.14
	competitiveness effect	0	0	-0.07	-0.02	-0.65
2014-2016	Market demand effect	0	0	-0.35	0.02	-0.32
	commodity structure effect	0	0	0.44	0.17	-0.65
	competitiveness effect	0	0	-0.36	-0.2	-0.45
2017-2019	Market demand effect	0	0	0.36	0.01	0.77
	commodity structure effect	0.02	0	0.62	0.06	-0.87
	competitiveness effect	-0.02	0	-0.21	-0.09	-0.19

Data source: Collected and collated according to the ITC database

Table 3: Decomposition of growth factors of Russia's fish products export to China

Unit: US $100 million; %

Growth factors	2002-2004		2005-2007		2008-2010		2011-2013		2014-2016		2017-2019	
	Amount	Proportion	Amount	Proportion	Amount	Proportion	Amount	Proportion	Amount	Proportion	Amount	Proportion
Total effect	0.38	100.00%	1.08	100.00%	7.13	100.00%	1.16	100.00%	-0.6	100.00%	3.8	100.00%
Market demand effect	0.84	223.06%	0.85	79.33%	1.33	18.67%	1.1	94.49%	-0.24	39.41%	5.29	139.27%
Effect of commodity	0.07	18.37%	0.99	92.29%	31.18	437.39%	0.17	14.36%	-0.06	10.63%	-0.41	-10.71%
Structure Competitiveness effect	-0.53	-141.42%	-0.77	-71.62%	-25.38	-356.06%	-0.1	-8.85%	-0.3	49.96%	-1.09	-28.56%

Data source: Collected and collated according to the ITC database

Russia exports to China. From 2002 to 2019, Russia's export of fish products to China will reach 876 million US dollars due to the increase of China's market demand, and the contribution of export growth will reach 594.23%, which is lower than that of China's export growth to Russia in the same

period. Consistent with the performance of China's exports to Russia, the financial crisis did not affect the increase in China's demand for Russian fish products. The market demand effect increased from 84 million US dollars in the first stage to 529 million US dollars in the sixth stage, but the export contribution decreased from 223.06% to 139.27%. Especially in the fifth stage, the absolute amount of market demand effect peaked at 529 million US dollars. However in the third stage, the relative quantity was 18.67%. From 2002 to 2019, the main fish products with significant market demand effect are frozen fish, accounting for 875 million US dollars, accounting for 99.83% of this effect. At the same time, from 2002 to 2010, China's import demand for Russian fish products did not come to the window obvious advantages. On the contrary, due to the change of commodity structure, the contribution of fish products increased from US $07 million in the first stage to US $3.118 billion, which indicates that Russian fish products can meet the demand of the Russian market to a great extent in this stage. However, with the global financial crisis in 2008, China's demand for frozen fish from Russia reduced, leading to a decline in market demand effect. However, after 2017, China's demand for frozen fish products has maintained a high level.

3.4.2. Effect of Commodity Structure

Table 4: Breakdown of growth factors of Russia's export of segmented fish products to China

Unit: US $100 million

Product category		Live fish	Fresh or chilled fish	Frozen fish	Dried, salted or marinated fish	Fish products
2002-2004	Market demand effect	0	0.01	0.41	0	0
	commodity structure effect	0	0.22	-0.4	0.25	0
	competitiveness effect	0	-0.23	-0.07	-0.24	0
2005-2007	Market demand effect	0	0	0.85	0	0
	commodity structure effect	0	0	0.95	0.04	0.01
	competitiveness effect	0	0	-0.73	-0.03	-0.01
2008-2010	Market demand effect	0	0	1.37	-0.04	0
	commodity structure effect	0	0	31	0.16	0.02
	competitiveness effect	0	0	-25.23	-0.13	-0.02
2011-2013	Market demand effect	0	0	1.09	0	0
	commodity structure effect	0	0	0.16	0.01	0
	competitiveness effect	0	0	-0.1	-0.01	0
2014-2016	Market demand effect	0	0	-0.25	0.01	0
	commodity structure effect	0	0.12	-0.24	-0.01	0.06
	competitiveness effect	0	-0.12	-0.13	0	-0.05
2017-2019	Market demand effect	0	0.01	5.27	0.02	0
	commodity structure effect	0	-0.01	-0.41	0.01	0
	competitiveness effect	0	-0.01	-1.05	-0.03	0

Data source: Collected and collated according to the ITC database

China exports to Russia. From 2002 to 2019, the effect is US $458 million, and the contribution of export growth is 176.66%, which shows that China can adjust the commodity structure to Russia in time to increase exports. Although the overall positive effect of the structure is relatively large, it should be noted that the positive effect of China's export structure to Russia only appeared before the financial crisis, and was positive in the other stages, indicating that there was a deviation between China's export structure of fish products to Russia and Russia's demand after the crisis, which hindered the export growth. From 2005 to 2007, the effect reached a peak of US $367 million, and export growth accounted for 409.08%. Specifically, the effect of fish products was US $300 million, and the export increased by 271.95%; the second was frozen fish, with an effective value of 73 million US dollars, and the export increased by 24.47%. There are just a few fish products in China whose growth direction coincides with Russia's demand structure changes, such as live fish, fresh fish or chilled fish, and their contribution to China's cumulative export growth to

Russia is negligible. Russia exports to China. From 2002 to 2019, the value of the effect is 3.194 billion US dollars. At this time, the absolute and relative value of Russia's effect on China's commodity structure peak at the same time, which are 3.118 billion US dollars and 437.39% respectively. From the perspective of segmented fish products, after 2010, due to the unreasonable commodity structure, Russia's exports to China decreased by 100.94%. From the third stage to the sixth stage, the negative effect of the export structure shows an expanding trend, from US $3.1 billion in the third stage to US $41 million in the sixth stage. The effect of commodity structure on export growth is more and more significant. The deleterious effect of the frozen fish commodity structure was the most obvious, reaching - 3.203 billion US dollars, resulting in a 101.54% decrease in exports, followed by dried fish (- 44 million US dollars). The main fish products that Russia's export structure to China can better adapt to China's market demand structure are live fish, fresh fish or chilled fish, and their contribution to the cumulative export growth is negligible, which means that Russia has not adapted to China's market demand to a large extent.

3.4.3. Competitiveness Effect

China exports to Russia. From 2002 to 2019, the export price competition effect is - 646 million US dollars, which are lower than the market demand-induced effect of China's export growth to Japan. The effect value is negative, which indicates that the price advantage of China's agricultural products in the Japanese market has declined, and the effective value in other stages is negative. This negative effect causes China's fish products to lose a certain share in the Japanese market, It further shows that Chinese fish products as a whole do not have a price advantage. Russia exports to China. The negative effect of this effect is more obvious, and it is negative in all stages, and this negative effect shows an expanding trend. From 2002 to 2019, the effect value is - 2.818 billion US dollars. It can be seen that the decline of the price competitive advantage caused by the rise of the export price of fish products is the main factor restricting Russia's export growth of agricultural products to China, which should arouse Russia's vigilance. Most of Russia's fish products do not have a price competitive strength. The most noticeable is frozen fish (- 2.731 billion US dollars), followed by dried fish and fresh fish or chilled fish, with the effect of - 43 million US dollars and - 35 million US dollars respectively. Live fish and fish products contributed little to the overall export growth. Through large-scale development and speeding up the development of high value-added modern fishery, the Russian government finds that the high price cannot meet the demand of the Chinese market from the negative effect of export price competition.

4. Conclusions and Suggestions

4.1. Main Conclusions

This paper uses the modified CMS model to decompose the growth factors of fish products trade between China and Russia from 2002 to 2019, the effect of commodity structure is the main factor for the growth of China's export of fish products to Russia, followed by the effect of market demand, and the gap between the two is small, while the effect of competitiveness is negative; The commodity structure effect and market demand effect of frozen fish and fish products are the biggest, and the contribution to export growth is the highest.

The growth factors of Russia's fish products export to China are slightly different from those of China. The commodity structure effect is always the leading factor of Russia's fish products export growth to China, while the export price competition effect restricts the export growth. The main fish products with significant market demand effect are frozen fish and fish products.

The effect of export price competition has a low contribution to the growth of agricultural

products treded between the two countries, and it plays an obstacle role in the trade of fish products between China and Russia. Comparatively speaking, China's export of fish products to Russia can adapt to Japan's market demand structure adjustment, while Russia's export to China has weak coordination ability with China's market demand structure and low flexibility.

4.2. Suggestions

Adjust export structure according to market changes and consumer demand. The continuous expansion of the scale of demand for fish products in China and Russia has promoted the growth of fish product trade. In order to grasp the changes of consumption demand of both sides, the two countries can establish fish products export industry associations with each other. Through the establishment of information network and information exchange platform, the two countries can conduct market research on the changes of consumption and demand of fish products, and timely analyze and transmit the information collected from the survey, so as to provide countermeasures and feasible schemes for fish products export enterprises to carry out and adjust the export structure, Finally, the positive interaction among consumption demand, export structure and trade development will be achieved.

Strengthen cooperation and exchange, seize the historic opportunity of Sino Russian fish products trade. There are still repercussions. One belt, one road initiative, is the twin crisis of Ukraine crisis. China's fish trade is facing a rare historical opportunity. After the Ukraine crisis, sanctions and anti-sanctions measures have been introduced between Europe, the United States and Russia. Russia will enhance cooperation with China to reduce the losses caused by sanctions. In terms of fish products trade, we should continue to consolidate the achievements of fish products trade between the two countries. According to the market demand of Russia, we should increase the export of fish products that Russia urgently needs because of Western sanctions. At the same time, we should actively import frozen fish and fish products from Russia that China need, so as to enhance the close relationship between the two countries in the trade of fish products.

Increase the cooperation mechanism of fish products trade between China and Russia. One belt, one road to the development of the two countries, is the improvement of the trade cooperation mechanism between the two countries. The improvement of the Sino Russian fish products trade cooperation mechanism focuses on the continuous improvement of fish products trade rules. Through the establishment of effective communication and coordination mechanisms and inter departmental contacts, the trade barriers and policy barriers between the two countries can be reduced or eliminated, and the comparative advantages of Chinese and Russian fish products in each other's markets can be effectively enhanced, so as to promote the development of bilateral fish products trade. In addition, the two countries can also carry out operational cooperation in fishery capture and breeding, so as to realize the trend of trade and cooperation.

Promote the standardization of fish products and realize the transformation from price competitiveness to nonprice competitiveness. Compared with Russia, China's fish products have a strong advantage of low labor prices, which has become an important factor in promoting exports to Russia in recent years. But obviously, this price advantage is vulnerable to external adverse factors, such as the global financial crisis. Therefore, implement structural reforms on the supply side of China's fish products. Carry out supply-side structural reforms of Chinese fish products in terms of resource endowment, technological progress, trade policies, etc., actively and deeply understand Russian fish product trade and market dynamics, and implement differentiated production strategies based on their own resource endowments to meet the needs of Russia’s fish trade. The demand for similar products ensures the healthy and stable growth of exports.

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References

[1] Adarms F. G and Behrman J. R. Commodity exports and economic development. Econometric Studies, 1982, 1:23-25.
[2] Asche F, Exchange Rates and the Seafood Trade, Globefish Research Programme 2014.
[3] Natalia Ishchukova, Mansoor Maitah, LubosSmutka, Karel Malec and Osama Eldeeb. Russia's Intra-Industry Trade in Agricultural Products. Medwell Journals, 2014, 9 (6): 375-385.
[4] Du Ya, Yin Yan, Liu Yiyang. Research and analysis of tuna international market competition performance. Marine development and management, 2018, 35 (05): 126-132.
[5] Zhang Ying, Du Wenting. Price fluctuation of aquatic products trade between China and ASEAN: a case study of frozen mackerel export price. Journal of natural resources, 2020 (9).
[6] Zhou Changshi, Yao Fangfang, Meng Fang. Dynamic growth of China's aquatic products export to Thailand based on CMS model. World agriculture, 2017(9).
[7] Tong Guangji, Cha hankai. Research on Sino Russian aquatic products trade based on comparative advantage and complementarity. Price monthly, 2018.
[8] Shao Guilan, Wang Yuan, Li Chen. Study on the duration of China's aquatic products export trade -- Based on survival analysis. Journal of China University of Petroleum (SOCIAL SCIENCE EDITION), 2019, V.35; No. 186 (06): 24-30.
[9] Guriev S, Klimenko M. Duration and Term Structure of Trade Agreements. Economic Journal, 2015, 125 (589): 1818-1849.
[10] Mulder Peter. International Specialization, Sector Structure and the Evolution of Manufacturing Energy Intensity in OECD Countries. Energy Journal,2015.
[11] Kim Y R. Does aid for trade diversify the export structure of recipient countries? The World Economy, 2019, 42.
[12] Trinh P T T. The Impact of Exchange Rate Fluctuation on Trade Balance in the Short and Long Run: The Case of Vietnam. Journal of Southeast Asian Economies, 2014, 31 (3):432.
[13] Kulwinder Singh. A Constant Market Share Analysis of India's Export Performance. Foreign Trade Review, 2014
[14] Zhao Yang, China one belt, one road initiative, the evolution and development trend of China's foreign trade structure. Foreign trade practice, 2017, 000 (005): 8-11.
[15] Ye Yongmei, Duan Kejie, Tang Yunping, et al. An Empirical Study on the international competitiveness of aquatic products in Jiangxi Province -- Based on the data from 2002 to 2015. Journal of Jiangxi agriculture, 2017, 29 (008):
[16] Xu Wei, Hu binger. Analysis on the dynamic growth of China's aquatic products export -- empirical data from China Singapore aquatic products trade. World agriculture, 2019, 000 (011):
[17] Gao Songhua. Analysis on the dynamic evolution of grain trade structure between China and Europe and Its Enlightenment. Agricultural economy, 2018, 000 (008): 120-122
[18] Liu Xiaoxue, Duan Xuan. Dynamic evolution of scale and structure of sugar industry in the United States -- Based on data from 1959 to 2017. World agriculture, 2018, 474 (10): 71-79
[19] Yang Wei, Feng Xiaoshan. Analysis of the problems and Countermeasures in the development of China's large yellow croaker export trade. Foreign trade practice, 2018, 000 (002):
[20] Ju Xiaoyan. Research on growth factors of China's aquatic products export based on CMS model. Business information, 2017, 000 (008): 57-5
[21] Jiang Yunfeng. Analysis of growth factors of China's aquatic products export to the United States based on CMS model. World agriculture, 2018, 000 (003): 114-121
[22] Liu Xuan. Analysis on export trade of aquatic products in coastal areas based on data mining. 2020.