

Analysis of Farmers' Income Security Mechanism under the View of Food Security

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Abstract: Food security is closely related to global livelihood, and the low income of grain farmers poses a real challenge. The income security mechanism for farmers has gradually become a key factor in ensuring food supply. This paper aims to delve into the income security mechanism for grain farmers. Firstly, it emphasizes the importance of food security and presents an overview of the evolution of relevant policies using China as an example. After a thorough analysis of the existing issues within the security mechanism, the paper proposes recommendations to enhance the mechanism, including strengthening price support policies for agricultural products, optimizing the agricultural industry chain, improving the wage system for farmers, fostering agricultural management entities, and promoting agricultural technological innovation. These suggestions aim to improve the rural economic system, ensure farmers' income, enhance their enthusiasm for grain production, and address the global food security challenges.

Keywords: Food security, Farmer's income, Safeguard mechanism, Enthusiasm of grain growing

1. Introduction

The United Nations has put forward a more comprehensive and coordinated concept of food security, defining it as the concept and strategic goal of achieving sustainable agricultural development on the basis of maintaining the security of the country's food supply, fully safeguarding the interests of food producers and consumers^[1]. The core of this concept lies in the emphasis on the continuity and stability of food supply, expanding the scope of food security from simple food supply to a wide range of food production, consumption and distribution, which are closely related to national economic development and social stability. Food security is no longer simply the pursuit of yield growth, but focuses more on the economic situation of farmers. The economic returns of farmers are directly related to the stability of the countryside and the sustainability of agriculture. Therefore, in building the farmers' income guarantee mechanism, policy makers need to pay more attention to balancing the interests of all links in the industrial chain to ensure that farmers can obtain reasonable economic returns in food production^[2].

The establishment of the farmers' income guarantee mechanism needs to start from a number of aspects, including improving agricultural support policies, raising the level of agricultural science and technology, and optimising the structure of agricultural production, etc. At the same time, it is also necessary to strengthen the distribution of agricultural products. It is also necessary to strengthen the circulation of agricultural products and the construction of the market system, to ensure that agricultural products can be smoothly circulated to the market, to improve the added value of agricultural products, so as to increase the farmers' income. Guided by the concept of food security, Global agriculture will develop in a more modern and sustainable direction. By paying attention to the economic situation of farmers and establishing a sound mechanism for guaranteeing farmers' income, we can better realise the organic combination of food security and sustainable agricultural development, and promote the overall enhancement of Global rural economy.

2. Importance of Implementing a Mechanism to Guarantee Farmers' Returns

2.1 The issue of global food security continues to persist

The issue of global food security has been a matter of great concern for the United Nations and

various countries. Despite advancements in technology and increasing agricultural productivity over the years, the problem of global food security still persists. In the 21st century, there have been four major international food crises^[3].

The first crisis occurred during the period of 2007-2008 when the world faced issues such as food shortages, reduced yields, and soaring prices. According to the FAO report, 47 countries were affected by this crisis, which was primarily caused by natural disasters and a financial crisis leading to a decrease in food production. The second crisis spanned from 2010 to 2011, during which countries like Russia, Ukraine, Canada, and the European Union experienced severe natural disasters. Governments adjusted their trade policies to protect domestic food security. Extreme weather events and trade protection were the main causes of this crisis. The third crisis emerged in 2020 due to the COVID-19 pandemic. The international food market experienced turbulence, and the global economic downturn resulted in a decline in the ability of impoverished populations to access food. The fourth crisis occurred in 2022 as a result of the Russo-Ukrainian conflict, which significantly impacted numerous countries internationally. Refer to Table 1 for further details.

Table 1: Four large-scale international food crises in the 21st century

Sequence	1	2	3	4
Crisis Period	2007-2008	2010-2011	2020	2022
Cause	Natural disasters, Financial crisis	Extreme weather, Trade protection	COVID-19 pandemic	Russo-Ukrainian War

2.2 The strategic fortress role of the income security mechanism for farmers

Firstly, it is directly related to the livelihoods and living standards of hundreds of millions of farmers. This group occupies an important position in Global agricultural production, and their livelihood and economic situation depend directly on agricultural output and the prices of agricultural products. Therefore, ensuring their earnings and maintaining their basic living standards is not only a matter of caring for individual farmers, but also a stabilising support for the entire agricultural production order^[4].

Secondly, the mechanism for guaranteeing farmers' returns is an important guarantee for achieving the goals of agricultural modernisation and rural revitalisation. Every country in the world will need to modernize in the future, of which agricultural modernisation and rural revitalisation are important components. This means not only the improvement of agricultural production methods and efficiency, but also the diversified development of the rural economy, the increase of farmers' income and the improvement of living standards. Rural revitalisation requires a stable and sustainable rural economic system, which in turn requires farmers to be able to earn a stable and reasonable return on their production, thus creating a virtuous circle^[5].

In addition, an in-depth study of the mechanism for guaranteeing farmers' returns is crucial to achieving the goal of building a modern country in a comprehensive manner. This includes the establishment of an income distribution system favourable to farmers at the policy level, the optimization of the price formation mechanism for agricultural products, and the strengthening of the construction of agricultural insurance and social security systems, among other measures. At the same time, agricultural institutions and all sectors of society can help farmers to improve their production and increase their earnings by supporting farmers' cooperatives and providing technical training^[6]. Therefore, in order to achieve this goal, the combined efforts of the Government, agricultural institutions and all sectors of society are needed. The Government should ensure that farmers benefit from agricultural development by formulating policies that are more favourable to them, encouraging agricultural inputs and increasing the added value of agricultural products.

To sum up, the improvement of the mechanism for securing farmers' returns is crucial to the improvement of farmers' living standards and the achievement of the goals of agricultural modernisation and rural revitalisation^[7]. Only by ensuring the return of farmers can we promote the sustainable development of agriculture and make positive contributions to the healthy and stable development goals of the country.

3. Stages in the Development of The Policy on Farmers' Income Security

Taking China as an example, this part aims to outline the changes in income security mechanisms

and policy developments in five stages from 1949 to the present day^[8].

(1) Phase I: Unified Purchasing and Marketing Stage (1949-1977)

In order to combat speculation in the grain market, control inflation, and achieve a balance between grain supply and demand, the central government established the Grain Department in 1952, instituting a system for grain procurement, marketing, and sales. In 1957, further measures were introduced to regulate the grain market and abolish the nationwide grain trading market^[8]. However, the unified procurement and sales policy disrupted the functioning of the grain market, distorting prices and impacting farmers' enthusiasm for cultivation, thus impeding the development of grain production. Agricultural tax revenue amounted to 1.91 billion yuan in 1950, accounting for 39% of the total tax revenue that year, and subsequently averaged around 3 billion yuan annually, reaching a cumulative total of 82.1 billion yuan by 1978. In short, during this period, the state's efforts to guarantee the income of grain farmers were primarily a solution to the problem of "farmers' subsistence".

(2) Second stage: Parallel phase of the two-track system (1978-1992)

During this period, the central Government took the initiative of establishing a Ministry of Grain and a system of unified purchase and marketing of grain in order to solve the problems of the grain market. However, as socio-economic development progressed, these policies interfered with the normal mechanism of market functioning and had a negative impact on farmers' incentives to grow food. The policy of unified purchase and marketing of grain allocated economic resources through administrative command prices, distorting market prices for food and leading to limitations on farmers' returns. The growth of the various taxes on agriculture has also been a problem, increasing from 1.91 billion yuan in 1950 to 82.1 billion yuan in 1978, accounting for a larger proportion of total tax revenue. This suggests that farmers have borne a considerable burden in terms of taxation, which has affected the growth rate of their real net income. In this context, while the policy has addressed the issue of "farmers' subsistence" to a certain extent, it has also brought about new challenges and imbalances. In future development, there is a need for more integrated consideration of market mechanisms and farmers' rights and interests in order to promote sustainable agricultural development. Possible ways to do so include adjusting tax policies, improving food market management mechanisms and encouraging the modernisation of agriculture, so as to better balance food supply and demand, raise farmers' income levels and promote overall economic development^[9].

(3) Phase III: Balance of Taking and Giving (1993-2003)

In the 1990s, China's agricultural policy underwent a transition from "discrimination and deprivation" to "support and subsidy", with a gradual trend towards a balanced approach to agriculture. Although the state still collected agricultural taxes and fees during this period, fiscal transfers to agriculture increased rapidly, providing more support to agriculture. This change reflects the Government's policy and institutional reforms in safeguarding the returns of grain farmers, while at the same time displaying a path-dependent character.

During this period, the problem of food and clothing for grain farmers was basically solved, marking a successful reorientation of agricultural policy. The Government's focus gradually shifted from the issue of food and clothing to a phase of transition to solving farmers' poverty, laying the groundwork for the comprehensive development of the rural economy. This policy evolution reflects the Government's active efforts to promote sustainable agricultural development and improve farmers' living standards, laying a solid foundation for future agricultural modernisation and rural revitalisation.

(4) Phase IV: Tax Collection Supplement (2004-2019)

The phase in which the agricultural subsidy policy was gradually strengthened following the abolition of the agricultural tax marked an important stage in China's rural areas in terms of lifting farmers out of poverty. This period fully demonstrated the firm determination of the Government to increase and safeguard the income of grain farmers, and was also a concrete manifestation of the gradual narrowing of the income gap between urban and rural residents. The abolition of agricultural taxes eased the burden on farmers, while the strengthening of agricultural subsidy policies further supported their productive activities. The implementation of this policy mix aims to achieve sustainable development of the rural economy by improving agricultural efficiency and promoting agricultural modernisation. Poverty alleviation for farmers has become an important direction of the policy objective, fully expressing the concern and support for the general farming community. The determination of the Party and the Government is evident not only in the formulation and implementation of policies, but also in the endeavour to provide more development opportunities for

the countryside. By increasing investment in and support for agriculture, we have not only safeguarded the basic income of farmers, but also provided them with more room for development. This has helped to stimulate the vitality of the rural economy and further narrow the income gap between urban and rural residents^[10].

During this period, farmers gradually escaped from the situation of poverty and realised the upgrading of their economic status. The Government's concern and support have injected new impetus into the countryside, promoting the modernisation of agriculture and the pace of rural revitalisation. In the future, it will be a continuing policy endeavour to continue to strengthen support for agriculture and raise the level of farmers' earnings, so as to ensure that the goal of building a moderately prosperous society in the countryside in an all-round way is achieved.

(5) Stage 5: Common Wealth Stage (since 2020)

By 2020, the Gini coefficient of per capita disposable income for all residents in China had reached 0.47, indicating an increase of 0.15 compared to 1978, thus signifying an expansion of income disparity. Analysis of the urban-rural situation revealed that the Gini coefficient for urban residents rose from 0.34 in 2007 to 0.38 in 2013, whereas the Gini coefficient for rural residents increased from 0.35 to 0.41. This indicates that both urban and rural income gaps are on an increasing trend. By implementing targeted policies to promote the development of the rural economy, it is possible to further raise the income level of farmers and promote the goal of common prosperity. This will also contribute to social stability and sustainable development, and build more harmonious urban-rural relations^[11]. Therefore, China's agricultural development must move forward steadily in the future in order to achieve the ambitious goal of building a modern country in all respects. The above five stages of development are shown in Figure 1.

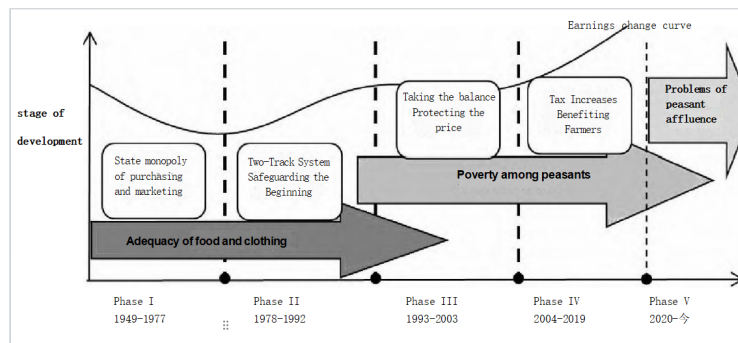


Figure 1: Stages in the Development of The Policy on Farmers' Income Security

4. Problems with Farmers' Income Security

The income security mechanisms for farmers worldwide are facing a series of prominent issues that have decreased farmers' enthusiasm for grain production and directly impacted food security.

Firstly, in recent years, the production costs of food have been continuously increasing. Factors such as the rising costs of fertilizers, pesticides, and agricultural machinery, along with a sustained increase in labor costs (as shown in Table 2), have resulted in overall rising production costs for food. However, the prices of food have remained low, and the increase in grain income has been lower than the increase in production costs, contributing to the upward trend in production costs in recent years^[12].

Table 2: Statistics on the increase of the production price index of agricultural products from 2018 to 2022

Target	2018	2019	2020	2021	2022
Agricultural production price index (Last year =100)	99.1	114.5	115	97.8	100.4
Production price index of plantation products(Last year =100)	101.2	100.8	102.8	110.6	102.9
Grain production price index(Last year =100)	102.3	100.3	104.1	113.8	104.3
Wheat production price index(Last year =100)	100.1	100.1	100.5	106.6	112.8
Rice production price index(Last year =100)	99.7	96.5	100.8	101.9	99.7
Corn production price index(Last year =100)	105.1	102	107.6	125.5	102.7

Data Source: National Bureau of Statistics of China

Secondly, the profitability of cultivating food crops is lower compared to cash crops (as shown in Table 3). Individual farmers have shown limited enthusiasm for cultivating food crops, as they are more inclined to choose economically viable crops such as fruits, medicinal herbs, and mushrooms, or even abandon agricultural production to engage in non-agricultural labor in the secondary or tertiary sectors. The low cost-effectiveness of cultivating food crops can be attributed to several factors, including small-scale farming that hampers economies of scale, low selling prices for grains, and high labor costs resulting from a lack of mechanization^[13].

Table 3: Cost and benefit of food crops and cash crops from 2016 to 2021

Target	Food crop				Commercial crop			
Species	cereal	wheat	maize	soybean	apple	orange	tangerine	vegetable
Total cost (yuan)	1235.36	1021.56	1070.23	700.2	5414.86	3602.58	3439.25	4745.3
Net profit (Yuan)	78.3	-17.99	-82.62	-124.16	1476.05	2364.32	1509.16	2631.38
Cost margin (%)	6.4	-1.83	-8.14	-18.43	27.77	66.65	46.69	54.87
Average selling price (Yuan)	134.07	114.98	96.45	213.77	181.76	169.47	187.28	101.21

Data source: China Agricultural Product Cost and Benefit Data Collection, the data in the table is the average value from 2016 to 2021, and the average selling price is the price per 50 kg of product.

Thirdly, the weakness of certain links in the agricultural chain restricts the development of the entire chain. Some agricultural supply chains are too homogeneous and lack diversified and stable market channels, resulting in farmers facing greater uncertainty when selling their products, which directly affects their level of profitability. In addition, the agricultural industry chain in some regions is too fragmented and lacks good synergy, which affects the overall efficiency.

Fourthly, the uneven distribution of income among farmers is a serious challenge that is currently being faced. Owing to differences in regional development and industrial structure, farmers in some regions have relatively high levels of income, while farmers in other regions face lower economic returns. This imbalance has a direct impact on farmers' quality of life and social participation, which may exacerbate the urban-rural gap and create factors of social instability.

In addition, a small amount of traditional agricultural production still exists which is not compatible with the requirements of modern socio-economic development. In the traditional mode, agricultural production lacks efficient scientific and technological support and modern management methods, resulting in low production efficiency and difficulty in coping with market competition and changes. This makes it impossible to achieve greater growth in agricultural output, thus limiting the improvement of farmers' earnings.

5. Relevant suggestions on farmers' income security mechanism

The establishment of a mechanism to guarantee farmers' income is key to current agricultural development, and a series of effective measures need to be considered and adopted to ensure a stable increase in farmers' income. These measures cover a wide range of aspects, from policy support to agricultural science and technology innovation, all of which play a key role in improving farmers' incomes.

Firstly, strengthening the policy of price support for agricultural products is an important measure to ensure the interests of farmers. The Government can increase price support for agricultural products by providing subsidies or guaranteeing minimum purchase prices, thereby raising the income level of farmers. Such policies will have a direct impact on the stability of agricultural sales and farmers' earnings, providing them with economic security.

Secondly, optimising the agricultural industry chain is also a crucial aspect. By lowering the costs of intermediate links, such as reducing transport costs and optimising supply chain management, it is possible to ensure that more profits are returned to farmers. The establishment of a more efficient industrial chain can increase the added value of agricultural products and raise the level of farmers' earnings.

Thirdly, improving the farmers' wage system is also one of the important safeguards. Ensuring that farmers are able to receive reasonable and stable wage payments and safeguarding their legitimate rights and interests is crucial to raising their income levels. At the same time, it is also worthwhile to explore the development of a more flexible and targeted wage system that takes into account the characteristics of different regions and different crops.

Fourthly, enhancing the cultivation of agricultural management entities is a crucial aspect. Encouraging and supporting the development of high-quality family farms and farmer cooperatives as new commercial entities is important. Such entities can achieve economies of scale and lower costs through specialized production, thereby improving income levels^[14].

At the same time, innovation in agricultural science and technology is also one of the most important means of raising farmers' incomes. The introduction of advanced agricultural technology, the promotion of efficient agricultural production methods, and the improvement of the yield and quality of agricultural products will all have a direct impact on farmers' incomes. Improving the efficiency of agricultural production through scientific and technological means, while reducing production costs, will enable farmers to earn more.

In implementing these measures, the joint efforts and support of the Government, enterprises and all sectors of society are needed. The Government can formulate policies that are more favourable to farmers and strengthen their implementation; enterprises can give full play to their own strengths, participate in the construction of the agricultural industry chain and provide technical and financial support; and all sectors of society can, in a variety of ways, provide assistance and support to farmers and promote the modernisation of agriculture and the construction of a mechanism for guaranteeing farmers' returns.

To sum up, the establishment of a more scientific and reasonable mechanism for guaranteeing farmers' returns requires a comprehensive approach in many areas, including policy support, industrial chain optimisation, agricultural science and technology innovation and other aspects. Only by making concerted progress in these areas can we achieve sustainable agricultural development and a steady increase in farmers' returns. This is also a direction for the whole society to pay attention to and make efforts to jointly promote the modernisation of agriculture and improve farmers' living standards and sense of well-being.

6. Conclusions and Future Prospects

Led by the concept of food security, the construction of a more comprehensive and sustainable model of agricultural development is an urgent issue that needs to be addressed at present. As an important part of the rural economy, the farmers' income guarantee mechanism is related to the immediate interests of farmers and the long-term development of the country. An in-depth study of the current situation, problems and guarantee mechanism can provide a scientific basis for the formulation of relevant policies and promote the sustainable development of agriculture in China^[15].

In the future, there will be a continued focus on developments in the agricultural sector, as well as on the ongoing adaptation and optimisation of mechanisms to guarantee farmers' returns. The importance of science, technology and innovation in agriculture in the future may also be emphasised, as well as the need for broader international cooperation to address global agricultural and environmental challenges. In addition, calls to governments, businesses and society may include more active inputs, more synergistic cooperation, and more flexible and innovative policy instruments to support sustainable development in agriculture and the enhancement of farmers' returns.

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