Influence of China's Grain Industrial Market Structure over Grain Pricing Power

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Abstract From the point of view of industrial market structure, we analyze the influence of market structure on grain production, circulation, and processing, and on the grain pricing power of entities along China's grain industrial chain. Through analysis, it is indicated that different features of market structure play a significant role in pricing power of such microeconomic entities as farmers and grain enterprises in grain production and transaction. And the market structure determines welfare distribution model of consumers' surplus and producers' surplus at the market.

Key words Grain pricing power, Industrial market structure, Negotiation ability, Grain security, China

Market structure of all links in grain industrial chain is always highly simplified and even neglected as a "black box". Various macroeconomic factors, such as petroleum price, price of means of agricultural production, increased demand for industrial used grain, speculation of international capital, determine China's grain price through the abstract "black box". On the other hand, however, the existence and internal features of "black box" have a significant influence on obtaining the pricing power by participants of every links, and consequently determine the economic welfare distribution of grain industrial chain.

The grain industrial chain consists of several major links, including grain production, circulation and processing. From a general view on the grain market, we can see a market organization structure that also exists in many other industries. Raw material production link at the lowest end of industrial chain is the grain production link, which has structural features of perfect competitive market. The circulation link shows structural features of monopolistic competitive market. The processing link can produce maximum added value and it has structural features of monopolistic competition and oligopoly market, which has significant development trend in processing industries of some grain products. Such combination of market structures has following characteristics. First, high-end links in industrial chain have high pricing power and market control ability. Second, intermediate links have fierce competition between each other and their ability of controlling overall price at market is limited. Third, the low-end production and planting links basically lose the pricing power and remain in the inferior position at the market. From structural features of market, we analyze the influence of these three links over the grain pricing power.

1 Grain production link has nearly perfect competitive market structure

1.1 Market structural features of grain production link The perfect competitive market features that there are numerous buyers and sellers at the market, and their products are homogeneous; producers are price takers and free in entrance and exit[1]. Grain producers are huge in number and wide and scattered in area distribution. The production scale of each producer is very small and industrial concentration is extremely poor. Each producer is a taker of marker price and does not have power to influence market prices of upstream agricultural products and grain products sold by him.

There are 252 million households in rural areas of China, and 290 million people are directly engaged in agricultural production. On average, each person in rural areas sells 394.64 kg grain. In 2006, there are 1 896 farms in China, the total output of grain reaches 20 million tons[2]. On average, each farm produces 10 000 tons of grain. In 2006, China's total output of grain is up to 497.47 million tons. However, for each farm or household, it is only a tiny cell of the entire grain production. Besides, it is difficult for most grain plantation families to make break-through in their technical level. As a result, there are few high quality grain products. And products produced by most grain production units including farmers and farms basically have the same quality.

1.2 Pricing power of farmers in grain production link Grain production has nearly perfect competitive market structure. This industrial characteristic results in loss of farmers' grain pricing power. Farmers are significantly inferior in negotiation of grain selling conditions. One of the reasons for this inferior position is that the perfect competitive market structure in grain production link is unfavorable for farmers in lowering the transaction costs. First, such circulation infrastructure as trading places for agricultural products and roads at all levels are of great importance for grain production and sales[3]. Farmers mainly rely on financial subsidy to improve infrastructure. It is nearly impossible to improve the infrastructure individually. Second, scattered farmers are faced with high transaction costs for market price, demand information, transportation, storage, and processing. Thus, farmers, especially those with small scale, are often passive in sales negotiation. Only in reli-

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ance on channels, prices and information provided by intermediate traders, it is difficult to obtain fair pricing conditions[4].

Grain producers are inferior in improving production technology, raising grain quality and optimizing circulation conditions. It is impossible for individual grain producer to assume soft and hard factors for technological development. Consequently, farmers lose the opportunity to enhance their pricing power. Over one million rice plantation families in China adopts small scale and scattered planting method, which is an obstacle to scale operation of rice planting and industrialized development of high quality seed[5]. In addition, the limitation on technology upgrading results in that overall quality of rice is not high. Low quality rice, in turn, makes producers lack of the fundamental bargaining chip.

2 Grain circulation link features monopolistic competition market

2.1 Organizational form of grain circulation market Currently, main organizational forms of grain circulation market are enterprises engaged in grain purchase and marketing, trade, industry and agriculture integration organization, and grain wholesale market[6]. Apart from these, there are "company plus farmers", "company plus quality grain production base"[7] and "farmers plus leading enterprise plus small private business"[8], *etc*. New organizational forms of grain circulation market constantly emerge.

By the end of November, 2008, there are totally 18 989 grain enterprises in 32 provinces and autonomous regions[9]. In these enterprises, there are 1 496 grain industrialization leading enterprises. For grain and oil market with annual turnover over 100 million yuan, there are 27, 17 and 8 separately in eastern, middle and western areas[10].

The regional distribution of enterprises is uneven. Shanxi, Jiangsu, Henan and Guangxi separately have over 2 000 state-owned grain enterprises, and Hebei, Heilongjiang, Anhui, Jiangxi, Guangdong and Gansu respectively have more than 1 000 grain enterprises. In other areas, the number of grain enterprises is less than 1 000. In Qinghai, there are only 65 grain enterprises.

As to the distribution of grain industrialization leading enterprises which play a significant role in the reform of grain circulation, the regional disparities are even more obvious. In Hunan, Gansu and Qinghai, there is no leading enterprise by the end of 2006, while Hubei has 549 leading enterprises.

From operation situations, according to statistical data of State Administration of Grain, average assets of state-owned grain enterprises are 25.21 million yuan in 2006. Only 9 areas of grain enterprises have operating profits, the rest 23 areas are in the red. The total amount of operating losses is up to 3.8 billion yuan for grain enterprises all over the country. However, China National Materials Storage and Transportation Corporation (CMST) and China Grains and Oils Group Corporation (CGOG) are exceptions. They made huge profits.

To sum up, structure of grain circulation market in China mainly takes on characteristics of monopolistic competition market. At a monopolistic competition market, there are numerous suppliers competing against each other. Thus, products at such market are heterogeneous. The monopoly power of a supplier depends on the degree of difference between his products and others' products and whether the enterprise can freely enter and exit this industry[1].

From the data of absolute quantity in the whole country and relevant quantity in all areas, it is shown that all market entities of grain circulation industry can become the foundation of monopolistic competition market structure. At the same time, after market opening up, consumers' requirements for grain quality, packaging and retailing are changed, heterogeneous products appear accordingly. Famous rice, flour, oil, and green organic grain are all results of circulation models making efforts to build core competence. In the aspect of market barriers, except that leading enterprises assume certain costs at the time of entrance and exit, other entities such as farmers and small private businesses in circulation link can freely enter and exit[8]. Some researchers believe that the entrance barrier of circulation industry is extremely low, while the exit barrier is very high[11].

2.2 Pricing power of grain circulation industry Since opening up of grain circulation industry, grain circulation enterprises are changed from totally state-owned into enterprises with multiple forms of ownership through restructuring. Operating modes of enterprises are increasingly diverse. Nevertheless, the data indicates that concentration of grain circulation industry is slightly low. Except the influential China National Materials Storage and Transportation Corporation and China Grains and Oils Group Corporation which own over a hundred enterprises, other enterprises are low in operating capability. The operation is greatly limited by regional extent. And most enterprises are still at a stage of exploring competitive operating mode of grain circulation.

In market with monopolistic competition characteristics, there is fierce competition and there are also enterprises with monopoly position. Therefore, much uncertainty exists in pricing, output, industrial standard, *etc*. Empirical data shows that appearance and development of new organizational forms of grain circulation have changed the pattern of grain commodity circulation portion. When the circulation of grain commodity is basically stable, increase of one organizational form of grain circulation will accordingly shunt a portion of grain commodity circulation. The better development of organizational form, the larger portion of grain commodity circulation it will increase.

All channels in grain circulation industry are looking for more economic operating mode. Lower costs, higher circulation efficiency, and increasing profit through proper pricing are targets of operating enterprises in circulation industry. Enterprise-oriented operation not only raises efficiency of the whole grain circulation industry, but also makes the grain circulation field get rid of problems of low performance, high deficit and massive debt. Thus, when circulation enterprises have adequate market capability to control costs, they will certainly do. This is the nature of an enterprise. In this situation, as lowest

end supplier, the grain producer is clearly inferior in control capability and information ability of prices to enterprise-oriented companies in circulation industry when negotiating for grain prices. Meanwhile, grain circulation enterprises grasp various channels of demand, so they can control the price at final consumption market.

In the report of *Investigation on Pricing of Agricultural Products and Distribution of Profits* issued by the Ministry of Agriculture, it follows up the product flow and value flow from production, purchase, processing, transportation, wholesale, to retailing. It also makes a record of profit allocation of agricultural products in every links. The research shows that market prices of agricultural products fluctuate, and farmers are often on the verge of profit and loss, while processing and sales links have relatively stable profits.

3 Market concentration rate of grain processing link is constantly increasing

3.1 Grain processing link and market structure China' grain processing link has shown the trend of monopolistic competition developing to oligopoly market structure. Here, we take statistical data of 2006 as an example. There are totally 11 719 grain and oil processing enterprises, and 125 enterprises invested by foreign businessman and Hong Kong, Macau and Taiwan merchants. Yet, the sales revenue of these 125 foreign-capital enterprises is up to 9.587 billion yuan, accounting for 25% of the total sales revenue of the industry (37.3 billion yuan), and the profit reaches 3.1 billion yuan, about 40% of the total profits of the industry (7.6 billion yuan). Among these 125 enterprises, 70 enterprises are engaged in processing of edible vegetable oil, 31 companies undertake wheat flour processing, and the rest 24 ones are dealing with rice processing. In edible vegetable oil processing industry, the yearly productive capacity of foreign-invested enterprises is three times higher than that of state-owned holding enterprises, accounting for 30% of total productive capacity of the whole industry[12].

From the specific type of products, over 60% of China's soybean processing industry is monopolized by four transnational companies (American ADM, Bunge Group, Cargill, and French Louis Dreyfus, or ABCD companies for short). In 2006, five out of eleven large oil companies with raw material processing capacity of over 6 000 TPD start business in China. Through investment and merger, the above ABCD companies are expanding the market share of China on a large scale[14], and these transnational companies are penetrating into rice processing industry.

3.2 Influence of processing link on grain pricing power Data has indicated that the concentrate rate of grain and oil processing industry at the higher end of grain industrial chain is very high. Higher concentration rate will directly bring about monopoly profit. Such indicators as production capacity, sales revenue and profits of grain and oil processing industry show that foreign-capital enterprises are constantly increasing in penetration and monopoly power in rice, flour and oil industries in reliance on their advantages in high operating efficiency. Obviously, enterprises invested by foreign businessman and Hong Kong, Macau and Taiwan merchants are in the industrial leading position.

The influence of constantly increasing of market concentration rate on pricing power is growing day by day in domestic grain processing industry. In 2006, American ADM, Bunge Group, Cargill, and French Louis Dreyfus companies entered domestic oil processing industry on a large scale through investing, building factories, merger, acquisition, and holding, *etc*[13]. In the same year, import of soybean in China increased sharply. Due to high costs compared with GM soybean, domestic soybean is faced with increasingly shrinking the planting area. Although soybean oil adopts low cost GM soybean, the soybean oil price at the market is rising year by year, rather than falling down. What is worse, international grain processing tycoons are penetrating into rice processing industry. Transnational companies like Jinlongyu Group are planning to establish an integrated industrial chain from rice production base to packaging finished products. If capital control can bring intensive development of China's grain industry, farmers should have been benefited from constant rise of grain price. Unfortunately, when consumers suffer from increasingly rising of grain price, farmers will obtain very limited benefit. However, profits of grain processing enterprises are rising greatly year by year. In these situations, it is required to have more empirical researches and in-depth analysis influence and function of market structural features of grain processing industry on steady and healthy development of the entire grain industrial chain.

4 Conclusions

It is indicated that different features of market structure play a significant role in pricing power of such microeconomic entities as farmers and grain enterprises in grain production, transaction, processing and sales links. And the market structure determines welfare distribution model of consumers' surplus and producers' surplus at the market. To guarantee steady grain price and safeguard the security of grain supply, we should not only focus on macroeconomic factors, but also manage and regulate industrial market structure in different links of the grain industry. Besides, we should guide the grain pricing power to shift to the direction that is favorable to increase of farmers' income, benefit of consumers, as well as to improving operating efficiency of China's grain enterprises.

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we inspect the specific situation of survey objects randomly, and verify the basic consistency of the actual situation with the results of comprehensive evaluation model of demonstration farmers' specialized cooperatives based on AHP. The design of this evaluation model is scientific and objective.

3 Countermeasures and suggestions

Through the careful examination and selection of the results of the evaluation, the research group regards the farmers' specialized cooperatives with score more than 60 points as objects of this demonstration. In order to improve the overall level of farmers' specialized cooperatives, we put forward the following countermeasures and proposals.

3.1 Promote the information-based level of demonstration cooperatives To solve the problem of low information-based level of farmers' specialized cooperatives, in accordance with the actual situation of demonstration objects, the research group provides computer hardware and software for demonstration objects and improves network bandwidth environment. Rural network is instable; the broadband cost is high; the demonstration objects have strong mobility; there is a shortage of information-based talents. These problems are the important factors responsible for restricting information-based level of demonstration cooperatives. We can use mobile Internet access, information-based training and other means to solve these problems.

3.2 Strengthen the service capacity of demonstration cooperatives The farmers' specialized cooperatives are farmers' economic cooperative organizations, which primarily should provide services for members of cooperatives. To enhance the service capacity of the demonstration objects, we should broaden and stabilize sales channels, promote the diversification of sales structure, enhance pricing right of products, actively carry out "connecting farmers and supermarkets", "connecting farmers and schools", "connecting farmers and enterprises" and other activities, encourage cooperatives to establish chain stores, direct sales points, shop, and marketing centre in cities, help solve farmers' problem of "difficult sales" and help farmers increase yield and income.

3.3 Use means of science and technology to promote product quality We should actively learn and comply with the provisions of *Agricultural Product Quality Safety Law* and *Food Safety Law*; establish the production record system to record the whole process of production and achieve traceability of product quality; encourage the demonstration objects to create conditions to have access to pollution-free product certification, green food certification, organic agricultural product certification, and certification of geographical indication; encourage the demonstration objects to register trademark and achieve unified packaging, unified identity, and unified sales of the products of cooperatives; encourage the demonstration objects to formulate the standard of production, harvesting, processing, and circulation, and continue to implement and promote the standard, according to the specific circumstances of the cooperatives.

3.4 Amplify social sensation of farmers' specialized cooperatives Through brand packaging, exhibition and forum, event planning, media recognition and other ways, we should expand publicizing degree of cooperatives. In the mean time, we should also actively use demonstration platform (or HC360. COM, NC. MOFCOM. GOV. CN *etc.*) to establish web site, to raise recognition and expand influence. We should spurn the traditional concept of "if you improve the quality and function of an essential product many consumers will buy it", and create good image of cooperatives, so as to rapidly promote the development pace and operation level of cooperatives.

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