

# Construction of the Impact Analysis Platform of Grain Import and Export Trade Based on the Multi-Dimensional Data Perception Model

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**Abstract:** The article analyzes from the perspective of the principles of international economics, the main influencing factors of the changes in the import and export trade volume of my country's agricultural products are: exchange rate, international food prices, etc. In order to further promote the healthy development of my country's grain trade, my country should increase food policy support, increase investment in agricultural production technology, drive by multi-dimensional data models, design model analysis engines, and output model examples for specific platforms to build a data warehouse. Actively look for food export measures to cope with price advantages. Further opening up the grain trade market and increasing grain imports by an appropriate amount will become a basic trend.

**Keywords:** Impact Analysis, Impact Analysis, Multi-Dimensional Data, Data Perception

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## 1. INTRODUCTION

In recent years, with the rapid progress of science and technology and the rapid development of social productivity, mankind has created unprecedented material wealth and accelerated [1] the process of social and economic development. However, just as human beings are pleased with the material [2] civilization they have achieved, a series of problems [3] such as a worldwide population surge, food shortages, energy shortages and ecological environment deterioration [4] have appeared. These major global problems seriously hinder the sustainable development of human society and economy [5]. After the "United Nations Conference on Environment and Development" was held in Brazil in December [6] and the "Rio De Janeiro Declaration on Environment and Development" centered on sustainable development [7] was adopted, population, resources, environment and development have become the hot spots of the world's attention [8]. With development gradually taking root in the hearts of the people, mankind began to pay attention to the balance of the earth's ecological system and the rational use of resources [9].

With the gradual liberalization of agricultural trade, international [10] food trade has developed rapidly. According to calculations based on data in the United Nations Statistics Office database [11], the world's total cereal exports have increased by 100 million U.S. dollars each year, and the annual growth rate [12] has more than doubled, with an average annual growth rate of up to 100%. Grain trade has long been an important factor [13] that regulates the relationship between international food supply and demand and affects the food security of all countries [14]. As the most populous country in the world, China is a typical food demand country. Although China has maintained the above-mentioned food self-sufficiency rate for a long time, it is still one of the main members of the world's grain trade due to the fluctuation of domestic grain supply [15] and demand and the need for adjustment of grain varieties. The five major issues facing humans, population, food [16], energy, resources, and the

environment, are more or less, directly or indirectly related to the use of land resources [17]. Land is the first resource that humans rely on for survival and reproduction, including natural resources and social resources. Play a role or show status in or through land use [18].

Cultivated land integrates ecological, economic and social functions, and its change affects the function and utility of the entire land [19] use system, so it has become the most important link in the chain of driving force changes in the land use structure system [20]. Cultivated land is the basic support resource for the existence and development of human society. According to statistics [21], China's food is provided by cultivated land, and the above meat, eggs, and milk are transformed from products provided by cultivated land. First, it is conducive [22] to enriching the theoretical research on international grain trade [23]. David Ricardo's theory of comparative advantage points out that a country should export products with comparative advantages and import products with comparative disadvantages [24]; Heckscher-Olin's factor endowment theory further points out that products with comparative advantages are those A large number of products supplied by the country's abundant production factors are used. In the traditional sense, grain is a land-intensive agricultural product; under the conditions of modern technology, grain production has gradually changed from labor-intensive agricultural products to capital and technology-intensive agricultural products.

The terminal multi-dimensional and multi-level information collection adopts the information collection mode that combines "collector" and "sensor". The collector reports the data to the sensor in real time, and the server cluster performs rapid data analysis to judge and locate suspicious behavior. Using terminal multi-dimensional data collection to actively discover suspicious behavior and quickly take emergency response is the best way to detect threats earlier, and this approach can also greatly reduce the impact of threats.

Compared with the United States and other western developed agricultural countries, China is not rich in land, capital, and technology. That is, grain is a relatively disadvantaged product in China, and China should be a net importer of grain. However, since the founding of New China, China has been a net exporter of grain for many years. Since ancient times, our country has had the ancient motto of "food is the heaven for the people". The food issue has been an issue that governments all over the world have attached great importance to in the process of national governance since ancient times. Therefore, all countries have been committed to the vigorous development and continuous innovation of agricultural science and technology.

## 2. THE PROPOSED METHODOLOGY

### 2.1 The Multi-Dimensional Data Perception Model

A regression analysis model was used to estimate the influencing factors of food price fluctuations, and quantitatively estimate the impact of changes in various influencing factors on my country's grain prices, especially it is the impact of grain import and export trade on domestic grain prices. building a regression equation In the process of , take the natural logarithm of each variable to linearize the data trend and eliminate the heteroscedasticity existing in the time series, and its regression coefficient represents the meaning of elasticity.

In the export structure, the export volume of wheat is very small, although the export volume has increased for a period of time, but Since 2012, the export volume began to decline again, and the proportion of exports was only 0.3%. Rice has always been exported to China the main grain varieties, but the export volume fluctuates greatly. After 2008, the export volume of rice basically It has remained at around 40%, making it the grain variety with the largest export volume in China. A Comparison of the Fluctuations in the Export of Corn Large, the proportion dropped from more than 50% to about 10% after 2008. Changes in the export volume of soybeans It is not large, and the proportion is basically below 30%, but since 2008, the export volume of soybeans has begun to rise. Therefore, China's largest export of grain is rice, followed by soybeans, wheat and corn.

Terminal forensics and terminal responses cooperate with each other, and mutual linkage is the basis of forming a chain of evidence. Dimensions refer to the various angles of analyzing the problem. For example, we want to be able to analyze the sales of a certain product according to time and region, then the time, region, and product here are the corresponding dimensions. Starting from different dimensions, we can summarize the metrics, or conduct a comprehensive analysis based on all dimensions.

In my country's current grain import structure, soybean marketization is relatively complete, and the demand elasticity is relatively low. Therefore, it is less affected by changes in grain prices in the world market, while my country imports high-quality wheat all year round. Therefore, the import of wheat is greatly affected by the fluctuation of grain prices in the world market. Although my country also imports a certain amount of rice, my country's rice is mainly exported for the purpose of Adjust the contradiction between domestic supply and demand and stabilize domestic rice prices. Therefore, the export of rice is subject to the availability of grains in the international market. Changes in food prices have little impact.

### 2.2 The Food Import and Export Trade

From the perspective of total trade, my country's total grain trade increased from 7.91 billion US dollars in 1979 to 82.1 billion US dollars in 2008. my country has become the world's fourth largest food importer and fifth largest exporter. From Figure 1, we can see that my country's grain export volume did not change much from 1979 to 1983. During the ten years from 1984 to 1994, although there were years when export volume declined, the overall trend was on the rise. After 1995, the export volume of grain went through a series of fluctuations and reached the highest level in history in 2003. Since 2004, my country's grain import and export volume has fallen sharply. From the historical experience of the development of international trade, it can be known that the surplus products available for exchange are one of the preconditions for the production of international trade, which shows that supply factors play a decisive role in the production and structural changes of international trade.

For this reason, from the early ideas of mercantilism, to the later theory of absolute advantage, comparative advantage, and contemporary trade theory, most of them discussed the emergence and structural changes of international trade based on the perspective of supply. In fact, the impact of supply conditions on the trade structure is mainly realized through changes in the supply conditions of production factors. The supply conditions of production factors determine a country's position in the international division of labor, and thus determine the country's foreign trade structure. Based on the supply of different factors of production on which the trade theory is based, trade theories based on the perspective of supply can be divided into three types: trade theory under different production technology levels, trade theory under different production factor endowments, and different production scale states Under the trade theory. The analysis is the direct impact of economic growth on food production, and the technical factors and sown area are used as control variables. This article uses the added value of capital investment in agricultural production as a substitute variable.

## 3. CONCLUSIONS

China's grain import and export trade is the best way to solve China's grain problem. Importing grain from the world market can solve the problem of domestic grain shortage, while exporting domestic grain varieties with comparative advantages in the world market can gain benefits. With the continuous improvement of my country's economic level and the establishment of a new international economic order, in the next few years, my country's net imports of grain trade will continue to rise. At the same time, the competitiveness of our country's agricultural products should be improved from other aspects such as brand and quality, and efforts should be made to expand export trade, so as to take advantage of the rising trend of international food prices to obtain more benefits.

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