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Literature Review and Further Thinking on Excess Capacity of Grain and Oil Processing Industry in China

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Abstract

The grain and oil processing industry is related to the national nutrition, health and safety protection, and the industry status has an extraordinary impact. At present, the phenomenon of overcapacity and benefit decline has aroused wide attention from all walks of life. Firstly, based on the existing literature on grain and oil processing industry, overcapacity and other aspects, this paper makes relevant comments, preliminarily understands the existing research status of overcapacity in grain and oil processing industry, and puts forward the research problems to be solved on this basis, so as to pave the way for further research on overcapacity in grain and oil processing industry.

Keywords

Grain and oil processing industry, Excess production capacity, China.

1. Introduction

For a long time, China's grain and oil processing industry has maintained a stable development trend. The growth of total industrial output value has entered a medium-speed development stage, meeting the basic needs of improving people's living standards and the stable development of the national economy, and has become the backbone of national food security [1]. In the 13th Five-Year Plan for the Development of Grain and Oil Processing Industry, the vision of an annual increase of 8%-10% in the total industrial output value was put forward [2]. According to Statistics of Grain and Oil Industry in 2016, the total output value of grain and oil processing industry will reach 2.76 trillion yuan in 2016, up 13.3% year on year. The total profit was 132 billion yuan, up 68.7% year-on-year, and the profit margin of product sales income was 4.8%. The economic benefit was good and the industry had a good prospect.

While the grain and oil processing industry is developing steadily, there are also many problems: the industrial structure is unreasonable, the low-end grain and oil processing industry has excess capacity, the gap between supply and demand of high-end products is large, and the average capacity utilization rate is only 46%. At the same time, 70% of the grain processing enterprises are engaged in the processing of primary products such as rice flour oil, 70% of the grain and oil processing enterprises have not yet realized the comprehensive utilization of by-products, and the industrial chain is short, which cannot improve the overall economic benefits of the grain and oil processing industry. Moreover, judging from the nature of enterprise ownership, although the number of domestic-funded non-state-owned enterprises is the largest, the scale of state-owned enterprises, Hong Kong, Macao and Taiwan businesses and foreign-funded enterprises are relatively large and the total industrial output value is relatively high. In addition, state-owned enterprises are still the lowest in terms of total profits alone, and even have negative profits in some fields such as wheat flour processing and alcohol processing.

Theoretically speaking, grain and oil processing industry is similar to monopoly competitive industry. When there is normal competitive overproduction in the competitive market environment, the relative excess demand of production capacity will prompt enterprises to adjust product structure and improve

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operating efficiency, and enterprises will selectively stay or withdraw from the market. The market will effectively coordinate the behavior of economic agents and promote the supply and demand to reach a new dynamic equilibrium, and overcapacity will only exist in the short term [3]. However, overcapacity in grain and oil processing industry obviously exists for a long time. According to "Statistics of Grain and Oil Processing Industry in 2015" and "Statistics of Grain and Oil Industry in 2016", the utilization rate of production capacity in rice processing industry and wheat flour processing industry has been below 50% and 60% respectively for seven consecutive years, while that in edible vegetable oil processing is slightly higher than 60%, obviously in a serious situation of overcapacity. However, enterprises in the industry are still concentrated in low-level capacity expansion, zombie enterprises are stranded in the market, unable to improve product innovation, competitiveness and market power, which further intensifies the industry's overcapacity, unable to guarantee the effective supply of high-quality green organic and well-known brand grain products, squeezing the profit space and living space of upstream interest subjects, and affecting the health of grain and oil processing industry Kanghe sustainable modernization development. Therefore, this paper will focus on the formation of excess capacity in grain and oil processing industry.

2. Discussion on related literature

2.1 Research on the Development of Grain and Oil Processing Industry in China

Reviewing the development of grain and oil processing industry for many years, there are some problems in the grain and oil processing industry in China during the Ninth Five-Year Plan period, such as lagging reform in grain and oil processing, lack of planning in management, unsound innovation system, weak market monitoring, etc. Liu Ying [4] and Xu Shenghui [5] point out that China's grain and oil processing industry should cultivate leading enterprises, intensify innovation, open up foreign markets and promote industrialization upgrading, taking the development of foreign grain and oil processing industry as a reference. Nowadays, the scientific and technological level of China's grain and oil processing industry has been constantly improved. While meeting the basic living needs of urban and rural residents, it has also constantly adjusted the product structure, actively created high-quality, green, organic and well-known brand grain products, and continuously explored the way of industry transformation and upgrading.

What cannot be ignored is that problems such as too short a chain of grain industry, small and scattered scale of enterprises, 15%-60% operating rate of processing enterprises, and silent brand of products have always existed in the grain and oil processing industry, hindering the integration and optimal allocation of factors in the grain and oil processing industry [6][7]. Every year, the national grain and oil processing chain loses about 7.5 billion kilograms of grain due to over-processing, resulting in low yield of grain products and loss of inherent nutrients in grain and oil, resulting in unnecessary loss and waste of grain. In response, Wang Xinhua [8] pointed out that the support for grain and oil processing and grain saving technological transformation should be strengthened, the grain and oil processing standard system should be further improved, enterprises should be guided and standardized in appropriate processing, and correct consumption should be guided by "loving grain and saving grain".

2.2 Research on overcapacity

3.2.1 Research on the method of measuring overcapacity

There is no direct statistical data, indicators and methods to measure the degree of overcapacity, but it depends on a variable that is easy to operate-capacity utilization rate. It is the index that can best reflect the status of capacity utilization and the degree of overcapacity. It can calculate the capacity utilization rate and then judge whether overcapacity occurs.

The first is the peak method. It is assumed that the output level of the unit input of the peak value is equivalent to the full utilization of the production capacity, and the low output rate is assumed to represent the utilization level of the production capacity. Capacity utilization is estimated as the ratio

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of observed output to "capacity" output. Sun Wei, He Bin and Wu Zhiguo [9] used the peak method to study the level of industrial overcapacity in 30 provinces of China from 1992 to 2005. Berndt & Morrison[10] summarized the calculation method of capacity utilization rate, that is, dividing actual output by potential output, which is calculated based on the previous peak value of output-capital ratio and accumulated net investment. The second is data envelopment analysis. This method is a nonparametric linear programming method developed by Charnes, Cooper and Rhodes[11]. This method first constructs the production frontier through observable input and output data, and then calculates its production capacity according to the fixed capital of the production units along the frontier. Finally is the production function method. Klein[12] estimates parameters by using input data of relevant factors, and calculates the production frontier, i.e. production capacity, in the form of C-D function. WangHui and Zhang Yueyou [13] use the quarterly data of 58 listed companies in China's photovoltaic industry from 2005 to 2012 to measure their capacity utilization rate by using the production function method. The conclusion is that the capacity utilization rate of China's photovoltaic industry in other years is less than 70% except in 2008, 2010 and 2011.

3.2.2 Research on the causes of excess capacity

Explain the cause of overcapacity from the perspective of market failure. First, the enterprise competitive behavior perspective to explain overcapacity. Wenders[14] believes that overcapacity is a competitive strategy. Once faced with new entrants and competitors, those who have entered can strike new entrants by expanding production, lowering prices and realizing economies of scale. Wei Sun et al [9] established a model analysis and pointed out that the factor hoarding behavior of micro-enterprises is an important cause of overcapacity, and an appropriate overcapacity is the choice of rational manufacturers facing the uncertainty of future economic development. Second, analyze the causes of overcapacity from the perspective of market structure. Xu Chaoyang and Zhang Nianli [15] built an enterprise dynamic model under the uncertainty of market demand. They will invest cautiously to avoid risks, thus leaving market space for a large number of inefficient enterprises, with low market concentration and capacity utilization rate. The competition among enterprises in the industry is fierce, the industrial structure convergence and low-level repeated construction are serious, which is easy to further aggravate the over investment of enterprises and the overcapacity of the industry.

Some scholars try to find the cause of overcapacity from the system mechanism and the distortion of factor market in the transition period. In fact, institutional overcapacity is the ultimate goal of government policy-making and institutional arrangements, which is economic growth. Taking local GDP value as the core of official performance assessment, local officials pursue GDP excessively. Because the government has many production resources, frequent market intervention, it lays "seeds" for overcapacity. Wang Yongqin [16] proposed that China's local governments are mainly responsible not for the lower but for the upper. In order to win the "favor" of the higher-level governments, local governments have the power to introduce various investment policies to attract investment, causing vicious investment competition. Under the condition that domestic demand cannot be released, the production capacity is continuously increasing. The defects of the system and mechanism make it natural for the government to intervene in economic activities and directly participate in market economic activities. At present, China's government still has high rights in the allocation of factor resources, and the role of market in allocating resources is difficult to play effectively. For example, Fan Linkai and others [17] proposed that local governments, in order to encourage enterprises to expand production capacity and boost GDP, do not hesitate to distort capital prices, lower investment costs and form overcapacity. Cao Jianhai [18] also pointed out that enterprise investors who do not have enough funds obtain industrial land in the form of agreement low price or even zero land price, more importantly, they resell the land to earn land price difference, disturb the pricing mechanism of production factors such as land, and lead to unreasonable excessive resource allocation in the industry. Bruce [19] also points out that domestic capital subsidies reduce the input cost of production factors of enterprises, resulting in overcapacity of the country through empirical research on the steel industry in the United States. The short-term overcapacity can be seen as competitive overproduction under

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market conditions. The market can effectively coordinate the behaviors of market economy participants and promote the supply and demand to reach a new dynamic equilibrium. However, there are always some factors that prolong the duration of overcapacity. The distortion of the factor market makes the factors of production mismatched. In order to recover their previous investment more quickly, enterprises are unwilling to invest in large technological innovations and are more willing to carry out low-level construction, resulting in the persistence of large quantities of low-level overcapacity [20].

In general, scholars at home and abroad have made relatively rich research results and valuable research conclusions around the core contents directly related to this research, such as grain and oil processing industry, overcapacity, etc. However, it is worth noting that the existing literature still has certain deficiencies and needs further development. There are mainly three aspects: first, the literature on grain and oil processing industry focuses on the current development situation, competitiveness, agglomeration level and the difficulties in upgrading the industrial structure. It pays less attention to the causes and formation mechanism of excess production capacity in grain and oil processing industry, and is limited to the analysis of the surface factors of excess production capacity. Second, most of the relevant literatures on overcapacity are studied from the perspectives of macro-economy, traditional steel industry and emerging photovoltaic industry, and rarely involve industries that pay attention to the national economy and people's livelihood, such as grain and oil processing industry. Moreover, there are few literatures that analyze in detail the ownership, time trend and regional differences of grain and oil processing industry's capacity utilization, which is not conducive to improving the targeted reference value of research results. In addition, although there are many literatures on the relationship between factor market distortion and overcapacity, most of them explain the causes of overcapacity from the perspective of over-investment, seldom discuss from the perspective of product demand, and ignore other possible transmission mechanisms of the effect of factor market distortion on overcapacity.

3. Conclusion and further discussion

As far as the particularity of grain and oil processing industry is concerned, grain and oil processing industry is an important link in the field of grain circulation. It links up the production and consumption of grain. Its stable development has strong practical and far-reaching strategic significance to solve the problem of difficult selling of grain by farmers, increase the income of farmers, ensure the effective supply of grain and oil products, improve the comprehensive benefits of grain and oil industry, and promote the national food security. At present, the domestic grain and oil processing industry is faced with multiple contradictions, new and old problems, unreasonable product structure, insufficient effective supply of processing and transformation products, and surplus low-level processing capacity. The allocation power of capital, labor force and other factor resources is still largely in the hands of the government. Due to soft budget constraints, price dual track system, and restrictions on the demand for basic food security, a large number of "zombie enterprises" occupy all kinds of human and property resources at a lower factor price. The supply of factor price and quantity cannot truly reflect the relationship between market supply and demand and the degree of resource scarcity. Enterprises are "addicted" to low-end production capacity investment construction, and do not follow the market's proper allocation of factor resources to make reasonable choices of enterprise investment, innovation and entry and exit behaviors, resulting in inefficient allocation of resources. Moreover, fluctuations in grain prices at home and abroad and constraints on the financing capacity of private grain and oil processing enterprises have reduced the operating rate of grain and oil processing enterprises, resulted in low profits, too broad and extensive government management and its preference for "state-owned capital", which has led to the emergence of zombie enterprises, inability to enhance product innovation, competitiveness and market power, and increased overcapacity at a low level. Therefore, it is necessary to fully study the problem of overcapacity in grain and oil processing industry and the entry and exit of enterprises, and comprehensively and correctly understand the influence of market distortion of different factors on the causes of

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overcapacity in grain and oil processing industry and the choice of entry and exit behavior of enterprises with excess capacity. The government and the market should carry out their respective duties and explore effective ways to improve the quality and efficiency of grain and oil processing industry under the supply-side reform of the grain industry. This is an important exploration to promote the healthy and orderly development of China's grain and oil processing industry, improve the quality of grain products supply, and speed up the modernization of grain circulation capacity. It is also a practical need to promote the balance of grain supply and demand to a high level, crack the structural contradictions in the current grain field, and build a high-level national grain security system.

Based on this, this paper attempts to further discuss the following issues: First, based on the current situation of China's grain and oil processing industry, what is the degree of market distortion and overcapacity of grain and oil processing industry elements, and what are the differences in ownership constraints, time trends and regional heterogeneity? Second, what is the cause of excess capacity in the grain and oil processing industry? How does the factor market affect the overcapacity of grain and oil processing industry from the perspective of factor supply and product demand? Third, in view of the fact that the remaining enterprises in the grain and oil processing industry have not entered the exit market normally to alleviate the phenomenon of overcapacity, how should the remaining enterprises choose to enter and exit the market after the production capacity of the grain and oil processing industry has exceeded? Fourth, based on the influence of factor market distortion on the production of overcapacity and enterprises' entry and exit behavior, it is of reference and enlightenment significance to put forward relevant policy suggestions to resolve overcapacity.

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