A Study on the Impact of Agricultural Product Price Fluctuations on Planting Structure and Farmers' Income Stability

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Abstract: Agriculture is the foundation of a nation and the cornerstone of national strength. The prices of agricultural products are closely related to the national economy and people's livelihood, and they exert significant influence on agricultural development, farmers' income, and consumer consumption. Stabilizing agricultural product prices is an important measure to enhance the resilience of China's economy, improve the stability of agricultural product supply, and ensure consumer demand. Based on this, this paper focuses on the key economic phenomenon of agricultural product price fluctuations and attempts to analyze their impact on the planting structure and income stability of farmers. It also puts forward relevant policy recommendations from aspects such as policy guidance, mechanism assurance, infrastructure construction, and service improvement. The study shows that price fluctuations of agricultural products have multiple effects on the adjustment of planting structure and the stability of farmers' income. The government needs to pay close attention, strengthen macroeconomic regulation, prevent and defuse risks, optimize resource allocation, promote high-quality agricultural development, and ensure long-term national stability.

***Keywords*:** agricultural product price fluctuation; planting structure; income stability of farmers; impact; recommendations

1. Introduction

Agriculture is the fundamental industry of the national economy and serves as the foundation for ensuring national food security, meeting the diversified dietary needs of the people, and promoting long-term national stability. China is a socialist country under the leadership of the Communist Party, and ensuring that the people have enough to eat and eat well is the most basic aspect of people's livelihood. Agricultural products, as goods with certain public attributes, are influenced by various factors under the overall environment of a market economy, such as external conditions, supply and demand, natural conditions, and policy regulation, which inevitably lead to a certain degree of price volatility. Such volatility has a certain impact on both the planting structure and the income stability of farmers. As the core component of agriculture, the adjustment of the planting structure directly affects the supply level of agricultural products in China. Meanwhile, farmers' income is crucial for stabilizing their confidence in crop cultivation, protecting their enthusiasm for grain production, and safeguarding their rights and interests. An in-depth study of the impact of agricultural product price fluctuations on planting structure and farmers' income stability is of significant value and practical importance for understanding agricultural development trends, scientifically adjusting and guiding policies, ensuring farmers' income growth, and maintaining national food security.

2. Current Situation and Characteristics of Agricultural Product Price Fluctuations

2.1 Overall: Frequent and Large Fluctuations

Influenced by international situations and global grain prices, the prices of agricultural products in China have experienced frequent and significant fluctuations in recent years. Grain crops are affected by factors such as international grain price shocks, changes in supply and demand, climate change, domestic macroeconomic conditions, and policy adjustments. Although the prices of staple grains such as wheat and rice in China remain relatively stable, they still experience periodic rises and falls, with certain varieties or periods showing considerable fluctuations that require timely policy intervention. In contrast, economic crops such as cotton, sugar beet, and sugarcane are more susceptible to international prices, product inventory levels, and climate factors, resulting in greater volatility than that of grains. Perishable seasonal agricultural products such as vegetables and fruits exhibit even higher levels of price fluctuation.

2.2 By Category: Significant Differences in Price Volatility Among Types

Different types of agricultural products, influenced by their inherent characteristics, production attributes, storage conditions, and changes in supply and demand, show considerable variation in price volatility. Grains such as wheat, rice, and soybeans, as well as major economic crops, have relatively stable demand. They benefit from strong government subsidies

and macro-control policies, have longer growth cycles, and are easier to store, resulting in relatively stable prices with small fluctuations. In contrast, perishable and short-cycle fresh agricultural products, non-typical economic crops, and specialty products tend to have unstable market demand. Their strong seasonality and dependence on supply-demand dynamics lead to greater price volatility. Industrial raw material-type agricultural products such as cotton and sugar are more influenced by industrial development and international commodity trade, making their prices more prone to fluctuations.

2.3 By Region: Uneven Price Fluctuations

Grain products, due to their public welfare attributes and strict government regulation, exhibit relatively stable prices with minimal regional variation. However, for certain crops such as vegetables and fruits, price fluctuations are significantly influenced by natural environment, production regions, transportation logistics, and levels of economic development, resulting in pronounced regional disparities. For instance, in major production areas of some vegetables and fruits, large local output and fierce market competition lead to relatively low and stable prices. However, in sales regions, added costs from logistics, transportation, and local labor result in higher prices and greater volatility compared to the production areas. Additionally, regional climate changes or natural disasters can also cause significant fluctuations in agricultural product prices.

3. Impact of Agricultural Product Price Fluctuations on the Planting Structure

3.1 Impact on Decision-Making for Planting Structure Adjustment

The most significant impact of agricultural product price fluctuations on the planting structure lies in their influence on decision-making.First, they affect adjustments in planting area. Influenced by market rules, when the price of a certain agricultural product rises and returns increase, farmers tend to follow the trend blindly and increase planting, leading to expanded cultivation of that crop; conversely, when prices fall, the planting area shrinks.Second, crop varieties become more diversified. Under the influence of risk control thinking, many farmers choose to plant multiple types of crops to balance the effects of price volatility and avoid major losses caused by the fluctuation of a single crop. Within the same category of agricultural products, high-yield and high-quality varieties often quickly replace outdated ones. Although China is currently vigorously developing its seed industry, due to a late start and weak foundation, there is still a generational gap between domestic improved seeds and foreign ones, and breaking foreign monopolies remains a long-term challenge.Third, there is a growing willingness to adopt new equipment and technologies. New equipment and technologies significantly improve yields and profits. When agricultural product prices are high, farmers' income increases, which stimulates their willingness to upgrade equipment and adopt new technologies, forming a positive development cycle.

3.2 Optimizing Resource Allocation and Integrating the Industrial Chain

Price fluctuations of agricultural products can help optimize agricultural resource allocation, effectively integrate the industrial chain, and promote high-quality agricultural development.First, they promote the orderly flow of factors such as land, capital, and labor among different crops, and even across industries. This active and orderly flow accelerates adjustments in the planting structure and enhances resource optimization.Second, they encourage industrial chain collaboration and industry integration. Persistently high and stable prices will stimulate the coordinated development of upstream and downstream industries. For example, in regions where apple cultivation is well developed and prices remain stable, there will likely be growth in related industries such as seeds, fertilizers, agricultural machinery, as well as processing, packaging, transportation, and storage.Third, they foster the emergence of new business entities. Continuous price fluctuations make it difficult for traditional household-based farmers to cope effectively, thereby giving rise to more agricultural cooperatives, farmer cooperatives, and large-scale growers. These new agricultural entities accelerate the integration of rural land resources, promote large-scale operations, enhance overall risk resistance, and strengthen market competitiveness.

3.3 Driving Transformation, Upgrading, and Green Development

Long-term fluctuations in agricultural product prices will compel enterprises and farmers to accelerate transformation and upgrading, and achieve diversified planting and green development.Firstly, sustained price volatility highlights the low risk resistance of single-crop or purely planting-based operations, where one poor decision can be devastating. Many enterprises or farmers have begun exploring diversified business models such as coordinated production of food, cash, and forage crops, as well as integrated crop-livestock-processing systems.Secondly, in the new era, China's principal social contradiction has shifted, and people's demand for agricultural products has moved from merely eating enough to eating well, eating green, and eating healthy. High-quality agricultural products have greater added value and better resistance to price fluctuations. This shift will push producers to improve varieties, focus on green and ecological farming, reduce the use

of fertilizers and pesticides, minimize environmental pollution during production, and improve product quality.Lastly, with the increasing export volume of vegetables, fruits, tea, and other agricultural products, international price fluctuations and changing international standards also have a certain impact on the domestic planting structure.

3.4 Cause Analysis

(1) Guidance from Price Signals.In the short term, when the price of a particular agricultural product rises significantly, market rules dictate that this will strongly stimulate farmers to expand the cultivation of that crop. For example, phenomena such as the periodic "Garlic You Ruthless," "Ginger Army," and "Spring Onion You Come" are reflections of such behavior. Conversely, if the price drops too low—periodically or regionally—some agricultural products may become unsellable due to poor market performance. In the long term, continued price fluctuations may also cause agricultural production factors such as land, capital, and labor to shift toward crops with higher returns.

(2) Stimulation of the "Cobweb Effect".The "cobweb effect" refers to cyclical fluctuations in price and output in economic activities. This phenomenon is also present in the agricultural sector, particularly in the case of fresh agricultural products. Stimulated by market demand, some farmers blindly follow the trend and increase production. Additionally, some business speculators may enter the market, resulting in a sharp short-term increase in the supply of certain agricultural products and triggering price turbulence.

(3) Lag in Market Regulation.Except for grain crops, most other agricultural product prices are rarely subject to direct government intervention and are largely determined by market dynamics. Under market economy conditions, the market is characterized by spontaneity and blind decision-making, and its cyclical adjustments often lag behind actual conditions. This can lead to periodic shortages or oversupply of certain agricultural products, causing significant price fluctuations and affecting farmers' incomes. Furthermore, for certain products, inadequate regulation of monopolistic operations or illegal speculation by government departments can lead to instances of price gouging or malicious price suppression.

4. Impact of Agricultural Product Price Fluctuations on the Income Stability of Farmers

4.1 Direct Impact on Farmers' Income

The rise or fall in agricultural product prices directly affects farmers' sales revenues. Agricultural products — especially grain crops — are essential to people's livelihoods and have relatively low price elasticity. Once price fluctuations occur, they can lead to significant changes in farmers' incomes. When prices rise, influenced by supply and demand, if products can be sold at high prices, nominal income will increase; even if high-price sales are not realized, selling at a lower price may still allow cost recovery or modest income growth. However, when prices fall, income is inevitably reduced. In extreme cases, unsold inventory may occur, severely impacting farmers' incomes — particularly smallholder farmers who operate at the household level. For some large-scale, modern agricultural entities with bargaining power and access to risk management tools such as agricultural insurance, some losses may be mitigated. Contracted farmers experience the least impact.

4.2 Indirect Impact on Farmers' Income

Agricultural product price fluctuations also produce a variety of indirect effects on farmers' incomes. First, when prices rise, planting areas expand, and the demand for seeds, fertilizers, agricultural machinery, and other inputs increases. This can drive up input prices and overall production costs, thereby offsetting the income gains from price increases. Conversely, when agricultural prices fall, production costs may decrease to some extent, but the drop in costs is typically far smaller than the drop in selling prices, resulting in reduced income. Second, many enterprises and large-scale grain producers rely on agricultural loans. Income instability due to price fluctuations can impact their ability to repay loans, increase credit constraints, affect future investment capacity, and thus reduce overall income. Finally, excessive fluctuations in agricultural product prices can weaken farmers' confidence in planting, lower agricultural expectations, and push farmers to seek off-farm employment or switch industries, which also affects personal income.

4.3 Cause Analysis

For farmers who rely primarily on crop cultivation, agricultural product price fluctuations have a direct and significant impact on income stability. For the same farmer, assuming fixed yield per unit area and sales volume, the price of agricultural products directly determines income. The higher the unit price of agricultural products, the higher the farmer's income, and vice versa. Farmers' expectations of future prices play an important role in shaping production decisions. If price increases are anticipated, farmers will likely expand scale or increase investment; if a price decline is expected, they will reduce production. However, due to information asymmetry and market uncertainty, farmers' expectations are often irrational. Such

blind behavior can further unbalance supply and demand in the market, intensify price volatility, and lead farmers into a predicament of “increased production without increased income,” seriously undermining income stability.

5. Policy Recommendations for Stabilizing Agricultural Product Prices and Ensuring Farmers' Income Stability

5.1 Strengthen Agricultural Infrastructure and Improve the Agricultural Product Circulation System

Promoting agricultural harvests and ensuring smooth circulation of agricultural products are fundamental to stabilizing prices and securing farmers' income. Efforts should be made to further enhance rural infrastructure by improving water conservancy, irrigation, field roads, rural transportation, power, and communications facilities to improve production conditions. A sound agricultural meteorological disaster early warning system and pest control system should be established to issue timely alerts and guide farmers in disaster prevention and mitigation. High-standard farmland construction should be promoted to improve land quality and productivity, thereby increasing agricultural production capacity and stabilizing supply at its source. It is also essential to enhance the agricultural product distribution system by vigorously developing cold-chain logistics, building and improving wholesale markets and logistics centers for agricultural products, increasing freshness preservation capacity and transportation efficiency, and doing everything possible to reduce logistics costs, adjust market timing, and smooth price fluctuations.

5.2 Cultivate New Agricultural Business Entities and Expand Channels to Enhance Supply Chain Resilience

Further policy guidance should be strengthened to encourage and support the development of new types of agricultural business entities such as farmers' cooperatives, family farms, and rural collective economic organizations, in order to continuously enhance the organization and scale of China's agricultural industry. Models such as "enterprises + bases + farmers" and "cooperatives + farmers" should be vigorously promoted. Smallholder farmers should be encouraged to participate through equity investment or service outsourcing, integrating scattered households to promote scale operations and enhance market bargaining power and risk resistance. Cooperation with leading domestic enterprises in catering, leisure, and other sectors should be strengthened to develop contract farming and stabilize supply-demand relationships and price expectations through contractual arrangements. Local governments should be supported in developing agricultural product deep-processing industries based on local conditions, extending the industrial chain, increasing value-added, and offsetting the risks of raw agricultural product price fluctuations. E-commerce in agriculture should be vigorously developed, with innovations in sales models to broaden marketing channels and stabilize farmers' incomes. New business models such as direct sales to supermarkets and community group buying should be deepened to reduce intermediaries and improve farmers' earnings through multiple measures.

5.3 Establish Agricultural Product Reserve and Adjustment Mechanisms and Improve Risk Management Systems

A reserve adjustment system for agricultural products should be established to further strengthen macroeconomic regulation. Reserve scale and product structure should be reasonably determined to allow timely purchasing or releasing of reserves, thus stabilizing supply and demand in the agricultural product market to the greatest extent possible. An emergency supply guarantee mechanism should be established to intervene in sudden events and ensure stable market supply. Agricultural insurance should be vigorously developed to expand coverage, increase product variety and insurance limits, and better meet the diversified needs of enterprises and farmers. Policies such as increasing premium subsidies should be used as incentives to encourage widespread participation in agricultural insurance by enterprises and farmers, thereby raising participation rates. Agricultural insurance claims processes should be optimized to ensure farmers receive timely compensation.

5.4 Improve the Agricultural Market Information System and Enhance Agricultural Service Support

Agricultural and rural information resources should be integrated to establish an authoritative, timely, grassroots-level agricultural product market information release platform. Timely information on agricultural production, market prices, and supply-demand forecasts should be published to reduce information asymmetry. Policies such as minimum grain purchase prices should be refined, with emphasis on policy flexibility and sustainability to avoid excessive market signal distortion and misinformation. A mechanism for joint consultation, coordination, and verification of agricultural information should be

established in collaboration with meteorology, water resources, and agricultural departments to promote information sharing and provide better services for enterprises and farmers. The application and service of agricultural science and technology should be strengthened to build a three-tiered agricultural technical service network at county, township, and village levels, achieving full coverage of all farmland.

6. Conclusion

Fluctuations in agricultural product prices have a profound impact on the structure of agricultural planting and farmers' income. The government should make full use of the "visible hand" of policy regulation and the "invisible hand" of market mechanisms, taking comprehensive measures from the dimensions of information, markets, insurance, policy, technology, and organization to effectively enhance the resilience of the agricultural industry and farmers' ability to resist risks. These efforts are crucial to stabilizing agricultural product prices, safeguarding farmers' incomes, and promoting high-quality agricultural development.

References

[1] Yang Qian. The Impact of Agricultural Product Price Fluctuations on Agricultural Production Decisions and Countermeasures [J]. Rural Science Experiment, 2025, (11): 111–113.

[2] Qi Chengxi. A Study on the Relationship between Agricultural Product Export, Price Fluctuation, and Rural Residents' Income [J]. Business Economics Research, 2024, (23): 109–112.

[3] Zhang Ying. An Analysis of the Impact of Agricultural Product Price Fluctuations on Farmers' Income Based on VAR Model [J]. Rural Science and Technology, 2024, 15(07): 32–36.

[4] Zhang Xiuli, Zhang Ming. Financialization of Agricultural Products, Price Fluctuation, and Farmers' Income Growth [J]. Rural Economy, 2016, (12): 41–45.

[5] Xie Yu, Wang Yifan, Qiao Shan. An Empirical Study on the Price Fluctuation Characteristics of Minor Agricultural Products in China—Taking Garlic Wholesale Prices as an Example [J]. Northern Economy and Trade, 2023, (10): 82–87.