

Research on Oversupply, Producer Decision and Price Fluctuation of Agricultural Products

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Abstract:

The decision-making behaviour of agricultural producers is the basic factor affecting the price fluctuation of agricultural products. In order to explore the price decline mechanism of agricultural products and provide reference for producers' decision-making, the equilibrium price model and price war model are used to analyze the pricing behaviour of producers, and the practical problems of price decline of some agricultural products in China are summarized. The research shows that under the market pressure of oversupply, price competition is carried out among producers, and price reduction becomes the only sales strategy; in China's agricultural production, excessive entry into the agricultural market and certain exit barriers are the basic reasons for price falling. The range of price fluctuation is related to the product characteristics and production organization structure of agricultural products. Different from the existing studies, this study pays more attention to the pricing decision-making mechanism and non-cooperative game of producers, and analyzes the relationship between agricultural product characteristics, agricultural organization structure and price fluctuation.

Keywords: Price fluctuation, Oversupply, Producer decision, Exit barriers, Product characteristics, Organizational structure.

I. INTRODUCTION

The price fluctuation of agricultural products is an important source of agricultural risk, which has a great impact on agricultural production activities and farmers' income. There are many researches on the price fluctuation of agricultural products. The first is the study of the law of fluctuation. Among a variety of agricultural products, the fluctuation period and fluctuation range among varieties are discrepant, among which small agricultural products have the characteristics of sharp rise and sharp fall, hard to anticipate and hard to intervene[1].The second is the research on the reason of price fluctuation. There are a lot of literatures on the reasons of lattice fluctuation, both from the perspective of supply and from the viewpoint of demand and circulation. Research from the perspective of supply mainly focuses on the price rise, and most scholars believe that price rise is the result of cost promotion, that is, the "Cost Theory". After China's reform and opening up, the price rise of some agricultural products is driven by the price rise of

labor force. In addition to the “Cost Theory”, there are also other views. Wei Jianfeng found that the lagging development of the agricultural productive services was an important factor in price increase. The financialization, energy utilization of agricultural products, and the monopoly power of the agricultural industry chain have contributed to price fluctuation [2]. The third is the research on the influence of price fluctuation on producers’ decision-making. Price fluctuation, especially severe and frequent fluctuation of price, increased the risk of enterprise operation and further affected the decision of producers [3]. Guo Dan and Tan Ying found that the price fluctuation of agricultural products had an impact on producers’ planting patterns, and this effect would also be reflected in the choice of crops in rotation [4]. FanZhang, et al. analyzed the relationship between fruit and vegetable price fluctuations and production decision-making. They found that farmers’ production decisions had obvious profit-oriented characteristics, and price was the core factor of farmers’ production decision-making [5].

Through the literature review, it can be found that the existing researches still have the following deficiencies. Firstly, there are more literatures concerning the rise of agricultural prices, while fewer literatures on the decline of agricultural prices. Rising prices affect the normal functioning of economic activity, and the same is true of falling prices, which may be even more serious. Dropping prices are not only the initial point for prices to rise again, but also directly harm the interests of producers and the increase of farmers’ incomes. More importantly, they may affect the long-term healthy development of agriculture. Secondly, scholars seldom research the relationship between price decline and producers’ pricing behaviour. It is known to all that the price fluctuation of agricultural products is the result of the movement of the contradiction between supply and demand, and the supply of agricultural products depends on the decision-making activities of agricultural producers. Nevertheless, when studying the price problem, the decision-making behaviour of producers is often ignored by investigators. What is the pricing decision-making mechanism of producers when prices slip, especially when prices decrease strikingly? Why don’t they use a cooperative strategy instead of racing to cut price? This is a question that needs to be explored in depth. In this article, the Supply and Demand Equilibrium Model and Bertrand Model of Price Competition are used to analyze the price decision-making behaviour of producers, on this basis, taking fruits and vegetables and other agricultural products as examples, this paper further analyzes the key reasons leading to the price decline of agricultural products in China, and finally puts forward countermeasures and suggestions.

II. INTRA-INDUSTRY COMPETITION AND PRICE WAR

2.1 Output Scale and Competition

Agricultural producers (enterprises or farmers) face not only the competitors in the region, but also all the competitors in the industry, that is, the manufacturers who produce the same products. Market demand is the most fundamental limiting factor for industrial scale expansion. Under the condition of a certain scale of market demand, there can only be one final result of supply growth: the decline of product price level.

Suppose the products of an industry are homogeneous, the number of manufacturers in the industry is n , and the supply function of the j th enterprise is $q_j(p)$, then the supply function is

$$Q(p) = \sum_{j=1}^n q_j(p)$$

It is assumed that the total cost curve of the manufacturer is strictly convex, and the marginal cost curve is strictly increasing; the supply function of the industry is strictly increasing, and the inverse supply function exists, the marginal cost of the manufacturer is equal, and the quantity willing to supply is equal to the price; at any price level p , the market demand for products is equal to the sum of the demand of all consumers at that price level, and the demand function is

$$D: X(p) = \sum x_i(p)$$

When supply equals demand, the price thus determined is the equilibrium price of the market:

$$\sum_{i=1}^n x_i(p) = \sum_{j=1}^m q_j(p)$$

Suppose the demand curve of the market is $D(p) = a - by$, and $a, b > 0$, the production cost function of all manufacturers in the industry is equal, $c(q) = \frac{d}{2}q^2 + F$, and $d > 0, F$ is a fixed cost, the marginal cost function of the manufacturer is $MC(q) = dq$, the average variable cost function is $AVC(q) = \frac{d}{2}q$, manufacturers' marginal cost is increasing, $MC > AVC$, the manufacturer's inverse supply function is $p = dq$, therefore, the supply function of a single manufacturer is $y = \frac{p}{d}$, the number of manufacturers in the industry is fixed, and the supply function of the market is:

$$Q(p) = \sum_{j=1}^m \frac{p}{d} = \frac{m}{d}p$$

The market equilibrium price p^* is determined by the following formula:

$$a - bp^* = \frac{m}{d}p^*$$

That is $p^* = \frac{ad}{bd+m}$

The above formula shows that with the increase of the number of manufacturers in the industry, the market equilibrium price p^* tends to decline. Under the condition of homogeneous competition of products, too many entrants will lead to a decline in profits or even losses in the whole industry. In the short term, the product market space is a constant A . Assume that the existing market space is divided by n enterprises, and then new enterprises enter, the space is divided into $A / n+1$, with the continuous entry of manufacturers, the market space becomes $A / n+2, \dots, A / n+n$, and the average sales of each manufacturer will decline. In order to seize the market, manufacturers will start a price war. The conflict between the limitation of absolute market space and the infinity of scale expansion is the root cause of price decline. The increase of the degree of product differentiation will reduce the intensity of price competition, even so, due to the strong substitution effect between agricultural products, oversupply will not only lead to a decline in the average price level of the industry, but also impact differentiated products.

2.2 Competition and Manufacturer's Pricing Strategy

Excessive competition is a common phenomenon in the agricultural market, which eventually leads to a vicious circle of falling prices. When the supply of products exceeds demand, manufacturers often use price reduction strategies to seek a larger market when playing games with their peers, so as to maximize the profits of the current period. The process of price decline of agricultural products is a process of price war between manufacturers. Price war can be used as the best response to the discontinuous random fluctuation of demand, so we use this model to analyze the price reduction motivation of manufacturers.

- (1) Suppose there are two manufacturers in the cluster, and there is product differentiation.
- (2) Manufacturers have the same cost structure, and the marginal cost is $c_1 = c_2 = c$
- (3) The price of the enterprise's products is p , and the output is q

Its linear inverse demand function is

$$\begin{aligned} p_1 &= a - b(q_1 + \theta q_2) \\ p_2 &= a - b(\theta q_1 + q_2) \end{aligned} \quad (1)$$

And $0 \leq \theta < 1$

Its corresponding demand curve is

$$q_1 = \frac{(1-\theta)(a-c) - (p_1-c) + \theta(p_2-c)}{b(1-\theta^2)} \quad (2)$$

$$q_2 = \frac{(1-\theta)(a-c) - \theta(p_1-c) + (p_2-c)}{b(1-\theta^2)} \quad (3)$$

The first-phase income of enterprise 1 is as follows:

$$(p_1 - c) \frac{(1-\theta)(a-c)-(p_1-c)+\theta(p_2-c)}{b(1-\theta^2)} \quad (4)$$

Suppose there is a super game formed by the infinite repetition of a single-period game, in which each manufacturer seeks to maximize the current discount value of its current income, for which they use the following strategies:

$$p_{10} = p_R$$

$$p_{it} = Rp_{j,t-1} + (1 - R)p_R, j \neq i, t = 1, 2, \dots \quad (5)$$

p_{it} is the price of the manufacturer i in the period t , $0 \leq R \leq 1$, p_R will be decided immediately.

After the initial stage, the optimal response function described in formula (5) determines the current price of each manufacturer, which is the weighted average of the firm's long-term equilibrium price and the previous period price of its competitors. If the optimal response function takes this form, then each manufacturer will know that if they betray the price p_R , competitors will use the same strategy (in the same direction) to change the price after the first period, and the price will be reduced more. If manufacturer 2 follows this form of strategy, then the optimal choice for manufacturer 1 is to choose p_{10}, p_{11}, \dots to maximize G_1 in the following:

$$G_1 = (p_{10} - c) \left[\frac{(1-\theta)(a-c)-(p_{10}-c)+\theta(p_R-c)}{b(1-\theta^2)} \right] + \sum_{t=1}^{\infty} \alpha^t (p_{1t} - c) \times \left[\frac{(1-\theta)(a-c)-(p_{1t}-c)+[R(p_{i,t-1}-c)+(1-R)(p_R-c)]}{b(1-\theta^2)} \right] \quad (6)$$

Take the first derivative of p_{10}, p_{11}, \dots , then get the equation:

$$(1 - \theta)(a - c) - 2(p_{10} - c) + \theta[(p_R - c) + \alpha R(p_{11} - c)] = 0 \quad (7)$$

$$(1 - \theta)(a - c) - 2(p_{10} - c) + \theta[(1 - R)(p_R - c)p_{10} - c] + \theta_{\alpha} R(p_{12} - c) = 0 \quad (8)$$

Because the optimal response function of manufacturer 2 appears in the profit function of manufacturer 1, the first-order condition forms a set of difference equations. Substitute all t through $p_{1t} = p_R$ into equations (3-7) and (3-8), then can get

$$p_R - c = \frac{(1-\theta)(a-c)}{2-\theta(1+\alpha R)} \quad (9)$$

The price for maximizing joint profits is:

$$p_{j\pi m} - c = \frac{1}{2}(a - c) \quad (10)$$

According to formula (9) and formula (10), since α and R are between 0 and 1, there are:

$$p_{j\pi m} - p_R = \theta \frac{1 - \alpha R}{2[2 - \theta(1 + \alpha R)]} > 0 \quad (11)$$

In this way, the strategy shown in formula (5) will generally not guarantee profit maximization.

If the manufacturer uses p_R in formula (9), then the strategy shown in formula (5) is non-cooperative equilibrium, and if a manufacturer adheres to the strategy shown in formula (5), then other manufacturers will also use the strategy shown in formula (5) to maximize their profits.

The conclusion of the model is that if the price of one manufacturer is high and the price of another is low, then the low-price manufacturer expects a larger market and is about to have a larger expected return. In other words, both manufacturers have an incentive to cut prices when demand falls.

There is a significant difference between the agricultural product market and the oligopoly market structure. In the oligopoly market structure, the cooperation equilibrium among monopolies may be formed; the agricultural product market is a kind of market close to perfect competition or monopoly competition, the cooperative equilibrium among agricultural products producers almost does not exist. Under the condition of oversupply of agricultural products, enterprises and farmers will not consider the strategic response of other enterprises or farmers and adopt the cooperative strategy of not reducing prices when making product pricing decisions. Because every decision maker knows that if he does not cut prices, other enterprises and farmers will take the initiative to reduce prices under the conditions of market decline, and they are bound to lose more interests, so price reduction has become the only sales strategy of agricultural producers.

III. THE KEY INFLUENCING FACTORS OF LARGE FLUCTUATIONS IN AGRICULTURAL PRODUCT PRICES

The above is a theoretical analysis of the reasons for the agricultural products price decline based on the perspective of market equilibrium and producer game. Then, the rest of this article takes fruits and other agricultural products as examples to illustrate the current situation of supply and demand and price fluctuations of agricultural products in China. Meanwhile, it further analyzes the deep level factors that lead to the large fluctuation of agricultural prices.

3.1 Excessive Entry of the Agricultural Product Market

Industrial Organization Theory believes that even the existing enterprises in an industry obtain excess profits, because of the existence of entry barriers, it does not necessarily lead to the entry of enterprises. That is, entry is not free. These barriers include economies of scale, capital and technology, degree of product differentiation, and industrial structure. Sunk cost is a barrier to entry, which refers to the cost of investment that cannot be converted to other goals, or the cost that cannot be resold in order to recover part of the investment cost (Xia 2005). Sunk costs will reduce investment incentives, among which special assets have become an important source of sunk costs due to difficulties in selling or limited value, and sunk costs will create barriers to entry for new entrants. The greater the sunk cost, the stronger the negative incentive for investment.

There is a relatively complex structure of the agricultural product market, and the entry barriers for agricultural product processing and production services are relatively high. Generally, the entry barriers of agricultural product cultivation are low, which is a market structure that is close to perfect competition. Especially in the planting process, the characteristics of economies of scale are not obvious, so the minimum effective scale (MES) of the enterprise is small, making no significant difference in production costs between ordinary farmers and large-scale enterprises, and diseconomies of scale even appeared in the production of specialty agricultural products. The main advantages of scaled agricultural enterprises are the equipment and sales, but in agricultural industrial clusters or regional specialized planting bases, the advantages of enterprise scale are weakened by external economies of scale. In an industrial cluster with relatively complete specialized services, the cost of specialized services such as farming, plant protection, and harvesting probably are lower than the cost of enterprise self-service, and specialized markets and circulation service organizations also provide favorable product sales conditions for cluster enterprises and relevant farmers. The knowledge spill over effect of industrial clusters and the inherent characteristics of agricultural products weaken the impact of barriers on entry caused by R&D, technology, product differentiation and so on. In the scaled production area of the planting process, compared with the less dedicated investment of ordinary farmers, scaled enterprises may form special investment in irrigation and other equipment. Therefore, most entrants do not consider sunk costs.

Take Chinese fruit production as an example, we can find the phenomenon that producers enter too quickly. Since the 1980s, with the increase in domestic resident's income level, the market for agricultural products has expanded rapidly, and the supply has also increased at a faster rate at the same time. After 2010, many agricultural products have reached a balance between supply and demand in quantity, or oversupply. Take apples as an example. The national production in 1982 was only 2.363 million tons, and it reached 4.319 million tons in 1990. After that, the production reached 20.431 million tons in 2000, and it reached 33.264 million tons in 2010. Finally, in 2016, it reached 43.882 million tons, which was 18.6 times more than that in 1980, and 2.1 times more than that in 2000. Among the main fruits, the production of citrus, pears, grapes and bananas has increased significantly. The production of apples over the years is shown in Fig.1.

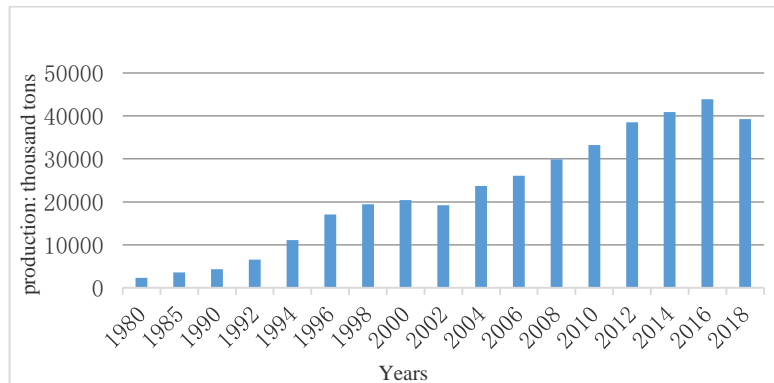


Fig.1 China's apple production over the years

Source: China Rural Statistical Yearbook

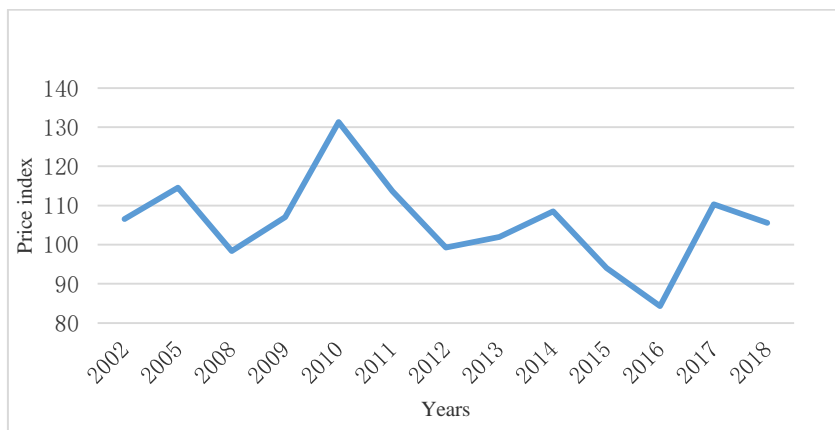


Fig.2 China's Apple production price index over the years

Source: China Agricultural products Price Survey Yearbook

The excessive growth of supply caused prices to fall. From 1992 to 1995, the cost of apples fluctuated wildly. In 1996, the price of apples began to drop significantly. The price of apples in 2000 was less than about half of the price of apples in 1995 [6]. In 2010, the apple producer price index was 131.34%; in 2016, the apple producer price index dropped to 84.34%, and the gap between peaks and valleys was 47%. Although the price of apple has fluctuated after 2011, it is generally in a downward range. The primary reason for the low prices of major fruits such as apples is that the output has grown too fast, and the supply of products has exceeded demand. The production price index of apples over the years is shown in Fig.2.

3.2 Exit Barriers for Agricultural Producers

In a perfectly competitive market, prices will automatically adjust supply, which may happen when the industry enters and exits without cost. Due to the sunk costs, it is not simple for companies to withdraw

from the market. Sunk costs constitute a barrier for companies to withdraw and hinder companies from exiting the market smoothly [7]. Sunk cost is the production cost sunk on the manufacturer. Sunk cost refers to the part of the cost that cannot be fully compensated by the transfer price or resale price of the asset itself, which includes both physical capital and intangible capital. When an enterprise exits the market, in addition to the loss of material assets, production technology knowledge, management experience, and reputation capital are also likely to lose their original value. Corporate decision-making is affected by sunk costs. In other words, the sunk cost effect is the tendency of enterprises to continue once they invest time and money in production [8]. Due to the existence of sunk costs, it is difficult for operators to make up their minds to leave the existing market in the face of poor operating conditions and even when they have a clear judgment on the current market situation of oversupply.

The market differences between varieties of agricultural products are large. In the production of seasonal products, producers are relatively easy to enter and exit the market, while industries with longer production cycles have higher exit barriers, such as the forest and fruit industry. Producers need several years from the beginning of planting the fruit to the high-yield period, and the accumulated investment is high. If they exit the market, the residual value of the original assets will be very small. In the case of high sunk costs, it is difficult for producers to make an exit decision. In addition, the expectations of enterprises and farmers on the future market will also affect their exit. There are many reasons for the decline in agricultural product prices. Among all the reasons, the cyclical fluctuation in the product market is a key interference term. In the face of falling product prices, it is difficult for producers to judge whether the reason is overproduction or other factors. If the producer believes that the product price drop is caused by short-term or cyclical factors, they will generally not choose to exit the market. In addition, most people are more optimistic than pessimistic about the manufacturers' expectations of the future market. Therefore, it is more difficult to exit the market than to enter the market.

Taking Yanling flowers and trees industry cluster which is the largest green industry cluster in Henan Provinces of China as an example, it can be found that farmers hesitate to withdraw. After decades of rapid development, China's green nursery stock industry cluster has formed a considerable supply capacity. Some products have been oversupply, and their prices have been in a long-term downturn. However, the producers have not chosen to withdraw in time in the face of losses. In the Yanling seedling stock industry cluster, winterberry euonymus herb (WEH) and red leaf cherry plum (RCP) are the main varieties. Since 2014, prices have fallen rapidly. Among them, the winterberry euonymus herb fell the most. The planter Mr. Wang planted 2.2hectare of winterberry euonymus herbin 2014. In the five years to2019, the average diameter of winterberry euonymus herb was 5 cm. The average cost per tree is 29.3 RMB, which include initial farmland cost, seedling cost, planting cost, land rent, pruning, fertilizer, watering, weeding and other management costs, etc., the average sales price per tree in 2019 is 10 RMB, which is in a state of substantial loss, but Mr. Wang still did not choose to quit. The main reason is that the price of winterberry euonymus herb is expected to rise again. The annual prices of winterberry euonymus herb and red leaf cherry plum are shown in TABLE I.

TABLE I. Price of winterberry euonymus herb (WEH) and redleaf cherry plum (RCP) over the years

Variety	Diameter	Period										
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
WEH	5cm	40	50	80	80	28	25	25	25	18	10	10
RCP	6cm	40	50	60	50	20	20	20	25	20	15	15

Source: Author's field survey

3.3 Product Characteristics with Large Price Fluctuations

The price fluctuation mechanism of agricultural products varies with the variety types, production region, consumption regions, market types and other aspects of agricultural products. There is a great difference in the robustness of the price fluctuation of agricultural products, and the price fluctuation of raw grain is mainly caused by external shocks of international market, the price fluctuations of eggs, Chinese cabbage and grass carp are mainly affected by their own price expectations. Tang Luyun et al. concluded that the prices of land-intensive agricultural products (rice, wheat, etc.) and strategic resource-based agricultural products (cotton, soybeans, etc.) fluctuated slightly, while the prices of labor-intensive agricultural products (apples, pork, etc.) fluctuated greatly [9]. The difference of product type price fluctuation is mainly affected by three factors: storage time, deep processing ratio and market scale. The influencing factors are shown in TABLE II.

TABLE II. The main factors influencing the price fluctuation of agricultural products

Variety	Examples	Storage time	Deep processing ratio	Market scale	Fluctuation range
Grain	Wheat	Long	High	Big	Small
	Mung bean	Long	Small	Small	Big
Fruits	Apple	Longer	Low	Big	Bigger
	Cherry	Short	Low	Small	Big
Meat	Chicken	Longer	High	Big	Small
	Crab	Short	Low	Small	Big
Vegetables	cabbage	Longer	Low	Big	Bigger
	Coriander	Short	Low	Small	Big

Source: Author's field survey

(1) Storage time. The price fluctuation of grain and other agricultural products is relatively small, mainly because grain and other products with relatively stable biological characteristics can be stored for a long time, for example, wheat can be stored for 3-5 years at room temperature and 8 years at low temperature, and there is no obvious change in quality. As a result, when the price of wheat is low, especially when it is much lower than the normal price, producers are in no hurry to sell, but store the wheat, which reduces the market supply in the current period, and the impulse to cut prices is offset. The

prices of fruits, vegetables and other products that are difficult to store or have high storage costs fluctuate greatly, but there are also differences between products. The relative storage tolerance of apples, coupled with the progress of storage technology, weakens the cyclical impact of apple supply to a certain extent and reduces the frequency and extent of apple price fluctuations. On the other hand, some varieties are not suitable for long-term storage, for example, nectarines need to be sold in a short time after ripening. Under the market conditions of oversupply, nectarines can only be sold at low prices in order to reduce greater losses.

(2) Deep processing ratio of agricultural products. The high value of deeply processed agricultural products and low price fluctuations lead to low fluctuations in the prices of upstream raw materials, for example, rapeseed is mainly used for processing rapeseed oil, cotton can be further processed into a variety of cotton textile products, and so on. Therefore, the price fluctuation range of rapeseed and cotton is relatively small. In contrast, deep processing ratio of vegetables is smaller, and the price of vegetables fluctuates greatly. The deep processing of agricultural products helps to slow down the price fluctuation: first, the deep-processed agricultural products break the time restriction of seasonal sales of products, prolong the sales cycle of products, and alleviate the excessive supply in a certain period of time; second, deep-processed agricultural products break the spatial constraints of the original product market scope, expand the sales radius of agricultural products, and promote the outward movement of the market boundary.

(3) Market scale. The price fluctuation range of agricultural products with small market size and small demand price elasticity is often larger. The reason why the price of garlic sometimes soars and sometimes the price plummets is due to the small scale of garlic market and the small elasticity of demand, so the price fluctuates greatly. Garlic bolts are subsidiary products of garlic, and the sales window period of garlic bolts is even shorter. In the garlic industrial base, the supply of garlic bolts is concentrated and the price fluctuates greatly. When the supply exceeds demand, if the picking cost is calculated, the price of garlic bolts will fall to a negative number.

Among the above factors, the storage time factor is more complex. Although cold storage can break the seasonal restrictions on fruit and vegetable products such as apples and garlic and reduce the range of price fluctuations, it also has negative effects. When supply falls short of demand, it may cause hoarding and then sales, driving prices to continue to rise. The extension of storage can only solve the problem caused by the centralized listing of agricultural products, but can not solve the fundamental problem of overproduction. The stored products will eventually be introduced to the market, and the price problem is a problem of balance between supply and demand.

(4) Organizational Structure and Substantial Price Fluctuations. In different industrial organization structures, enterprises have different decision-making behaviors and pricing methods. In the agricultural industry, the characteristics, operation scale and technical level of operators will affect the production decision. Some studies have shown that producers with high level of education and technology can make reasonable production decisions under the condition of price fluctuation [10]. Large enterprises have

advantages in information collection, production decision-making mechanism and product differentiation, as well as strong bargaining power, while small & medium-sized enterprises and small farmers do not have these advantages, especially the lack of market judgment. Decentralized management is the main feature of agricultural production in China, such as Yanling flower and tree industry cluster is the largest and highly organized flower and plant industry cluster in China, and the number of large-scale enterprises is gradually increasing, but on the whole, small farmers still account for the vast majority. The organizational structure of Yiling flower and tree industrial cluster is shown in TABLE III.

TABLE III. The organizational structure of flower and tree industry cluster in Yanling

Organizational structure	Largeenterprises	Small&medium-sized enterprises	Smallfarmers
Quantity	100	790	11000

Source: The author collates according to the relevant data

The market structure dominated by small farmers will promote the contradiction between supply and demand and price fluctuations. First, farmers' production decisions have the characteristics of conformity, that is, they are prone to simple imitation and mutual imitation, or can only rely on real-time price information or experience to make production plans, but this kind of plans is often lagging behind and can not catch up with the changing rhythm of the market. The herd effect will lead to synchronous magnification or contraction in supply, thus contributing to the price fluctuation of agricultural products. Second, restricted by production conditions and technical capacity, farmers can not adjust the product structure in time and produce more major varieties, resulting in serious product homogenization and fierce price competition.

IV. CONCLUSION

The conclusion of this paper is that the conflict between the limited market space of agricultural products and the rapid expansion of production scale is the root cause of price decline. The cooperative equilibrium between agricultural producers and production plans does not exist. Under the condition of oversupply of agricultural products, producers (enterprises and farmers) will not consider the strategic response of other enterprises or farmers when making product pricing decisions, and price reduction has become the only sales strategy of agricultural producers. In recent years, the basic reason why the prices of some agricultural products (fruits, green seedlings, etc.) in China are hovering at low prices is that the output increases too fast, the supply of products exceeds demand, and at the same time, there are high exit barriers. The product characteristics such as the storage time of agricultural products, the proportion of deep processing and the market scale affect the price fluctuation, the organizational characteristics of producers also affect the decision-making, and then affect the price fluctuation.

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