

# Research on the Dynamic Relationship Between Scientific and Technological Complaints and Agricultural Economic Growth

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## Abstract

China is an agricultural country, so agriculture is one of China's important basic industries. With the continuous improvement of science and technology, the integration of science and technology and agriculture has become the main development trend of agriculture in the future. As long as the purpose of science and technology complaints is to supplement and improve the investment in science and technology, this paper will study the dynamic relationship between the two and propose relevant coordination countermeasures.

## Keywords

Science and technology complaints; Agricultural economy; A dynamic relationship.

## 1. Introduction of Relevant Concepts

### 1.1. Connotation of Scientific and Technological Investment

The concept of scientific and technological input can be understood from the macro and micro perspectives. From the macro perspective, scientific and technological input is to set relevant goals for scientific research and conduct relevant research. What needs to be paid attention to in this process is the issue of investment quantity and the detailed determination of various factors invested in scientific and technological research. From the micro perspective, its scope is more specific than the macro time, that is, to conduct correlation analysis of various factors in the experiment and research and confirm the specific investment amount. In this paper, the specific scope of the concept is micro science and technology investment research[1].

### 1.2. Composition of Science and Technology Investment

There are three different elements in science and technology investment, namely government science and technology investment, non-government science and technology investment and science and technology loan. Among them, government investment in science and technology is state-approved investment in science and technology. Government investment in science and technology can also be divided into central financial funds and local financial funds, which are directly responsible by different government departments. Non-governmental investment in science and technology refers to the sources of scientific and technological funds from outside the government agencies. The main sources include relevant enterprises and research institutions in the industry and self-raised funds of colleges and universities. The non-government scientific and technological input of enterprises mainly comes from the profit of their commodities, while the non-government scientific and technological input of universities comes from the copyright and patent of their research results. Finally, in terms of science and technology loans, the main source is financial institutions' support for science and technology research, and economic institutions receive dividends after the research and development of science and technology products[2].

Scientific and technological input can be divided into two aspects in content composition: human resources input and capital input. Human resources input is the pillar in the process of scientific and technological development. Scientific and technological personnel are the carrier of scientific and technological communication and development, and their personnel mainly include R&D personnel, scientific and technological activity personnel and technical personnel. And fund respect, can divide into fund of scientific research infrastructure and scientific career fund to wait. To provide a detailed overview of this, the following sections are presented in the form of images, as shown in figure 1.

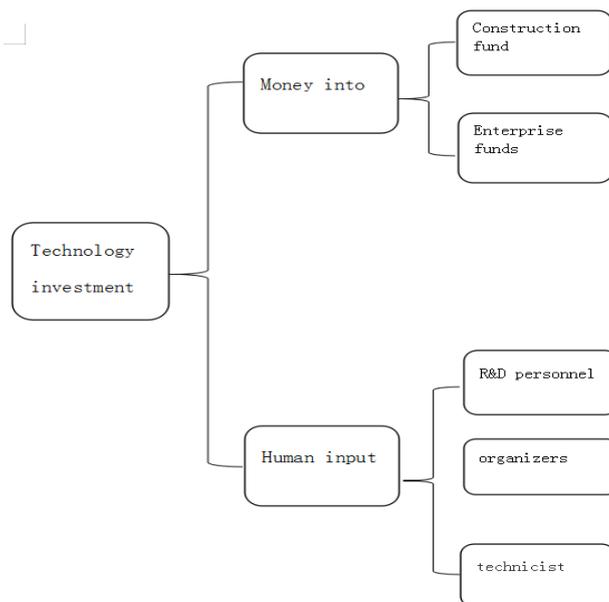


Figure 1. Technology investment system diagram

## 2. Status Analysis of Agricultural Economic Growth and Dynamic Analysis of Scientific and Technological Investment

### 2.1. Current Situation of Agricultural Economic Growth

As the primary industry, agriculture has maintained a growth trend in the past decade. From 2007 to now, China's total agricultural output has increased by three times, with an annual growth rate of 14.1%. In the following paragraphs, specific values of the last 5 years will be shown in the form of charts, as shown in figure 2 for details.

year	Total GDP (100 million yuan)	Total value of primary industry (100 million yuan)	Proportion (%)
2013	595244.40	55329.10	9.27
2014	643974.00	58343.50	9.05
2015	689052.10	60862.10	8.83
2016	743585.50	63672.80	8.56
2017	827121.70	65467.60	7.91

Figure 2. Total value table of China's primary industry from 2013 to 2017

After summarizing the contribution rate of the primary industry through figure 2, another data reflecting the current situation of agricultural growth is the contribution rate of the primary industry. The following will summarize the contribution rate of the primary industry in the past five years and show it in the form of a graph, as shown in figure 3 for details.

year	Contribution rate of primary industry (%)	GDP growth percentage
2013	4.4	0.3
2014	4.6	0.3
2015	4.7	0.35
2016	4.3	0.34
2017	5.2	0.41

**Figure 3.** 2013-2017 China's primary industry contribution rate table

## 2.2. Dynamic Analysis of Scientific and Technological Investment

In this paper, vector autoregressive model is adopted for dynamic analysis. The specific principle is to take the generated variables as hysteresis values and analyze the single variables through autoregressive model. On this basis, this paper applies the specific agricultural data from 2013 to 2017 to obtain accurate dynamic relationship analysis values. In order to show the actual results, the following will be shown in the form of pictures, as shown in figure 4.

The sequence	Test type (C,T,K)	P values	conclusion
LASTT	(C,0,0)	0.925	unstable
LAGDP	(C,0,1)	0.856	unstable
$\Delta$ LASTT	(C,T,0)	0.0036	smooth
$\Delta$ LAGDP	(C,0,0)	0.024	smooth

**Figure 4.** Results of dynamic analysis of technology investment

Through the analysis of the results in the figure, it is found that it is an unstable situation in the time series. However, it can be seen from the formula that there is a certain stable relationship, and the specific formula is:

$$LAGDP_t = 0.6823 + 0.682LASTT_t$$

$$R^2 = 0.985 / F = 1086.2$$

At the same time, according to the granger causality test, it is found that there is a long-term equilibrium relationship, and the granger reason LAGDP is LASTT can be found after checking it. Therefore, the sequence of science and technology input variables and the total value of agricultural GDP are both unstable sequences, but they have a large relationship, with the elastic ratio of 0.65, which is very high enough to verify that it is the existence and unique coordination relationship. The effect of investment increases gradually with the time of investment. In addition, it can be concluded from its marginal diminishing property that unilateral input has certain effects on agricultural economic growth, but the effect is not significant enough. Therefore, reasonable allocation of its resources in the future is more effective than simply increasing the value [3].

### **3. Countermeasures for Future Agricultural Economic Development**

#### **3.1. Improve the Investment Structure**

In the innovation of agricultural science and technology, the government should strengthen support. In the overall structure of the past results of other countries, it is found that the effect of science and technology investment can be truly exerted when the investment in science and technology reaches more than 2% of the total agricultural GDP. Therefore, in the investment structure, it is necessary not only to ensure sufficient investment amount, but also to coordinate the proportion of funds in the investment. For this reason, developed countries can learn from relevant aspects, improve the system, and establish stable and effective relevant mechanisms.

#### **3.2. Improve the Investment Environment**

As mentioned above, as long as the agricultural investment fund consists of government funds, non-government funds and technology loans, the rest of the funds are rare, so the source of funds is relatively simple, which has a certain impact on the development of agricultural science and technology. Therefore, it is necessary to change the investment environment, appropriately reduce the financing cost of agricultural science and technology enterprises and change their listing threshold to optimize their investment environment. Secondly, a special fund can be set up to maximize the diversification of its contribution. Finally, the division of labor between the government and the market is rationalized to facilitate the cooperation between Banks and enterprises.

#### **3.3. Increase Investment in Scientific and Technological Personnel**

The essence of the improvement of science and technology comes from the research of scientific and technological personnel, and agriculture can do the same. Therefore, in order to ensure the rapid and stable development of agricultural science and technology, attention to scientific and technological personnel is essential. At present, the brain drain of agricultural scientific and technological personnel in China is relatively serious, so relevant departments should pay attention to it, increase the investment in scientific and technological personnel, improve the treatment of agricultural scientific and technological personnel, and increase their incentive policies. When scientific and technical personnel make important discoveries and research progress, additional subsidies are given to them. At the same time, we should strengthen the re-education investment of technical personnel to ensure their professional skills keep pace with The Times [4].

#### **3.4. Clear Protection of Intellectual Property Rights**

Finally, the innovation and development of agricultural science and technology cannot be separated from the integrity of intellectual property protection. Through the improvement of the intellectual property protection system, the costs generated in the process of scientific research can be solved internally through its benefits. Therefore, the government of our country should strengthen the initiative and enthusiasm of intellectual property protection and absorb more private sectors to carry out relevant researches by such means. Ensure that all agricultural scientific and technological achievements can eventually be commercialized and marketed.

### **4. Endnotes**

Through the discussion of this paper, the author USES vector autoregressive model to analyze the dynamic development of China's agricultural economy, and puts forward relevant countermeasures for its future development, hoping to make contributions to the coordination of the relationship between China's agricultural economy and scientific and technological input in the future.

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