

Analysis on Evolution of Price Mechanism of Rice in China and Japan

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Abstract—The development of rice industry plays an important role in China's food security and even the world's food security. The stability of rice price is very important to promote the development of national economy and integrate rice industry chain. However, with the implementation of market-supporting purchase policy for rice, China's grain reserves have topped off and market prices are distorted, reflecting the failure of government control and market pricing under the policy. By using comparative analysis, this paper compares the evolution process of the rice price mechanism between China and Japan, analyzes the characteristics of the rice price mechanism between the two countries, and draws lessons from the relevant advanced experience of Japan, and puts forward relevant suggestions to improve the rice price mechanism in China.

Keywords—Rice; Price Mechanism; Subsidy Policy; Japan

I. INTRODUCTION

As one of the most important food crops in the world, rice is the staple food for more than 50 % of the world's population and also one of China's three staple foods. China's rice planting area accounts for about 30 % of the total grain area [1]. The output of rice accounts for about 37 % of the total grain output and 50 % of the commodity grain. According to statistics, 60 % of the population in China takes rice as their staple food. In 2016, China's annual rice output was 207.075 million tons, equivalent to 144.952 million tons at a 70 % rice yield rate, accounting for 40 % of China's total grain output and 30 % of the world's total rice output. The change of rice price is closely related to people's livelihood. It can reflect the relationship between supply and demand in the rice market and consumer demand, and can also further guide the transformation of rice farmers' planting structure. It is of great significance to ensure national food security, mobilize the enthusiasm and increase the income of rice farmers, and adjust the interests of various main bodies in rice production.

II. EVOLUTION OF JAPAN'S RICE PRICE SYSTEM

Rice cultivation in Japan is dominated by small-scale farmers and is strongly dependent on price protection and income subsidies [2]. The evolution of Japan's rice price system has gone through three stages in term of time.

A. Food Administration Law and Controlling Food Prices (1942-1995)

Facing the serious shortage of food supply during the World War II, Japan enacted the Food Administration Law in 1942 to stabilize food market and maintain balance between supply and demand, with the government controlling food prices in a unified way. In 1990, an independent rice price controlling center was set up. Producers must sell the rice to the government, or they will be punished. The government bought and processed rice at a higher price, and entrusted qualified agricultural association organizations and distributors to sell at a lower price determined by the government, the intermediate price difference of which was borne by the Finance.

B. Food Law and Planned Circulation of Food Prices (1995-2004)

In October 1995, the Law on Supply and Demand of Major Grain and Price Stability (Food Law for short) was formally implemented, abolishing the unified purchase and marketing by government, and clarifying the decisive role of the market mechanism in the formation of rice prices in legal form, namely, rice prices were all formed by auction.

C. Revision of the Food Law and Free Circulation of Food Prices (2004-present)

According to the revision of the "Food Law" in 2004, all residents were allowed to purchase and sale rice, which meant the time when the purchase price and market price of rice were determined by government was over. Rice had nothing to do with the government and entered a free circulation phase. Rice price could reflect the relationship between supply and demand. Independent Rice Price Formation Center was changed to the National Rice Trading Price Formation Center. Subsequently, trading methods other than auction trading were also allowed.

D. Japan's Subsidy Policy on Rice

Japan's subsidy policy on rice was constantly changing with the change of the ruling party, and the object and method of subsidy change with the change of the political party. In recent years, due to the increase of construction land in Japan, the price of farmland has been increasing. Rice farmers,

therefore, have strong motivation to keep the land as a profitable asset, which leads to the reduction of rice cultivation area [3]. The Liberal Democratic Party government only subsidizes relatively large-scale agricultural operators and uses the difference in price changes as the subsidy method. The Democratic Party government extends the subsidy object to all operators to subsidize from both cost and price. In recent years, direct incentives and subsidies have focused on the comprehensive utilization and development of new-use rice and paddy fields. At the same time, Japan has drawn the experience from the United States to build a new agricultural income insurance system to cover the loss of rice farmers' income caused by social and economic factors such as nature and price.

The factors affecting the formation mechanism of rice prices in Japan vary with changes in agricultural policies and economic situation [4]. It has gone through government pricing period, auction center pricing period and market pricing period, which reflects that government gradual loosens its control on rice price and defines the market's position in the formation of rice prices. Drawing on the experience of other countries, Japan promotes rice income subsidies to protect the interests of rice farmers.

III. EVOLUTION OF RICE PRICE MECHANISM IN CHINA SINCE THE FOUNDING OF THE PEOPLE'S REPUBLIC OF CHINA

The rice price mechanism was determined by the market and the government and closely related to the change of economic system [5]. Since the founding of the People's Republic of China, rice price mechanism in China went through five stages.

A. Free Market Pricing (1949 -1952)

In the early days after the founding of the People's Republic of China, China was facing serious inflation and the national economy was in a period of recovery [6]. The status of the RMB was consolidated. There was no speculative capital to profit from the "silver dollar war" and the target has been shifted to necessities such as grain, cotton and coal, triggering a nationwide price boom. In 1950, the "War for Grain and Cotton" triggered a nationwide price upsurge. In 1952, land reform was carried out, completely abolishing the feudal system on land and liberating the productive forces [7]. On September 1st of the same year, the Central People's Government decided to set up the Food Department of the Central People's Government. It managed the purchase, supply and circulation of grain and other state affairs. In addition, it adopted a series of effective measures such as grain allocation and transportation, selling and tightening of currency. Speculation activities were cracked down on to stabilize rice prices and maintained the stability of the grain market. What's more, it guided the standardization and legalization of grain market transactions. During this period, the government continuously improved the grain management agencies and strengthened the management of the grain market, but the purchase and sale market was free and the rice price mechanism was characterized by market-oriented.

B. The Unified Grain Purchase and Sale System (1953 - 1984)

China adopted a series of principles, policies and measures to stop the hyperinflation left over by the Kuomintang government during the period of the Republic of China, stabilize market prices and restore the national economy severely damaged by the war. Land reform has liberated rural productive forces. In 1953, China implemented the first five-year plan to carry out economic construction. Although the industrial process was accelerating and the demand for commodity grain was increasing, the per capita grain output was low, the contradiction between supply and demand was prominent, and private grain traders manipulated the market, resulting in tight rice supply and unstable market prices. In November 1953, the State Council promulgated the "Order on the Implementation of Planned Purchase and Planned Supply of Grain", stipulating that the State shall be responsible for industries that were the lifeblood of the national economy and were closely related to the people's livelihood, in order to maintain the stability of the domestic grain market. There were plans and systems for unified purchase and centralized sales of grain-unified purchase and unified sales. The government was responsible for the management of grain purchase, supply and circulation, cracking down on speculation and stabilizing rice prices. During this period, the purchase and sale price of rice was determined by the government, which played a leading role in the formation of rice price.

C. Coexistence of Purchase Price and Negotiated Purchase Price (1985 - 1992)

After the problem of insufficient total grain was initially solved, the structural problems of agriculture began to show up, which showed that the market was dominated by a kind of grain alone. Grain was relatively surplus while other agricultural products were in short supply. In January 1985, according to Ten Policies on Further Activating Rural Economy, the Central Committee of the Communist Party of China announced that the unified purchase of grain gave way to the contract purchase. The system of "purchase price + market price" was implemented for grain prices [8]. The purchase price was determined by the central government while the rest was determined by the market. State-owned grain departments were allowed to operate some grain and oil according to market prices. Relevant business entities were allowed to enter the grain market. Rice farmers could put surplus grain into the market after completing the unified purchase standard. During this period, the purchase price of rice was a "double track" with both the purchase price and the negotiated purchase price, which laid a foundation for the transformation of rice prices from government-oriented to market-oriented.

D. Coexistence of Price Protection and Sales Market Price (1993 - 2003)

Due to the loose control of grain prices during the contract purchase period, the lack of national macro-control measures, and the reduction in rice production in the south, grain prices fluctuated greatly at the end of 1993, and the state resumed its intervention in the rice purchase and sale price market [9]. In

1994, the State Council issued the “Notice on Deepening the Reform of the Grain Purchase and Sale System”. The grain price within the state’s ordering task was determined by the state, while the grain price outside the task follows the market. When the market price was lower than the purchase price, the grain would be purchased in time according to the purchase price. If the market price was too high, it would be sold in time. The provincial chief executive was responsible for the balance of local food supply and demand and price stability. In 1997, the State Council issued a “Notice on Open Purchase of Grain at Protection Prices”, giving full play to the role of the main channel for grain purchase and sale and the leading role of the formation of market grain prices [10]. In 1998, China’s total grain shortage was met, but the supply of varieties was seriously out of line with market demand, and the circulation system led to a serious financial burden. Therefore, the central government issued to separate government functions from enterprise management, separate reserve from operation, separate central and local responsibilities, separate new and old financial accounts, and improve the grain price mechanism to ensure the implementation of the grain price policy. The rice price mechanism at this stage was compatible with the socialist market economic system. The protection price for rice purchase was gradually improved in the implementation, and the scope of the protection price was continuously narrowed. The market played an increasingly obvious role in the formation mechanism of rice price.

E. Minimum Purchase Price and Market Formation Price Period (from 2004 to the present)

In 2004, “Opinions on Several Policies to Promote Farmers’ Income Increase” issued by the State Council clearly stated that the grain purchasing and selling markets would be fully liberalized and multi-channel marketing would be implemented. In the same year, the minimum purchase price policy for grain was implemented, and rice was one of the first crops to be included in the minimum purchase price. In the harvest season, the price of rice is often low, which affects the enthusiasm of rice farmers [11]. Price market fluctuations may encourage rice farmers to sell [12]. According to the minimum purchase price policy, the central government announced the minimum purchase price level of various rice varieties one year before rice planting, and announced the implementation plan every year. When the market price of rice was lower than the lowest purchase price, the central government should decide to start the implementation plan, which can effectively keep the enthusiasm of rice farmers for planting grain. Since 2014, China has begun to adjust the policy of purchasing grain reserves and initiated the market-oriented reform of “separating price from subsidy”. The lowest purchase price has also begun to change, which was no longer only increasing but not decreasing. The rice price formation mechanism has stepped into a market-oriented stage [13].

All previous major adjustments in China’s grain price change mechanism have taken place during periods of sharp fluctuations in grain output and price, and the adjustment of rice price mechanism will in turn have an influence on rice output and price. With the acceleration of structural reform on the supply side and the rise of residents’ income level, the

total demand for rice is basically stable, but consumers’ demand for high-quality and green products will increase day by day, which is just the short board of the current domestic rice production structure. It is difficult to optimize the rice production structure by relying solely on government, so the role of market pricing needs to be further developed. From this perspective, deepening the market-oriented reform of rice price formation mechanism has become an inevitable choice.

IV. COMPARISON OF RICE PRICE FORMATION MECHANISM BETWEEN CHINA AND JAPAN AND REFERENCE FOR CHINA

As a rice power, Japan is quite similar to China in rice planting and eating habits. The comparison of rice price mechanisms between the two countries is shown in table 1 and table 2.

TABLE I. EVOLUTION OF RICE PRICE MECHANISM IN CHINA

Phase	Content & Feature	
	Content	Feature
Free Market Pricing (1949 - 1952)	Food Department of the Central People’s Government was established on September 1st, 1952	Market-oriented
The Unified Grain Purchase and Sale System (1953 - 1984)	Order on the Implementation of Planned Purchase and Planned Supply of Grain in November 1953	Government-oriented
Coexistence of Purchase Price and Negotiated Purchase Price (1985 - 1992)	Ten Policies on Further Activating Rural Economy in January 1985	Transformation from government-oriented to a market-oriented
Coexistence of Price Protection and Sales Market Price (1993 - 2003)	Notice on Deepening the Reform of the Grain Purchase and Sale System in 1994	Rice price was determined by government and market together
Minimum Purchase Price and Market Formation Price Period (from 2004 to the present)	Opinions on Several Policies to Promote Farmers’ Income Increase in 2004	Rice price was dominated by market

TABLE II. EVOLUTION OF RICE PRICE SYSTEM IN JAPAN

Phase	Content & Feature	
	Content	Features
Food Law and Planned Circulation of Food Prices (1995 - 2004)	Food Administration Law in 1942	Rice price was determined by government
Food Law and Planned Circulation of Food Prices	Law on Supply and Demand of Major Grain and Price Stability in October 1995	Rice price was determined by government and market together

Phase	Content & Feature	
	Content	Features
Revision of the Food Law and Free Circulation of Food Prices (2004 to Present)	The revision of the Food Law in 2004	Rice price was determined by market

The characteristics of the evolution of rice price mechanism between China and Japan are as follows:

- Rice price mechanism is affected by multiple factors such as the situation of food supply and demand, agricultural policy objectives and institutional arrangements.
- The government plays a very important role in the rice price mechanism.
- Rice price is determined from government to market.

At the present stage, there are many problems under the purchase policy of for rice market in China. For example, the government has too many main grain sources; the pressure of storage capacity is increasing day by day; the price system is disordered; and the effect of subsidy is not obvious. Based on the actual situation in China and the advanced experience of Japanese rice development, the following suggestions are given.

A. Promote the Grain Prices Determined by Market rather than Government and Promote the Change of Rice Planting Structure

The minimum purchase price of rice should be equal to its cost. Farmer would earn profits by improving grain quality and efficiency, and getting direct subsidies. Under the current rice minimum purchase price system in China, the high quality of rice does not have a favorable price, which does not reflect the role of the market in determining the purchase price of rice. At the end of 2015, the central rural work conference stressed that efforts should be made to strengthen the structural reform of the agricultural supply side and improve the quality and efficiency of the agricultural supply system. Only by pushing the price of rice to change from the government price to the market price and giving full play to the role of market pricing can the transformation of rice planting structure was promoted and the structural reform on the agricultural supply side be realized. Take Japan’s subsidy of new-use rice as an example, it subsidizes rice farmers to grow high-quality varieties, thus adjusting the rice planting structure.

B. Take a Moderate Increase of Production as Main Goal based on Food Security

The purpose of China's current rice purchase policy is to mobilize farmers' enthusiasm for production and to ensure national food security. Adding new rice will increase the stock. However, rice is not resistant to storage so if it cannot be consumed and used in time, it will become inedible due to its expiration and deterioration [14]. At the same time, the storage capacity of facilities for rice storage is limited and it is

impossible to store rice indefinitely in space and time. The rice yield increase standard should aim to meet the basic needs of edible and industrial grains, then increase production moderately and use rice efficiently. In addition, we can draw lessons from the circulation mode of Japan's rice grain reserves for five years, and take out 20% of the stock every year as feed grains to reduce the stock backlog.

C. Implement an Active Policy of Moderate Import of Food

China's agricultural product market is highly open to the outside world. Compared with imported rice at low prices, domestic rice prices are at a great disadvantage. We will implement an active policy of moderate import of rice cameras. When rice production meets domestic demand, we should moderately import varieties that cannot meet domestic demand and have higher costs. The import and the subdivision of rice varieties should be guided scientifically in order to meet the needs of different consumers. We would make full use of the foreign and domestic markets to reduce the pressure on domestic rice consumption cost and grain production [15].

D. Implement Target Price Subsidy and Direct Subsidy Policy

The current rice purchase policy is to ensure the reasonable income of rice farmers. However, along with too much government intervention and market failure, the effectiveness of the policy system has obviously declined. As indirect subsidies, the minimum purchase price of rice is difficult to really guarantee the income of rice farmers. For example, the total amount of subsidies is insufficient; the scope of subsidies is small; the subsidy structure is not reasonable and the dispersion of funds reduces the incentive effect. With the rising price of agricultural materials and the national conditions of one mu of arable land per capita, subsidizing 150 RMB per mu of rice is of little significance in increasing the income of rice farmers. In order to solve this problem, the target price subsidy policy for corn and soybean should be applied to rice. When the purchase price of rice is lower than the target price standard, the difference between rice farmers and subsidy income will be directly given to farmer. Meanwhile, we should learn from Japan’s agricultural insurance system that natural disasters and other force majeure will be taken into account to provide a good system guarantee for rice farmers.

V. CONCLUSION

This paper analyzes the background, content and characteristics of the rice price formation mechanism in different stages by elaborating and comparing the evolution process of the rice price formation mechanism between China and Japan. It is concluded that the changes of the rice price formation mechanism in the two countries are influenced by factors such as the situation of grain supply and demand, agricultural policy objectives and institutional arrangements. In addition, government plays an important role in the rice price formation mechanism and rice price is gradually evolving from the government pricing to the market pricing. Based on the bottom line of China’s “rural revitalization” to ensure supply and steady income, and drawing on the advanced experience of Japan’s rice development, the

following suggestions are given: First, we need to promote the change of grain prices from determined by government to market and change the structure of rice planting; second, on the basis of ensuring food security, the main goal is to increase production moderately. Third, we should implement an active policy of moderate import of grain. Fourth, the policy of target price subsidies and direct subsidies should be implemented. Only when the complementary effects of rice price marketization, direct subsidy system and agricultural insurance system are brought into play can the reform of rice price formation mechanism in China be deepened.

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