An Analysis of Government Behavior in China’s Dairy Industry

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Abstract The quality of agricultural products should be regulated and guided by the industrial association consisting of various links of agricultural production chain. The government has to purchase the regulatory services from agricultural associations. In the production of dairy products in China, the improper government intervention has been in violation of the socialist market economic law, resulting in damage to the node enterprises on the dairy production chain. Therefore, it is necessary to establish the agricultural associations to ensure the quality of agricultural products.

Key words Government policy, Chinese dairy products, Local agricultural associations, Service purchase

1 Introduction

The prevailing economics of the world shows that there are three basic elements in the operation of any form of market economy: trading platform, market players, and trading rules for market players. Market platform can be divided into basic domestic local market, domestic unified market and international market. The local market is spontaneously formed by local traders, and such market operation is quite effective as long as the government does not hinder the occurrence and development of this market. Domestic unified market needs to be guided by the government to develop national standards and regulations, and the local government supports large enterprises to occupy domestic market share and promote business development.

The international market requires government policy support, the enterprises carry out production and overcome the trade resistance according to international standards, and the international market maintenance also needs government support. The government should not intervene in the market economy, especially in the agricultural production with obvious local market characteristics. For China’s dairy industry, the government bans small dairy enterprises in the form of re-examining and re-issuing production licenses, and uses unified management approach to establish farming area to eliminate the production of "retail dairy farmers".

This control of the dairy market is a violation of market economic law, breaking the dairy market and market trading rules, and dividing the market participants into the damaged and beneficiaries. The government’s correct approach is to assist various links of agricultural production chain in forming local agricultural associations which have the functions of agricultural information consultation and transmission, agricultural supply and marketing negotiation, agricultural product quality testing, agricultural technology reform, and agricultural credit.

The government should purchase the regulatory function from the agricultural associations, and delegate powers to agricultural associations to make the agricultural associations with government background more authoritative and stable in the production chain.

2 Improper government policies in China’s dairy industry

China’s dairy industry forms the following production chain: dairy farmers→ individual milk stations→ transfer milk stations→ milk enterprises→ sale. Government regulators advocate the US model; large-scale ranching, mechanization, integrated production of dairy products. China’s dairy enterprises are also eager to borrow the US model.

Therefore, from raw milk, the government implements the guideline of "raising control, scale pursuit", and uses administrative measures and economic support approaches to develop large-scale breeding.

2.1 Improper establishment of dairy farmers’ breeding area

Taking Hebei for example, the government reshapes the dairy farming and milk stations. Retail milk farmers can only take the dairy cow to rural dairy cooperatives for unified milking, or take the dairy cow to the breeding area for unified rearing. The labor costs are high for the former because of long distance; the feeding and management costs are high for the latter, and dairy farmers’ income is significantly reduced.

The only way to make the individual dairy farmers survive is to raise dairy cows at home, do manual milking, and sell the milk to mobile milk mongers or send the milk to the milk stations in the neighboring province. Dairy farmers have the feelings of being bullied, and happiness index is low. The breeding economic efficiency of dairy farmers is higher than that of pasture and breeding area, and the scale of breeding 6–8 cows per household has the best efficiency [1].

The direct breeding of cows in family courtyard saves the management and labor costs, and dairy farmers can take into account the farmland and other economic activities. The mobile milking car can be used to milk farmers’ cows to ensure the quality of
the original milk. For the artificial milking, the milk can be acquired as long as the quality of milk reaches the national standards. The policy of establishing dairy cow breeding area is wrongly implemented to squeeze dairy farmers’ interests.

2.2 Improper establishment of large milk enterprises’ ranches In 2009, Inner Mongolia Yili Industrial Group Co., Ltd. established super-large ranch holding 15000 cows; in 2011, it invested 1.4 billion yuan in establishing new ranches. In 2007, the annual report of Inner Mongolia Mengniu Dairy (Group) Co., Ltd. showed that it invested 700 million yuan in milk source construction within a year, and planned to build 20 – 30 ranches in the future.

The raw milk produced by the large dairy enterprises’ ranches is sold to their own dairy enterprises, but even if the expensive imported cows and grass seeds are purchased, the milk yield and quality can not achieve the same level with the United States for various reasons, and the super-large scale has doubled the disease prevention costs and other risks. It is easy to get land for establishing ranch, and there are subsidies for the purchase of equipments and cows. Government subsidies bring risks to large dairy enterprises, reduce economic benefits of competitive dairy enterprises, and even cause losses and bankruptcy of competitive dairy enterprises.

In 2011, Feihe International, Inc. sold its two large ranches at the low price of 130 million yuan for "self-help", and the state finance also suffered from losses.

2.3 Improper regulation of the government on milk stations

The individual milk stations are established by private investment, and the scale is expanded due to the breeding area policy. The stations operated a number of milking halls and farms, and the milk stations are the policy beneficiaries.

Melamine and other additives are the "research" results of milk stations, and the dairy farmers can not know the "melamine" secret. The individual dairy farmers can not compete with the milk stations, the dairy enterprises rely on the milk source of milk stations, and the government can not execute in-depth regulation over milk stations. The breeding area policy does not have any constraints on the adulteration of milk stations.

It has been said that the individual milk stations are the source of low quality dairy products. The dairy enterprises and government can not effectively control the link most in need of regulation.

2.4 Improper reappraisal of the government on small dairy enterprises

In early April 2011, the dairy production license was reappraised[2], and for the 1031 dairy enterprises and 145 infant milk powder enterprises, only 643 enterprises (including 136 infant milk powder enterprises) passed the production license reappraisal; 107 enterprises suspended production for rectification; 426 enterprises were not approved, with the percent of pass of less than 55%.

The existence of small businesses offers living space for the scattered dairy farmers, and prompts the large milk enterprises to occupy the national market and enter into the international market. After the reappraisal of government, the three dairy giants Bright, Yili and Mengniu increased the price of more than 5%, respectively. The domestic high milk prices have led to the influx of international liquid milk into the domestic market, squeezing the market share occupied by the three giants. This is closely related to the reappraisal of government. In August 2013, 6 dairy enterprises were fined 670 million yuan because of monopoly behavior.

It is necessary to develop large, medium and small dairy enterprises while ensuring the safety and quality of milk products. There is a need to establish the local dairy association as a third party independent of the links of dairy production chain (dairy farmers, milk stations and dairy enterprises), and it has the functions of milk quality inspection and milk price adjustment. The government purchases the milk quality regulation function from the dairy association so that it has government background and becomes more authoritative.

3 Establishment of regional agricultural associations

3.1 Necessity of establishing agricultural associations

The quality of agricultural products in China has always been a matter of concern to the government and the public. There are some adulteration behaviors, such as feeding the hens with diet mixed with Sudan red to produce "native eggs", feeding the pigs with clenbuterol, spraying watermelon with leavening agent, and adding melamine to milk.

These moves are not a secret in the industry, but the outsiders and government officials do not know. It is necessary to establish the agricultural associations. Dairy farmers’ agricultural marketing channels and price problems are inseparable from the help of the third-party agricultural associations, and they need channels to increase the happiness; the agricultural enterprises need stable, high-quality goods; brokers also need to get appropriate protection to ensure the profits.

Therefore, all links in the agricultural production chain need to establish agricultural associations.

3.2 Funding issues for agricultural associations

The agricultural associations are funded by agricultural production chain and sellers[3]. Let the membership fee of link i be, then the total membership fees of agricultural associations $G = \sum_i g_i$. The function $u_i$ of the benefit obtained by link i due to establishment of agricultural associations is expressed as:

$$u_i = x_i^\alpha i^\beta \quad 0 < \alpha < 1, \ 0 < \beta < 1, \ 0 < \alpha + \beta < 1$$ (1)

where $x_i$ is the number of products of i; $\alpha, \beta$ are the performance values after the intervention of agricultural associations.

The partial derivative of $u_i$ is calculated:

$$\frac{\partial u_i}{\partial G} = \beta x_i \quad \frac{\partial u_i}{\partial x} = \alpha G$$ (2)

Let $p_i$ be the production costs of i, $p_e$ be the rate of return on investment, $g_i$ be the investment rate, $M_i$ be the total income, then:
3.3 Operation mode of agricultural associations

The conditions for production chain to establish agricultural associations are as follows:

\[ \sum_{i=1}^{n} M_i \geq \sum_{i=1}^{n} p_i x_i + \sum_{i=1}^{n} p_{g_i} g_i \]  

(4)

Let the objective function of \( i \)'s optimal strategy \((x_i, g_i)\) be \( L_i \), then the optimal conditions for \( L_i = u_i(x_i, G) + \lambda (M_i - p_i x_i - p_{g_i} g_i) \) are as follows:

\[
\begin{align*}
\frac{\partial u_i}{\partial G} - \lambda p_{g_i} &= 0 \\
\frac{\partial u_i}{\partial x_i} - \lambda p_i &= 0 \\
\frac{\partial u_i}{\partial g_i} &= \frac{p_{g_i}}{p_i} 
\end{align*}
\]

Based on formula (2), (4), (5), the optimal membership fee \( g_i^* \) is as follows:

\[ g_i^* = \frac{\beta M}{\alpha + \beta p_{g_i}} - \frac{\alpha}{\alpha + \beta} \sum_{j=1}^{n} g_j, i, j \in (1, 2, \cdots, n) \]  

(6)

Formula (6) indicates that the agricultural processing enterprises and sale enterprises with greater \( M_i \) and smaller \( p_{g_i} \) should pay more membership fees; farmers pay the least fees. In \( u_i(x_i, G) = x_i^\alpha G^\beta \), \( \alpha, \beta \) are the symbolical parameters for the role of agricultural associations. The larger the value of \( \alpha \), the higher the degree of dependence of \( u_i \) on production \( x_i \); the larger the value of \( \beta \), the greater the role of total membership fees \( G \) in the benefit function. This shows that this production chain is in optimal condition, and each link benefits from it. The membership fees paid are \( g_i^* \), and form the stable, high-quality sources of agricultural products for enterprises.

The milk enterprises, as the initiators in the main source areas of milk, send technical personnel and testing equipments to combine with the regional milk stations and dairy farmers to form local milk associations as the third-party agencies independent of dairy enterprises and dairy stations.

3.3.2 Operation mode. Many agricultural associations can be set up, and one association is formed for one production chain. Farmers, purchasing stations and enterprises are free to pay to participate in an agricultural association, which can eliminate invalid associations.

For the local market platforms, the government purchases the supervising and coordinating functions of outstanding agricultural associations to improve the quality and quantity of agricultural products. For the large enterprises having a large domestic market share, the government should reduce part of the taxes, and guide enterprises to orderly expand and enter the international market.

The government should also strengthen the national public education, and the shared values of honesty and trustworthiness, fair trade and quality and quantity assurance prevalent in agricultural production will make our food safer.

References


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