

Dynamics and Countermeasures of Import and Export Trade of Animal-Derived Food

Jianli Guo

South University of Science and Technology of China, Guangdong, China

gjl1258@sustech.edu.cn

Keywords: Animal-Derived Food, Import and Export Trade, Trade Dynamics, Competitiveness Analysis

Abstract: In recent years, the process of economic globalization has continued to accelerate, and international trade has also achieved rapid development in China. Food exports have increasingly become a major force in China's export trade, especially animal-derived food. For this reason, this article the dynamics of import and export trade of sexual foods were studied, and relevant countermeasures were proposed. This article mainly studies the development status of animal-derived food import and export trade and the structure of import-export products, and analyzes the main characteristics of China's animal-derived food import and export trade. The total import and export trade of animal-derived foods has been increasing in 2019. Among them, the increase in 2014-2015 was 3.5%, the increase in 2015-2016 was 0.6%, the increase in 2016-2017 was 12.1%, and the increase in 2018-2019 was 8.9 %. It shows that the import and export trade of animal-derived foods in China is optimistically rising. In addition, this paper also selects three indicators of market share, trade specialization index and explicit comparative advantage index to analyze the competitiveness of China's animal-derived food. The research results show that although China's current animal-derived the export trade competitiveness is not as good as some developed countries, but it has also been improving and has gradually narrowed the gap with developed countries.

1. Introduction

With the development of China's economy and the improvement of people's living standards, the demand for animal food has changed from quantity to quality. Animal-derived food as an important part of food, it is improving people's living standards and changing people's diet structure. At the same time, it has laid a solid foundation for farmers' income increase, economic development, and foreign exchange earnings through exports. With the advancement of economic globalization,

countries around the world have begun to communicate with each other. Animal-derived food has also become a hot spot in import and export trade. As one of the world's major countries, China's import and export trade of animal-derived food is more concerned about Hot spots, therefore, it is of great significance to analyze the import and export trade dynamics of animal-derived food and propose relevant countermeasures.

In order to understand the pollution levels of HBCD and decabromodiphenyl ether (BDE-209) in animal-derived foods sold in Beijing, Jian Zhou used sample pretreatment and gel permeation chromatography combined with solid phase extraction Law, statistical analysis of aquatic products, meat products, egg products, dairy products, etc. Jian Zhou's research showed that the BDE-209 pollution level ranged from ND to 159.17 ng / g, with an average of 14.33 ng / g and a median value of 9.44 ng / g. The contamination level of HBCD is ND ~ 26.83ng / g fat, with an average value of 4.32, and a median value of 2.45ng / g. Fat α -HBCD dominates most food samples. BDE-209 and HBCD contamination in the study the average level is higher than other studies. Jian Zhou's research results show that BDE-209 and HBCD are wildly spread in the sale of animal-derived foods [1]. After the outbreak of mad cow disease, the public demanded the improvement of the safety of animal-derived food. Food safety is fundamentally affected by the source and health of the source animal and the use of good manufacturing practices. In order to better track the origin of the source animal, Aimee I. Porter proposed a biological recognition system (immune ear tag) that utilizes the mammalian natural immune system. In this system, individualized animals or cohorts are marked for vaccination with synthetic peptides, and peptide-specific antibodies can be detected in blood, milk, and meat products by conventional enzyme-linked immunosorbent assays or similar detection systems. Therefore, detection of anti-peptide antibodies in immunized animals can be used as a highly specific biomarker. Aimee I. Porter tested the system and verified the feasibility of the system [2].

This article starts with related conceptual issues, first introduces animal-derived foods, focuses on the safety of animal-derived foods, analyzes the import and export trade status of animal-derived foods in China, The current status of the source food trade was analyzed, and several representative countries were selected to analyze the competitiveness of China's animal source food from three aspects, and put forward some related suggestions.

2. Related Overview

2.1. Food of Animal Origin

Food is a familiar concept for the common people. However, food in the sense of life is different from food defined by law. In different national legal systems, food also has different meanings. Therefore, before defining the concept of animal-derived food, it is necessary to clarify the general concept of food [3-4].

(1) Definition and scope of food

Looking at the definition of "food" in food legislation of various countries, in order to facilitate the management and effective, many countries adopt the definition of generalization or exclusion to adapt to specific national conditions and nationalities. The definition of food in China is mainly reflected in the Food Safety Law of the People's Republic of China. Article 150 of the Food Safety Law of the People's Republic of China stipulates: "Food refers to all kinds of finished products and raw materials for human consumption or drinking and According to the tradition, it is both food and Chinese medicinal materials, but does not include items for therapeutic purposes." This article mainly adopts the definition of food in the Food Safety Law of the People's Republic of China, that is, food is available in addition to tobacco and medicines. Substances eaten or consumed by humans are generally nutritious and safe. They are classified according to their processing forms, including

processed foods, semi-finished products, and unprocessed foods; according to their ingredients, they include endogenous and exogenous ingredients.

(2) Definition and scope of food of animal origin

According to the "People's Republic of China Animal and Animal Origin Food Residues Monitoring Plan and Official Sampling Procedures" formulated by the Ministry of Agriculture and the General Administration of Quality Supervision, Inspection and Quarantine, and the "Guidelines on Promoting the Sustainable Development of Wild Animals" of the State Forestry Administration, Animal-derived food refers to all edible animal tissues and eggs and milk, including: 1) poultry: domesticated poultry including chickens, ducks, turkeys, geese, pigeons, etc .; 2) raised animals: refer to cattle, Pigs, sheep and goats, domesticated hooves, camels and farmed fish; 3) domestic and wild game: domestic and wild game, such as pheasant and guinea fowl [5-6].

(3) Animal food safety

Animal-derived food safety is an important part of food safety, that is, all edible animal tissues, eggs and milk should not contain substances and factors that may damage or threaten human health. In a nutshell: first, the ingredients are safe, excluding ingredients that endanger human health; second, functional safety, which does not affect the normal metabolism of the human body after consumption; third, immune safety, without animals and microorganisms that cause human disease And viruses; fourth, genetic safety, that is, it does not change human genes and human genetic functions [7].

2.2. China's Animal-Derived Food Safety Issues and Influencing Factors

(1) Animal diseases

Animal diseases refer to animal infectious diseases and parasitic diseases. Animal diseases cause animals and animal foods to carry pathogens such as bacteria, viruses and parasites. In severe cases, they can cause morbidity and even death in humans. It is a food safety threat that threatens human life and health. At present, it is known that at least more than 200 animal infectious diseases and parasitic diseases can be transmitted to humans. According to the "List of Zoonoses" published by the Ministry of Agriculture, zoonoses in China include: bovine spongiform encephalopathy, highly pathogenic Avian influenza, rabies, anthrax, brucellosis, toxoplasmosis, hydatidosis, leptospirosis, salmonellosis, bovine tuberculosis, schistosomiasis japonicum, swine encephalitis B, swine type II streptococcal disease, Trichinellosis, Cysticercus cellulosus, Equine Neisseria, Hare fever, Escherichia coli disease, Listeriosis, Nematode, Actinomycosis, Schistosomiasis, Filariasis, Q fever, Avian tuberculosis, Leishmaniasis Disease etc. [8].

In recent years, food safety and public health incidents caused by animal epidemics have occurred frequently. According to the Animal Epidemic Prevention Law of the People's Republic of China and the Ministry of Agriculture Order No. 1125, animal epidemics in China include 17 types of animal diseases and 77 types of animal diseases. There are 63 species of three types of animal diseases. However, China's animal epidemic prevention management system, epidemic prevention conditions and epidemic prevention level cannot meet the needs of animal-derived food safety development. According to incomplete statistics, China's animal epidemic diseases cause direct economic losses of 20 billion yuan every year. Indirect losses amount to 70 billion yuan. Therefore, strengthening prevention and control of animal diseases is a top priority for ensuring food safety and people's health.

(2) Veterinary drug residues and use of prohibited drugs

According to China's "Veterinary Drug Administration Regulations", veterinary drugs refer to substances (including pharmaceutical feed additives) used for the prevention, treatment, diagnosis of animal diseases or purposeful adjustment of animal physiological functions, mainly including:

serum products, vaccines, diagnostic products, micro-ecology Products, Chinese veterinary drugs, Chinese patent medicines, chemical drugs, antibiotics, biochemical drugs, radioactive drugs and external pesticides, disinfectants, etc. Veterinary drugs have always played a pivotal role in preventing animal diseases and promoting the development of the breeding industry, but in recent years Due to profit-driven and other reasons, producers and operators improperly use veterinary drugs in the breeding of animal products, and even have a malignant incident of abuse of prohibited drugs. Animal-derived food safety problems caused by veterinary drug residues and toxic and hazardous substance residues are increasing. [9].

1) Veterinary drug residues caused by unqualified veterinary drugs

According to the report of the Ministry of Agriculture on the supervision and sampling of veterinary drugs, in recent years, the quality of veterinary drugs has been steadily improving. The latest report in September 2015 showed that a total of 51 batches of veterinary biological products were completed in the second quarter of 2015, with a pass rate of 100 %, 3528 batches of chemical drugs, traditional Chinese medicines and other veterinary drugs were supervised and sampled, 3420 batches were qualified, and 108 batches were rejected. %) Increased by 1.3 percentage points, among the unqualified samples, the unqualified characters accounted for 20.2%, the unqualified identification accounted for 39.4%, the unqualified inspection accounted for 24.8%, the unqualified content accounted for 50.0%, and the other unqualified accounts o .9%. Among the factors affecting unqualified veterinary drugs, unqualified content has always been the main cause. Unqualified veterinary drugs not only seriously affected the economic interests of farmers, but also laid hidden dangers for food safety.

2) Drug abuse

Drug dosage, frequency of use, and improper use of time can easily cause animal-derived food veterinary drug residues to exceed the standard. Generally speaking, the country has more clear drug holiday regulations for veterinary drugs and drug feed additives. The so-called "drug holiday" is Refers to the interval between the last administration of food animals and the approval of the slaughtering of their products (milk and eggs) .For example, the drug withdrawal period of Anaijin injection cattle, sheep and pigs is 28 days, and the milk abandonment period is 7 days. The withdrawal period of chickens is 5 days. The withdrawal period is of great significance to prevent the residues of drugs or other exogenous chemicals in food-borne animal products. However, in actual production, many farmers use veterinary drugs for improper pursuit of production benefits. Causes veterinary drug residues to exceed the standard.

3) Illegal use of banned veterinary drugs and their compounds

The Ministry of Agriculture clearly stipulates veterinary drugs or compounds that cannot be used in the feeding and breeding of food animals in Announcement No. 193, and in Announcement No. 265 of 2003, it continues to emphasize the export of veterinary drugs (including feed) used in meat and poultry farms (households) Drug additives), but in recent years, illegal additions have continued to occur, such as malachite green, clenbuterol, etc., the illegal use of drugs is bound to seriously affect food safety.

(3) Environmental pollution and residues of toxic and hazardous substances

At present, there are no less than 400 chemical substances known to cause harm to human health, such as lead, mercury, arsenic, cadmium, dioxin, and nitrosamines. With the rapid development of the economy and society, the opportunity for food to be polluted by chemical substances Increasing. The toxic and harmful substances in the environment are derived from industrial by-products on the one hand, typical of industrial "three wastes" such as waste water, waste gas, waste residues, etc. On the other hand, they originate from the abuse of pesticides and fertilizers and the random disposal of domestic garbage. The amount of emissions and use far exceeds the environmental decomposition and bearing capacity, which will cause heavy metal pollution of air, water quality

and soil, inorganic matter pollution, microbial pollution, and thus damage to the ecological environment, which not only poses a direct threat to human health. Moreover, the accumulation of residues in the animal body through the food chain accumulation effect, human long-term consumption of such animals and animal products poses a great health risk, such as organic mercury pollution of fish can cause liver and kidney damage and congenital malformations of the fetus.

(4) Improper feeding, slaughtering, processing, storage and transportation methods

The safety of animal-derived food is inseparable from the standard operation of feeding, slaughtering, processing, storage, transportation, packaging and other links. First, the feeding link, unhygienic and unscientific feeding methods, such as free-range livestock and poultry consumption. Post-garbage waste and abuse of antibiotics and feed additives will not only increase the chance of contracting epidemic diseases, but also cause residues of toxic and harmful substances. Secondly, the slaughtering and processing links, the epidemic prevention conditions of the slaughtering and processing sites, the sanitary conditions of supplies, equipment and equipment, the health conditions of the relevant personnel, and the improper slaughtering and processing methods will all affect the quality of animal products to varying degrees. Third, there are many loopholes in some cold storage management during storage, such as failure to abide by the "first-in-first-out" principle, irregular disinfection, and mixed freezing of various types of food, etc., which can easily cause food safety hazards. Finally, the improper operation in the packaging and transportation process, such as pollution of transportation vehicles and sales tools, unqualified packaging materials, etc., can easily lead to the growth of microorganisms and chemical pollution, resulting in food spoilage and toxic and harmful substances residue, resulting in Food contamination.

(5) Human factors

Due to the current low cost of illegality, in order to maximize the economic benefits, some criminals spare no effort to test the law, produce and sell unqualified food by means of forging inspection and quarantine certificates, adulteration, and addition of prohibited and restricted chemical substances. Not only disturbed the normal market operation order, but also caused some unsafe food of animal origin to flow to the people's table, infringing on the legitimate rights and interests of consumers [10].

2.3. Food Safety Assurance Strategy of Animal Origin

(1) Strengthen publicity on the importance of animal food safety

So that the majority of feed processing enterprises and farms (households) can realize from the thought that safe animal food is produced rather than detected, and realize that animal health and human health have the same important position in social development. Through publicity, technical guidance, and consulting services, they can consciously abide by the national "Animal Epidemic Prevention Law", "Veterinary Drugs Management Regulations", "Feeds and Feed Additives Management Regulations" and other regulations, reasonably and safely use veterinary drugs and feed additives to ensure animal feed and Product safety [11].

(2) Monitoring of strong feed safety

Feed is the material basis of animal-derived food. The quality of the feed and its safety are directly related to the quality and safety of animal-derived food. Therefore, it is the key to ensure the safety of animal-derived food to do a safe inspection of feed production and use process. In this link, the feed supervision and management department must first firmly grasp the safety testing of the feed production link. Require feed processing enterprises to use advanced technology for sterilization and detoxification of animal feed before processing, establish feed sources, hygienic quality inspection files during production and processing, and make production records for each batch of feed, safety and quality self-inspection and Product sample keeping work, the

implementation of enterprise self-inspection and national sampling inspection management methods for enterprise feed safety, to ensure the safety of feed on the market. Secondly, do a safe spot check of the feed use process to prevent the feeder from overdosing and over-adding veterinary drugs and banned drugs in other countries in pursuit of economic benefits. To do a safe spot check of the feed use process, it is necessary to propagate the relevant laws and regulations on the safe use of feed to the feeders, so that they can realize from an ideological point of view that animal health is human health, and protecting animals is protecting humans themselves. Consciously prohibit the use of allergic reaction drugs that may have "teratogenic, carcinogenic, and mutagenic" effects in feed, consciously accept the safety inspection of the feed supervision and management department, and actively cooperate with staff to do feed sampling. In addition, the feed supervision and management department should increase the supervision and management of the production, sales and use of feed, and add the use of national prohibited drugs and allergic drugs that may have "teratogenic, carcinogenic, and mutagenic" effects to the feed. Enterprises and individuals should be severely punished according to law to maximize the safety of feed production and use [12].

(3) Strengthen the safety control of animal growth process

At present, China's safety testing of animal growth processes is not standardized in terms of content, methods, standards, and requirements. The determination of animal food safety still remains in the end products, which is a great deal of unsafe factors in the growth process. out of control. When people eat animal foods with residual drugs, it is possible to cause food poisoning (such as clenbuterol hydrochloride); the body's hematopoietic function destroys and causes anemia (chloramphenicol). At the same time, due to the low level of animal disease control in China, only three kinds of animal diseases have been eliminated in the 50 years since the founding of the People's Republic of China, and the number of new diseases has been increasing every year. Tuberculosis, brucellosis, anthrax, etc. Humans are currently facing the threat of hundreds of zoonotic diseases. When humans consume animal-derived foods with these diseases, they may suffer from the same diseases. Therefore, it is another key link to ensure the safety of animal-derived foods by testing animal diseases and drug residues during animal growth. In this link, we must do a good job of testing animal infectious diseases and parasitic diseases, especially zoonotic diseases, antibiotics and toxic and harmful substances, to reduce the various factors that may cause animal diseases and drug residues to the safest level. . In the management of animal growth process, the animal epidemic prevention supervision organization should strengthen the supervision and management of the breeding farm (household). The veterinary package responsibility system is implemented, and the veterinarian should collect blood samples and urine samples at different growth stages of animals in accordance with the work requirements of the animal epidemic prevention supervision agency, and send them to designated testing sites for testing. The detailed results of the supervision results, epidemic immunity, epidemic detection, epidemic prevention and control of the animal in charge shall be registered, animal health files shall be established, and animal file management shall be implemented. For the animals found in the body that have been banned by the state, they should take timely measures to restrict slaughter or culling, and trace the source of the drug. Enterprises and self-employed persons who provide, sell and use drugs shall be severely punished in accordance with the law in order to raise the legal awareness of breeders to actively avoid the residues of toxic and hazardous substances during animal breeding. Animal epidemics found to be controlled and eliminated by the national plan during the inspection shall be culled and the pathogens shall be eliminated at the budding stage. Therefore, the animal production process is protected from safety and health without disease.

(4) Do a good job of safety and health inspection of slaughtered animals and safety quarantine of animal products during slaughter

Inspection of the safety and health of slaughtered animals is directly related to the safety of

animal-derived food. In this link, the animal epidemic prevention supervision agency, in addition to checking the animal's health files and doing a good clinical health check, must collect blood and urine samples for animal disease and drug residues and immune antibody residues from 7 to 14 days before animal slaughter. Situation detection. Through laboratory tests and clinical health checks, the safety and health of slaughtered animals are assessed. If unsafe factors are detected in the animal body, such as drug residues, antibody residues, etc., the animal should be kept in the body without any influence on the safety of animal-derived food ingredients, and the slaughter can only be allowed until the animal-derived food hygiene standards are met. . Animals with the state's banned drugs detected in their bodies should be destroyed to ensure that safe and healthy animals enter the slaughter process. The quarantine inspection of animal products in the slaughter process is the key to prevent the disease from being imported, and cannot be ignored. Because some animal infectious diseases and parasitic diseases are difficult to find and detect before death, only after slaughtering in accordance with specific quarantine procedures and technical specifications, certain parts, tissues and organs can be detected and detected after touching and anatomizing. The main purpose of slaughter and quarantine. In this aspect, the animal epidemic prevention supervision agency shall, in addition to inspecting and recovering animal health files, animal ear tags and quarantine certificates, detain animals that do not have health files and ear tags for slaughter and destruction as appropriate, and carry out legal diseases and parasites on animal carcasses In addition to disease quarantine, residues of animal carcass pathogenic microorganisms, drugs and other harmful substances should also be tested. Only in this way can animal products be truly safe, healthy and free from diseases. In the process of quarantine inspection, animal carcasses that do not meet the requirements of food hygiene quality standards, have drug residues and exceed the national maximum limit standard should be destroyed, and be carried out based on animal health files, ear tags, and quarantine certificates issued by veterinarians. Trace back. Severely punish those who violate the law in pursuit of economic benefits, regardless of public health, in order to enhance the producers' initiative to implement safety and quality monitoring of animal growth processes and avoid the legal awareness of toxic and harmful substances residues. At the same time, strictly investigate and punish illegal activities that give green light to animals that do not meet the slaughter standards in the quarantine team, improve the work responsibility and professionalism of the majority of veterinary workers, use a scientific attitude and a realistic work style, and do a good job in animal and animal product safety Quarantine and inspection work.

(5) Do a good job in sanitary condition audit and production technology assessment of slaughtering enterprises and animal food processing enterprises

Whether the production technology of slaughter enterprises and animal food processing enterprises meets the standards, and whether the production facilities, equipment, and environmental sanitation meet the production requirements are the basic elements for ensuring the safe production of animal food. In order to ensure the safety of the production process, the animal epidemic prevention supervision agency should strengthen the supervision of the enterprise, do a good job in the registration of slaughter enterprises and animal food processing enterprises, and review the enterprise's animal epidemic prevention conditions in accordance with the National "Measures for the Administration of Animal Epidemic Prevention Conditions" To implement a certificate management, regularly or irregularly inspect the harmless treatment of sewage, dirt and feces in the production process of the enterprise, disinfection of slaughter equipment, tools and utensils, etc., and record the inspection results. For enterprises that do not meet the conditions for animal epidemic prevention during the inspection, the qualifications for animal slaughter and animal food production and processing shall be restricted or cancelled. At the same time, the food hygiene department should also regularly assess the technical level of the company's product quality inspection, conduct safety and sanitation testing of the animal food produced by the company in

batches, and fail to meet the requirements of the production technical level and the product does not meet the food hygiene quality standards. Enterprises, ordered to suspend business for rectification, serious cleaning problems suggested that the industry and commerce department revoke their business license. Therefore, all animal products that do not meet the food hygiene quality standards are prevented from going to market, and the safety of animal-derived food is guaranteed.

(6) Establish a food safety guarantee system and revise and improve laws and regulations related to animal food safety

Change the management philosophy of the past that emphasizes results rather than processes, and implement the assessment of animal health and safety by the production system. In all aspects of the security system, the HACCP (Hazard Analysis and Critical Control Point) management system, which has been adopted by developed countries in the world, is adopted to promote the implementation of comprehensive quality in the production process by enterprises and individuals that raise, operate animals and produce, and operate animal products Monitoring to ensure the safety of the final animal product. Make food safety testing from the content to the main body of law enforcement, adapt to the development requirements of the international market after the WTO, and escort China's livestock products into the international market smoothly.

(7) Strengthen the supervision and inspection of the circulation link and severely punish illegal acts

Due to the low degree of intensive economic development in China's animal husbandry, courtyard animal husbandry is still dominant in China. The supervision and inspection of animal food safety in circulation is the focus of our country's work in the future. We should increase the punishment of those units and individuals who ignore the national laws and regulations and the personal safety of others and use veterinary drugs and feed additives indiscriminately. Expose to the society through the media, never tolerate.

3. Experiments

3.1. Sample Selection and Data Source

(1) Sample selection

This article selects countries such as the United States, Germany, the Netherlands, New Zealand, Brazil, and France for comparison based on China's animal-derived food export data over the past few years. This is because China's animal-derived food imports and exports to these countries (regions) exceeded The market share of 80%, so the selection of these countries as a sample can more comprehensively reflect the current status of China's animal-derived food imports and exports.

(2) Data source

The data of the labeling of animal-derived food used in this article comes from the WTO-TBT / SPS notification and consulting center in 2014-2019, and the data of China's export trade of animal-derived food to countries comes from the UN database COMTRADE.

3.2. Selection of International Competitiveness Evaluation Indicators

This article selects a total of three competitiveness evaluation indicators for comparison, including international market share, trade specialization index and explicit comparative advantage index.

The original data of this article is the total import and export of animal-derived food and the total import and export of goods from 2014 to 2019 in China, the United States, Germany, the Netherlands, New Zealand, Brazil, France and the world. The data comes from the "China Statistical Yearbook", "International Trade Statistics Yearbook" and the Customs Information

Network, the United Nations Commodity Trade Statistics Database, and the website of the National Bureau of Statistics to compare and analyze the dynamic changes in the current export competitiveness of China's animal-derived food.

The international market share will expand the scope to the international market. It is generally used to measure the export competitiveness of a product in a country (region). The export value of a product in a country (region) accounts for the proportion of the global export value of the product. Said. The formula is:

$$MS_{ij} = (X_{ij} / X_{wj}) * 100\% \quad (1)$$

(1) Among them, MS_{ij} : international market share of product j in country i (region); X_{wj} : total export of world product j.

(2) Trade specialization index

The trade specialization index is derived from the ratio of the difference between the import and export value of a product in a country (region) and the total amount. It is a relative value, which is not easily interfered by other macroeconomic factors and is more stable. The formula is as follows:

$$TSC_{ij} = (X_{ij} - M_{ij}) / (X_{ij} + M_{ij}) * 100\% \quad (2)$$

Among them, TSC_{ij} : trade specialization index of product j in country i (region); M_{ij} : total import value of product j in country i (region). According to the characteristics of the formula, it can be seen that the index value is distributed between -1 and 1, and the level of export competitiveness represented is also from low to high, that is, the closer to 1, the higher the level of export competitiveness, the closer to -1 means the lower the export competitiveness level.

(3) Explicit comparative advantage index

The explicit comparative advantage index, like the trade specialization index, is a relative indicator and an effective index for evaluating the relative advantages of a product's exports after removing macroeconomic factors. It consists of three elements, the specific formula is:

$$RCA_{ij} = (X_{ij} / X_{it}) / (X_{wj} / X_{wt}) \quad (3)$$

Among them, X_{wt} represents the total world export of goods. The higher the RCA index value, the stronger the export competitiveness of products. Generally, if $RCA \geq 2.5$, it means that the export competitive advantage of the product is very strong, if $RCA < 0.8$, it means that the export competitive advantage of the product is weak.

4. Analysis on the Current Situation of Import and Export of Animal Food in China

With the continuous development of China's economy, the import and export trade of animal-derived food has achieved rapid growth, becoming a major part of China's food trade import and export. This article mainly studies the development status of animal-derived food import and export trade and the structure of import-export products, and analyzes the main characteristics of China's animal-derived food import and export trade.

4.1. Analysis of the Overall Situation of Import and Export Trade

In order to understand the import and export of animal-derived foods, this article collates and analyzes the relevant data of the 2014-2019 United Nations Trade Database on China's animal-derived foods import and export trade, as shown in Table 1 and Figure 1.

It can be seen from Table 1 and Figure 1 that China's total import and export trade of

animal-derived foods has been increasing from 2014 to 2019, with a high or low increase. Among them, the increase from 2014 to 2015 was 3.5%, and the increase from 2015 to 2016 was 0.6 %, The lowest increase in the past few years, the increase in 2016-2017 was 12.1%, the highest increase in the past few years, the increase in 2018-2019 was 8.9%, overall, although the increase is not large, but has been increase.

Table 1. 2014-2019 China's total import and export value and growth rate of animal derived food trade

Time	Total value of trade import and export (trillion yuan)	Increase
2014	23.43	-
2016	24.29	3.5%
2017	24.43	0.6%
2018	27.79	12.1%
2019	30.51	8.9%

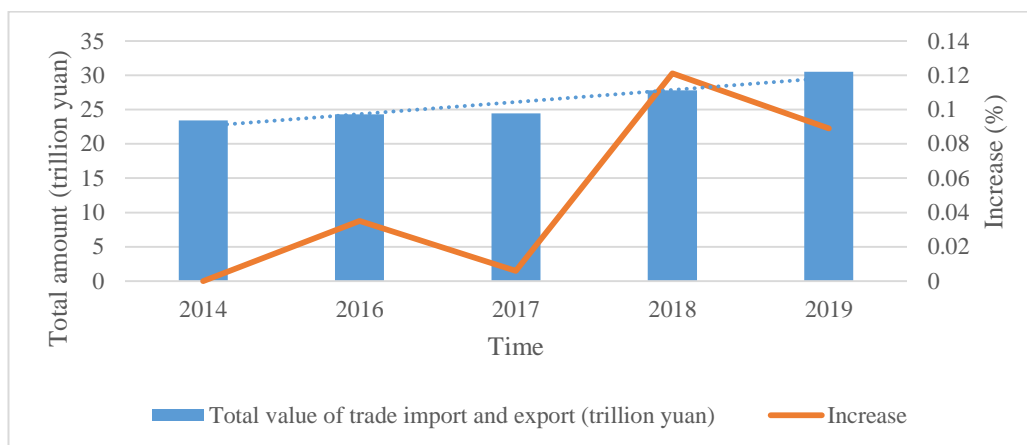


Figure 1. 2014-2019 China's total import and export value and growth analysis of animal derived food trade

4.2. Import and Export Product Structure

Animal-derived foods are classified into aquatic products, livestock meat and offal, poultry meat and offal, honey and its products, eggs, milk products and other food animal products in the Customs Import and Export Statistics and China Agricultural Products Import and Export Monthly Statistics Report respectively The import and export of various animal-derived foods in China are shown in Table 2 and Figure 2.

Table 2. Structure analysis of import and export products

Particular year	Aquatic product	Meat and offal	Poultry and offa	Honey and its products	Egg and dairy products	Other
2014	6425	395	366	162	178	6
2015	8351	482	560	268	196	5
2016	10498	612	530	256	300	4.5
2017	11939	596	425	352	245	8
2018	13472	654	526	320	269	10
2019	61543	3210	2789	1563	1379	40

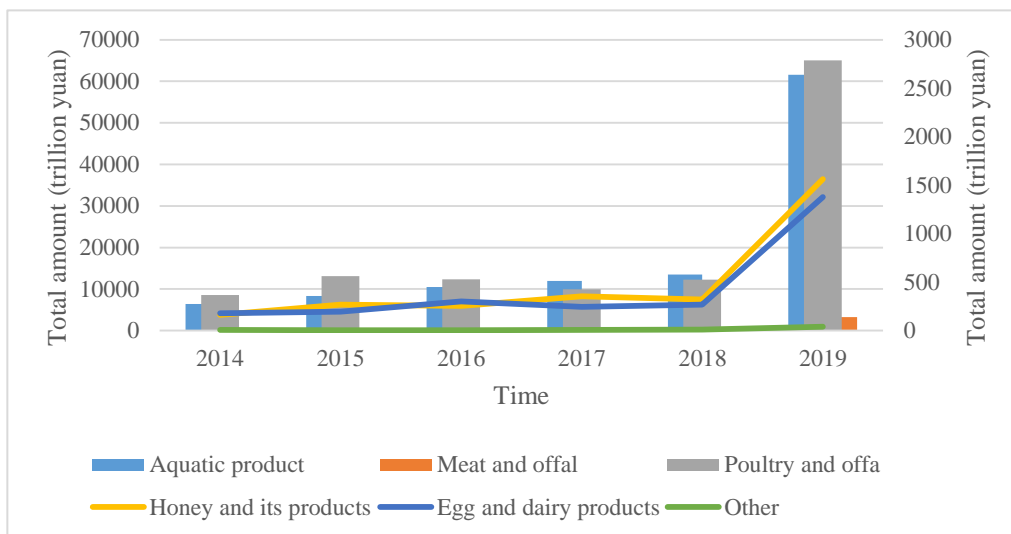


Figure 2. Import and export of all kinds of animal derived food in China

It can be seen from Table 2 and Figure 2 that from 2014 to 2019, China's animal-derived food product structure constitutes that the results show that China's import and export of aquatic and seafood products exceed 4/5 of the total export of animal-derived food, except for aquatic products. In addition, poultry meat and offal, animal meat and offal are also exported, accounting for a large proportion of the total export of animal-derived foods except aquatic products.

5. Analysis of International Competitiveness of Animal Derived Food in China

5.1. International Market Share

A comparative analysis of the international market share of animal-derived foods in major import and export countries from 2014 to 2019 is shown in Figure 3.

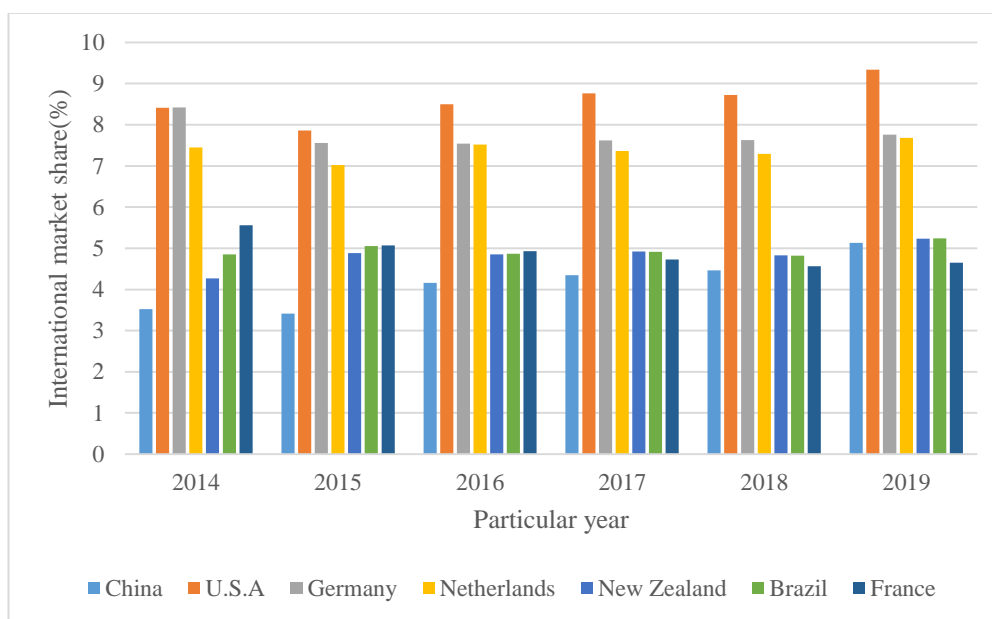


Figure 3. International market share of major countries

It can be seen from Figure 3 that China's animal-derived foods have obvious disadvantages, with the lowest share among the 7 countries. However, the proportion of our country is constantly rising and rising faster, and the gap between China's international market share and other countries is constantly narrowing.

5.2. Trade Specialization Index

The analysis of the trade specialization index of animal-derived food in major import and export countries from 2014 to 2019 is shown in Figure 4.

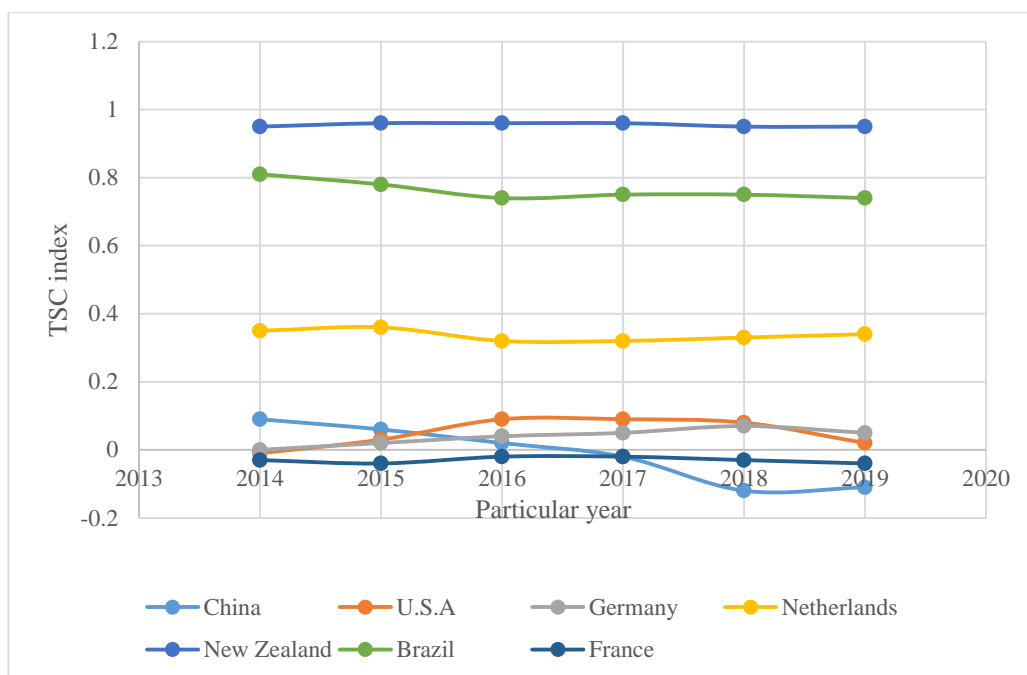


Figure 4. Analysis of trade competitiveness index

It can be seen from Figure 4 that China's TSC index shows a declining trend, the competitiveness advantage is not obvious, and basically maintains an average level. In recent years, the trade specialization index has gradually changed from a positive number to a negative number, that is, from the initial competitiveness to a slightly weaker situation. Compared with other countries, China's TSC index declines rapidly, which shows that compared with imports, China's animal-derived food exports have a great disadvantage. However, from the horizontal comparison, except for New Zealand, Brazil and the Netherlands, the gap between the TSC index value of China and other countries is not very large.

5.3. Explicit Comparative Advantage Index

An analysis of the explicit comparative advantage index of animal-derived food in major import and export countries from 2014 to 2019 shows the results shown in Figure 5.

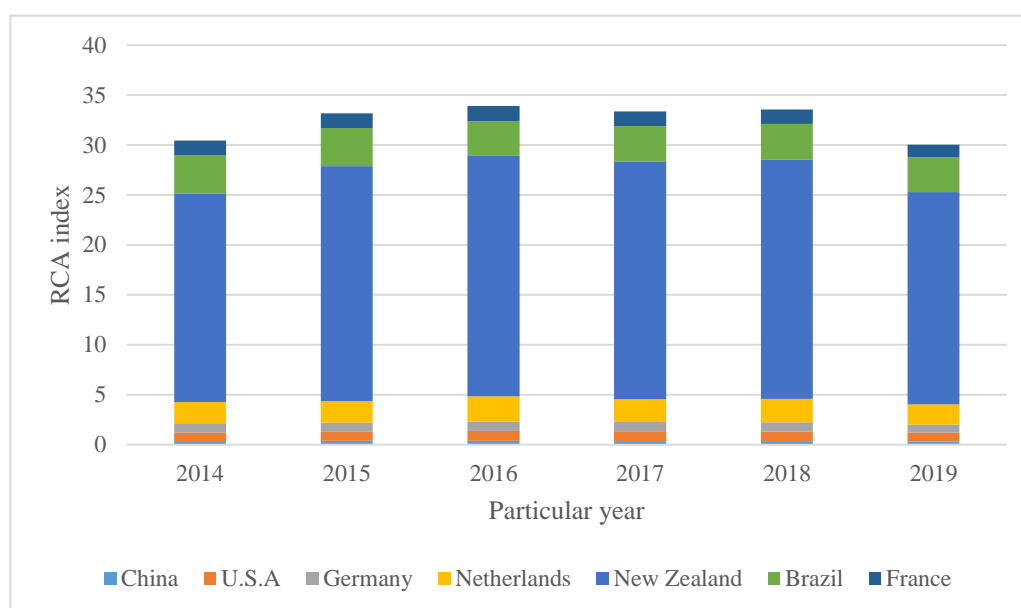


Figure 5. Analysis of dominant comparative advantage index

It can be seen from Figure 5 that China's animal-derived food export competitiveness has been weak. In recent years, the RCA index has been below 0.8, maintained at 0.3 to 0.4, and has a decreasing trend, indicating that it exports with similar products in the world. In contrast, China is in a relatively disadvantaged position, which is mainly determined by the high base of China's goods exports, which also reflects the structure of a country's export products. Comparing the changes in the RCA index of various countries, we can find that the RCA values have declined to varying degrees, which shows that the competitiveness of animal-derived food imports and exports has generally weakened worldwide. China's animal-derived food import and export competitiveness still has a lot of room for improvement.

6. Countermeasure Analysis

6.1. Accelerate the Popularization of Import and Export Trade Knowledge and Technical Training

Increase the publicity and education of animal welfare and traceability knowledge to illustrate the stakes. Help import and export companies to update their concepts so that they understand the severe situation facing China's animal-derived food import and export. Introduce the import and export enterprises to the animal welfare laws and traceable regulations of the relevant countries, as well as the animal welfare standards and the requirements of the traceability system in the entire food chain in the breeding, slaughtering, fishing and transportation of animal products in developed countries. And carry out relevant technical training.

6.2. Strengthen Relevant Legislation, Law Enforcement and Supervision

Promote the legislation of animal welfare and traceability in China, and establish a set of practical standards for animal welfare and traceability. Drawing on the relevant standard systems of developed countries and combining with the actual situation of China's aquaculture production and processing enterprises, gradually establish an animal welfare and traceability standard system that meets China's national conditions and covers the entire process of breeding, production and

transportation, so as to Traceability standards run through the production and consumption of exported animal-derived products, which can greatly enhance the competitiveness of China's export products.

6.3. Strengthen International Exchanges and Cooperation to Understand the Latest Developments

In addition to the government and industry associations paying close attention to the development of animal welfare and traceability systems, companies themselves should actively and timely understand the relevant dynamics, and after learning relevant information, actively study effective countermeasures.

6.4. Strengthen Enterprise Production Standards

Construction enterprises should draw on international standards, clarify specific standards and requirements for animal welfare and traceability, and actively promote standardized production that meets animal welfare and traceability requirements. Import and export enterprises should track and predict foreign animal welfare standards and traceable construction and implementation trends in a timely manner, refer to these standards as soon as possible to redesign the production process, improve technical equipment, improve the quality of enterprise products, and enhance the competitiveness of enterprises' import and export trade.

7. Conclusion

Animal-derived food refers to animal products derived from animals for human consumption, mainly refers to meat, eggs, milk and aquatic edible tissues and processed products. With the promotion of international trade, China's animal-derived food has also entered the international arena. This article initiated research on the import and export trade dynamics of animal-derived food in China, and made some suggestions after analyzing the import and export trade dynamics of animal-derived food in China.

This article uses a variety of research methods for research. This article first introduces and analyzes the relevant concepts and food safety aspects of animal-derived food, and secondly, analyzes the current status of import and export trade of animal-derived food in China. The structure of the imported and exported products of the source food and the overall situation of the import and export trade were analyzed, and three indicators were selected to analyze the competitiveness of animal-derived food in China.

The research in this paper found that the total import and export trade of animal-derived foods in China has been increasing from 2014 to 2019, and the import and export of animal-derived foods are mainly water and seafood. In addition, although the trade competitiveness of animal-derived foods in China is still lower than that of some developed countries, it has been improving. Therefore, this article puts forward some related suggestions for reference.

Funding

This article is not supported by any foundation.

Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this

study.

Conflict of Interest

The author states that this article has no conflict of interest.

References

- [1] Jian Zhou, & Longhua Ding. (2017). "Research on the Present Situation, Dilemma and Countermeasures of the Institutional Old-Age Care Model of " CMHC " * —Taking XinYu YinHe Park Elderly Service Center As an Examp", *Open Journal of Social Sciences*, 5(4), pp.68-84.
- [2] Aimee I. Porter, Rebecca A. Erwin-Cohen, Nancy Twenhafel, Taylor Chance, & Luis DaSilva. (2017). "Characterization and Pathogenesis of Aerosolized Eastern Equine Encephalitis in the Common Marmoset (*Callithrix Jacchus*)", *Virology Journal*, 14(1), pp.25. DOI: 10.1186/s12985-017-0687-7
- [3] Tom N. McNeilly. (2017). "Global Food Security Via Efficient Livestock Production: Targeting Poor Animal Husbandry", *Veterinary Record*, 180(11), pp.276-277. DOI: 10.1136/vr.j1236
- [4] Rita-Marie Cain Reid. (2016). "The Chicken and the Egg - Animal Welfare, Food Safety and Federalism", *Food & Drug Law Journal*, 71(1), pp.1-29.
- [5] D. Russick, & P.E. Urriola. (2017). "Digestibility of Food Waste-Derived Animal Feed", *BioCycle*, 58(9), pp.30-32.
- [6] Xu Qin, Lijie Zhao, Qingqing Huang, Yiyun Liu, & Yetong Liu. (2017). "Rapid Multi-Residue Determination of Pesticides in Animal-Derived Food Via Modified Quechers Sample Preparation and GC/MS", *Food Analytical Methods*, 11(24), pp.1493-1500.
- [7] Paulien Adamse, Stefanie Schoss, Rob M. C. Theelen, & Ron L. A. P. Hoogenboom. (2016). "Levels of Dioxins and Dioxin-Like Pcb's in Food of Animal Origin in the Netherlands During the Period 2001-2011", *Food Additives & Contaminants Part A*, 34(1), pp.78-92. DOI: 10.1080/19440049.2016.1252065
- [8] Will, D. (2018). "Food Animal Abuse Not Widespread", *Canadian Veterinary Journal La Revue Veterinaire Canadienne*, 59(1), pp.9.
- [9] Parviz Shayan, Dhakam Al-taghlubee, Ali Misaghi, David Shayan, & Brigitte Eckert. (2018). "An Innovative Reverse Line Blot for Simultaneous Detection of Animal Species in Food", *European Food Research & Technology*, 244(6), pp.1-7. DOI: 10.1007/s00217-018-3083-7
- [10] Sarah L. Zieger, Silke Ammerschubert, Andrea Polle, & Stefan Scheu. (2017). "Root-Derived Carbon and Nitrogen from Beech and Ash Trees Differentially Fuel Soil Animal Food Webs of Deciduous Forests", *Plos One*, 12(12), pp.e0189502.
- [11] Franck L. B. Meijboom. (2017). "More than Just a Vet? Professional Integrity As an Answer to the Ethical Challenges Facing Veterinarians in Animal Food Production", *Food Ethics*(4), pp.1-12.
- [12] D. Al-Ramamneh. (2018). "Reduce Heat Stress in Broiler by Adding Onion", *Russian Agricultural Sciences*, 44(1), pp. 92-96. DOI: 10.3103/S1068367418010160