

# Research on Operation and Management Mechanism of Science and Technology Innovation Fund

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**Keywords:** Technological innovation; fund operation; management mechanism; the reference;

**Abstract:** With the continuous development of the current scientific and technological innovation, relevant departments have also carried out optimization analysis on the fund operation and management mechanism. In the management and operation method, the supervision mechanism of scientific and technological innovation fund is improved to improve the risk control of scientific and technological innovation fund. In the link of loss sharing risk control, the scientific and technological innovation fund is limited by the amount of investment by the investors and bears corresponding responsibilities for the debts of the sub-fund. In addition, the author makes a detailed analysis in order to provide reference basis.

## 1. Introduction

As an important subject in the field of scientific and technological innovation investment, the government plays a crucial role in promoting the development of scientific and technological innovation industry after intervening in innovation investment. The scientific and technological innovation fund established under the guidance of the government and extensively absorbing private capital plays a decisive role in supporting the sustainable development of scientific and technological innovation.<sup>[1]</sup> This chapter mainly discusses the significance, background and basis of the topic selection, and carries on the optimization and rectification, obtains the better application result.

## 2. Operational characteristics of science and technology innovation fund

First, the Science and Technology Innovation Fund has set up a special fund management institution, the Fund Management Committee, to conduct operations and investment management. The fund management committee consists of an expert review committee and an expert advisory committee. Through a strong information network and a large number of professional investment researchers, the company conducts professional and comprehensive dynamic tracking and analysis of the market, which enables the fund to have professional investment management capabilities.

Second, the Science and Technology Innovation Fund is a government-led fund that cannot diversify investment risks by purchasing different stocks. Therefore, other methods are used to diversify risks, such as establishing a sub-fund through cooperation, adopting an unconditional exit mechanism and a “highly authorized + benefit bundling” model.

## 3. Composition of the Science and Technology Innovation Fund

### 3.1 Technology Innovation Fund

In terms of fund raising, the Science and Technology Innovation Fund is a parent fund, and the source of funds is mainly funded by the government. The four sub-funds established are funded by 5%-10% of the parent fund and 90%-95% by commercial banks, realizing a dozen times of social capital investment with a certain proportion of financial allocation funds. The management of the parent fund is entrusted to the Science and Technology Innovation Fund Management Committee. The management of the Sub-Fund shall be managed by the Parent Fund Management Committee and the Industrial and Commercial Bank to have the highest level of financial management

institutions in the country to manage and establish the Sub-Fund Management Committee.

### **3.2 ICBC Communication Information Fund**

On the basis of government funding, the Science and Technology Innovation Fund, in conjunction with ICBC, adopted the method of financial funds to subsidize banks, set up ICBC Communication Information Fund, the parent fund invested 250 million yuan, and ICBC invested 3 billion yuan. The total fund size is 3.25 billion yuan, which is mainly used to provide financial support for communication technology innovation.<sup>[2]</sup> ICBC Communications Information Fund established a special sub-fund management committee, namely the ICBC Communication Information Fund Management Committee, which is responsible for the fund declaration, declaration review and fund supervision of the Sub-Fund. The management committee is only responsible for management, and the third party is still supervised for the funds themselves.

### **3.3 Jianyin Marine Industry Fund**

The marine industry is a comprehensive industry that provides the necessary technical equipment for marine development energy transportation, water transportation, construction, etc., and is an indispensable part of the national equipment manufacturing industry. It is also an important part of the national economy that develop the strategic industries that are closely related to the national security. The Jianyin Marine Industry Fund established a special sub-fund management committee, namely the Jianyin Marine Industry Fund Management Committee, which is responsible for the fund declaration, declaration review and fund supervision of the Sub-Fund. The management committee is only responsible for management, and the third party is still supervised for the funds themselves.

### **3.4 BOC Biotechnology Fund**

Biology and chemistry are the foundation of agronomy and medicine, and biotechnology is indispensable for modern science and technology research. Therefore, countries around the world attach great importance to the development of biochemical technology and continue to expand research in this field, including bionics, demography, environmental and energy issues. In order to improve China's biochemical technology development and biochemical technology innovation capabilities, to also improve the international competitiveness and effectively solve the funding problems of biochemical technology development, with the Science and Technology Innovation Fund as the mother fund on the basis of government funding, joint Bank of China to take financial funds the way bank discounts, to establish BOC Biochemical Technology Investment Fund and Artificial Intelligence Technology Innovation Fund.

## **4. Investment management of science and technology innovation fund**

### **4.1 Management issues of science and technology innovation funds**

At present, the Science and Technology Innovation Fund is the way in which government departments conduct supervisors and adopts decentralized management, in this way lacks effective and unified administrative supervision and social supervision institutions, and there also lacks effective follow-track supervision on the financial funds allocation, so whether it is from the difficulty of the management or from the efficiency of the management both increased the operating costs of science and technology innovation funds and also increased the investment risks. In addition to government management, there are also scientific and technological innovation fund management institutions, which are not separated from government functions and are often affected by government actions. The regulatory system of China's science and technology innovation fund is also not perfect, the most serious of which is insufficient attention to the selection and internal control mechanism of investment managers. In addition, the financial management system and accounting system of science and technology innovation fund are not perfect, which makes the government lack of supervision on the raising and use of science and technology innovation fund, and also lack of relevant safety awareness and responsibility of maintaining and increasing value in

the use of funds.

#### **4.2 Technology Innovation Fund Management Structure**

The management of the Science and Technology Innovation Fund is under the responsibility of the Fund Management Committee, which is responsible for the decision-making of the entire fund. The committee consists of an odd number of members, one of whom is the director of the Fund Management Committee, the remaining members are members of the management committee and should be fully represented. At the same time, the committee members should include the election committee, the appointment committee members and the elected members to ensure the impartiality and authority of the fund management committee, which is conducive to the maximum protection and realization of the fund's objectives; the board of directors under the management committee (acceptance department, audit department, finance department), Supervisory Board, Expert Review Committee and Expert Advisory Committee, mainly for expert consultation and guidance, industrial decision-making and supervision, among which: the director of the fund management committee is the first executor of the fund, appointed by the government according to the request of the foundation management committee, responsible for leading the daily work of the foundation.

#### **4.3 Application for Science and Technology Innovation Fund, Reward and Punishment**

On the basis of the method of obtaining funding, the Science and Technology Innovation Fund will download the application form of the fund project through the fund website or other forms on the basis of preliminary investigation and research, and fill in the relevant content as required, and then submit it to the relevant competent department for approval. After the review and approval, the fund will be reviewed by the Science and Technology Commission of the Fund, and the application method for approval can be approved. At the same time, it is also possible to learn from the practices of foreign related science and technology innovation funds, such as In-Q-Tel Corporation of the United States, which is a non-profit venture capital company funded by the US government. Its main responsibility is to establish a bridge between the government, venture capital and entrepreneurial companies, and become a meeting point between the three, which can get rid of the traditional government project office model, and take the initiative to actively seek out in the market. The right companies to invest and cooperate to be truly close to the market and start-up companies, consistent with the speed and agility required by the market. <sup>[3]</sup>

### **5. Risk control measures for science and technology innovation funds**

#### **5.1 Improve the regulatory mechanism of the Science and Technology Innovation Fund**

In order to ensure the safety and effectiveness of the science and technology innovation fund investment, prevent the technology innovation fund from being misappropriated, and prevent possible financial risks and crises, it is necessary to establish a sound regulatory system for the operation of the science and technology innovation fund. Through the system of supervision system and regulations of construction and the corresponding regulatory construction, guarantee the government investment in fund in the diversification of the supervision and management ability, the structure and proportion of assets in the fund investment regulation, create a diverse and dispersed specification and effective system of science and technology innovation fund investment operation accordingly to promote the construction of our country market economy system and the improvement of the science and technology innovation system, gradually form China's science and technology innovation fund supervision work institutionalized, standardized, standardized, regular management.

#### **5.2 To improve on the risk control of science and technology innovation funds**

First, the loss-sharing, science and technology innovation fund is limited by the amount of investment of the investor, and bears corresponding responsibility for the debt of the sub-fund. When there is a loss in the liquidation of the Sub-Fund, the Sub-Fund Management Committee shall first bear the loss liability for the contribution of the Sub-Fund, and the remaining amount shall be

borne by the Parent Fund and other investors according to the proportion of the capital contribution.

Second, the withdrawal of capital contribution, the science and technology innovation fund can take unconditional withdrawal measures for the sub-fund when the unconditional exit occurs in the operation of the sub-fund.

The third is to choose a limited partnership. First of all, as a fund investor of the Sub-Fund, it does not participate in management and management, so as to avoid the intervention and influence of non-professional management personnel on the operation of the fund. At the same time, it reduces the debt liability for the sub-fund loss and increases the risk-taking ability of the parent fund. Secondly, the management of the Sub-Fund must invest in proportion to the sub-funds it manages. This can reduce the investment risk of the Sub-Fund and establish a long-term interest relationship with the Manager, which will promote the long-term development of the Sub-Fund.<sup>[4]</sup> Finally, there must be certain restrictions on the fund manager, such as limiting the scope, direction, and amount of investment, and reducing the probability of the manager's moral hazard.

## 6. Summary

This article uses a combination of literature induction, comparative analysis, expert interviews, modeling and argumentation, thus analyzes the main contradictions of the current domestic government guidance funds, and fully demonstrates the importance and necessity of setting up the science and technology innovation funds in China, and proposes a mechanism suitable for the management and operation of China's science and technology innovation funds. In order to ensure that the technology innovation fund can operate efficiently, it must be carefully considered in the design of the fund operation mechanism. The fund designed in this paper belongs to the government-guided fund. It not only has the characteristics of the general government guidance fund, but also solves some contradictions in the operation of the general government guidance fund. It can basically meet the special requirements of the capital operation of innovation activities in China's high-tech fields, and has relatively profound research significance.

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