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Development Status and Forecast of Pig Industry in China

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Abstract: China is the world's largest pig producer and consumer, and the proportion of pork consumption in total meat consumption has always been maintained at over 60%. The pig industry is an important basic industry in China's agriculture. However, China's pig industry has been plagued by the "pig cycle" for a long time, coupled with multiple adverse factors such as the frequent risk of diseases, increasing environmental pressure, tighter resource constraints and intensified international competition, and the sustainable development of the pig industry is facing a severe test. Therefore, the objective of this paper is to review the previous pig cycle, focus on the current pig cycle, and make relevant predictions. In this paper, the current situation of the industry and the main problems are described, and in the end, the three aspects of enterprise, economy, and investment are forecasted. On the corporate side, the warming of the pig cycle also indicates the arrival of the era of large-scale farming, and large-scale farms will receive a dividend after taking on continued debt. Enterprises with scale and modern management will be more competitive, able to better adapt to market changes and seize development opportunities. For the economy, the recovery of the pig cycle is also positive for economic development. From an investment point of view, it is recommended to prioritize high-quality enterprises with excellent cost control and continuous expansion.

Keywords: Pig industry, Pig cycle, Large scale farming, China.

1. Introduction

China is the world's largest pig producer and consumer, and the proportion of pork consumption in total meat consumption has always been maintained at over 60%. The pig industry is an important basic industry in China's agriculture. Promoting pig production and ensuring market supply play an important role in maintaining stable economic operations and overall social stability. However, China's pig industry has been plagued by the "pig cycle" for a long time, coupled with multiple adverse factors such as the frequent risk of diseases, increasing environmental pressure, tighter resource constraints and intensified international competition, and the sustainable development of the pig industry is facing a severe test. At present, China's pig industry is in the fifth round of the "pig cycle", but due to the impact of African swine fever and the COVID-19 epidemic, the "pig cycle" in recent years has been different from the previous rules. The price of live pigs has risen and fallen, appearing as a "roller coaster" market, facing unprecedented challenges. It is of great significance to the high-quality development of China's economy to formulate and improve long-term support policies to stabilize pig production, stabilize basic production capacity, and prevent drastic fluctuations in production.

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In the aspect of technology, Lluís has pointed out that data science methods and artificial intelligence (AI) will be able to successfully expand the range of modeling techniques that can be used to develop smart pig DSS in the near future [1]. Esteve et al. propose a production planning model to manage a pig farm production system operating as a pig supply chain (PSC). The model is intended for practical use and is illustrated based on a real case study in Catalonia (Spain). The model helps PSC managers make decisions by providing a holistic view of planning production over the long term. The goal is to maximize the total revenue of the slaughterhouse [2]. Coleman et al. assessed livestock attitudes and personality through self-report questionnaires and directly assessed behavior using trained observers. They found that positive attitudes, both general and behavioral, were associated with the use of an electric prod with the power turned off (NPROD) while negative attitudes were associated with the use of the prod with the power on (PROD) [3]. Jordan et al.raised questions about population management, the occurrence of bacterial diseases, and the type and frequency of antimicrobial use. They also used univariate and multivariate analyses to analyze the results. Finally, they successfully described how various antimicrobials are used in commercial pig herds in Australia, and what disease conditions they are suitable for [4]. Moehn et al. feed is the single largest cost factor in pig production. And, in the pig diet, energy accounts for the largest proportion of the cost. Therefore, it is essential to describe the energy content of the diet in the best possible way. They also describe digestible and metabolizable energy systems and demonstrate that the Canadian pig industry should adopt net energy [5]. Kenny et al. believe it is necessary to clarify the effectiveness of probiotics in pigs and their underlying mechanisms. They note that when assessing the efficacy of probiotics, it is necessary to consider the specific strain of the organism being used and the stage of production of the pigs being treated [6].

In terms of industry analysis, Edwards and Crabb successfully described the management and quality of water used in the Australian pig industry by completing a written survey on water management. Specifically, these include what water is used, how it is managed, and how to evaluate water quality at both the source and the point of delivery to the pig [7]. Galano and Diaz performed a simple percentage analysis using data collected from respondents, who in this study were made up of different types of pig farmers. They succeeded in understanding the problems and prospects of the pig industry in selected areas of the province of Nueva Ecija [8]. Zhao et al. They reviewed the historical background, new research progress, and far-reaching significance of breeding selection techniques for new meat-type pig breeds in China, compared them with similar studies in the same period, and then analyzed the existing problems in pig breeding in China and their impact [9]. Yuan et al. based on the demand for livestock products in 2020, estimated the amount of excrement production was about 2.825 billion tons of pig manure equivalent. Using this information, they successfully predicted the distribution of animal waste and laid the foundation for the selection of animal waste treatment methods and the formulation of related policies [10].

The objective of this paper is to review the previous pig cycle, focus on the current pig cycle, and make relevant predictions.

2. A Historical Review of Cyclical Fluctuation of Pig Industry in China

2.1. China's First Pig Cycle(July 2006 - March 2010)

From 2005 to 2006, pig prices were at a low level, farmers eliminated a large number of sows, and pig production decreased, coupled with the outbreak of "blue ear disease" in 2007, the supply and demand relationship was reversed, and pig prices rose. Then, in 2008-2009, global trade contracted sharply, emerging economies were hit hard, and countries adopted extraordinary monetary and fiscal policies to deal with the crisis but still failed to avoid the occurrence of the Great Recession, which was long, intense, and widespread. The global economy is in a downturn, China's economic growth

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is declining, the demand for pork is falling, and pig prices have plummeted. After that, pig prices rebounded only slightly, and at the end of 2009, pig prices began to double dip and fell until April 2010.

2.2. China's Second Pig Cycle(April 2010 - April 2014)

This cycle is less exogenous interference and is a relatively classic "pig cycle", prices are mainly driven by the contradiction between supply and demand. From April 2010, domestic pig prices entered the upward channel, and reached the highest point of this wave of rise in September 2011, and this record-high price was not broken until 2016. As prices rose in 2010, the breeding sow stock bottomed in August 2010, slowly recovered, and reached a record high in October 2012, and pig prices also went down in the recovery of sow supply.

2.3. China's Third Pig Cycle(May 2014 - May 2018)

This is the only pig cycle where the upcycle is shorter than the down cycle. Since 2014, China began to implement strict environmental protection regulations and strive to improve the scale of the pig farming industry, resulting in a large number of free-range farmers out of the market, and the stock of pigs and breeding sows began to enter a continuous decline. After bottoming out in May 2014, prices continued to rise until June 2016. Subsequently, under the influence of waste hog disease, prices reached their lowest point in mid-2018.

2.4. China's Fourth Pig Cycle(June 2018 - March 2022)

This cycle is known as the "super pig cycle".In 2018, the outbreak of African swine fever hit pig production capacity hard, driving the rapid rise in pig prices. Since then, although the price focus has fallen in 2020, it is still much higher than the price high in previous years. The new coronavirus epidemic in 2020 caused a big blow to consumption, and prices fell after the Spring Festival, but due to the slow recovery of inventories, there was still a considerable rebound in the second half of the year, and it rebounded to near the former high before the Spring Festival in 2021. However, due to the high overall profitability and attracting a large amount of capital, the recovery of deposits is more obvious in the second half of 2020, which sets the stage for the price decline in the first half of 2021.

3. Current Situation of the Industry and the Main Problems Facing

3.1. Current Situation of Pig Price

Since 2024, the price of live pigs has risen obviously, and the cumulative increase of futures and spot prices has exceeded 30%. According to the latest data released by the price monitoring center of the National Development and Reform Commission, the price of live pigs in the country was 19.52 yuan per kilogram on July 31, hitting the highest level this year. In a word, the pig breeding industry is in a recovery trend, although most enterprises continue to lose money, but the profit situation will show a significant recovery.

3.2. Recent Suppression and Second Breeding

The second breeding volume is in a normal state. According to the data of Yong Yi Consulting, since 2024, the second breeding has risen in a stepped way, and the peak of the early stage is mid-March to mid-April, and the early second breeding pigs are basically completed. The proportion of second breeding in June did not exceed the high point on October 23, 2023, and at this stage, the industry's second breeding is mostly rolling, so it is difficult to form additional supply pressure. With the rise

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in pig prices, the second breeding approach is becoming more cautious, the proportion of second breeding in the actual sales in late June was 3.88%, in mid-May was 7.26%, and the 23-year high was 9.61%, which has been greatly reduced.

Since the Spring Festival, the premium of fat pigs is obvious, which drives the industry to increase the weight of the industry, but with the reduction of the demand for fat pigs in April and May, the fat pigs have no obvious premium or even discount, accelerating the industry inventory of big pigs, and the stock of big pigs has been greatly reduced at this stage. As of July 11, the average weight of the industry was 125.66kg, which was basically the same as the level of the same period in 22 years, and the proportion of pigs above 150kg was only 4.89%, which was relatively low in recent years, and the recent phenomenon of fat pig discount has been significantly alleviated, which also reflects that the stock of large pigs is in a normal state at this stage.

3.3. Losses of Pig Enterprises

Due to the large loss in the early period, although the profit situation of the farming industry has rebounded significantly, the loss of all aspects of the breeding end is still a fact that is difficult to reverse. Although large-scale farms have become the main body of pork market supply, they have greatly improved the ability of enterprises to resist risks. However, the cash flow and debt ratio of listed pig enterprises caused by the substantial expansion in the early stage are already very high, and some pig enterprises have even entered the dangerous range. For example, Aonong Biology issued four debt overdue announcements in January, the company said in the latest announcement that due to tight liquidity, the company and some subsidiaries have failed to repay some debts as scheduled. As of January 23, the Company's new overdue debt principal and interest in financial institutions totaled about 3.19 million yuan, accounting for 12.76% of the company's most recent audited net assets.

3.4. Industry filling field status is slow

At this stage, the action of filling columns is slow. In general, from the perspective of futures and binary sow prices, the industry side is more cautious about pig price expectations, thus hindering the enthusiasm of the field; The industry suffered serious capital losses in the early stage, and the short-term profit recovery is difficult to solve the shortage of funds in the industry, and the superposition of financing is difficult to be in place, making the industry fill the column sentiment is weak.

3.5. Capacity reduction is slow

Although the industry continues to lose money, the number of breeding sows is still maintained at a high level, higher than the normal amount, which leads to the supply of pork market will not change much. The slow progress of capacity removal means that the adjustment of the market supply and demand relationship is not as expected, thus affecting the normal operation of the pig cycle. However, it will still form a certain positive support for the improvement of the supply and demand relationship in 2024, so there is a high probability that the pig price level in 2024 will be better than that in 2023, and the performance of pig enterprises will usher in some repairs, but the liquidity and debt pressure still exists.

4. Prospects

4.1. Enterprises

From the perspective of enterprises, the future pig breeding industry is expected to continue the recovery trend. After 16 months of degradation, the cumulative degradation rate reached 9.2%, and

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in the eight months from November 2023 to June 2024, the production capacity was continuously lower than the lowest point of the 2021-2022 cycle, which indicates that the supply of pigs in the second half of the year will continue at a low level for a long time. Therefore, the decline of pig prices in the second half of the year is limited and will remain at a relatively high level for a long time. At the same time, the start of a new round of "pig cycle" has made the price of live pigs steadily climb, and the cumulative increase of futures and spot prices has exceeded 30%, which directly led the breeding enterprises to enter the performance cashing period, and the profit situation has also rebounded significantly.

In addition, the warming of the pig cycle also indicates the arrival of the era of large-scale farming, and large-scale farms will receive a dividend after taking on continued debt. As the pig industry enters the era of scale, the retail investors who enter the second breeding or rehabilitation will be far fewer than in previous pig cycles, but the retail investors who enter will be the most rational family farm members over the years. This shows that in the new pig cycle, enterprises with scale and modern management will be more competitive, able to better adapt to market changes, and seize development opportunities. At present, the pig industry is in the production contraction period brought about by the previous production capacity reduction. At the same time, production is also driven by seasonal gradually backward. From the current situation, the market has a certain degree of production backward but has not yet exceeded the amplitude of the change in demand in the third quarter and the fourth quarter of 2024, if the industry can maintain a relatively cautious pressure rhythm, the third quarter and the fourth quarter of live pig prices are supported as a whole. However, in some areas, in the case of price fluctuations and changes in the price spread of standard fertilizer, there is a large number of pressure columns and the possibility of secondary fattening, which needs continuous attention, if the excess pressure column may leads to a drop in the price of live pigs in the fourth quarter.

4.2. Economy

For the economy, the recovery of the pig cycle is also positive for economic development. The rise in pig prices and the improvement in the profitability of breeding enterprises help to improve the overall economic efficiency of related industries, and thus contribute more and more to the economy. The release of domestic demand and the boost to pig prices will promote the contribution of consumption to the economy and contribute to the stable growth of the macroeconomy.

4.3. Investment

From an investment point of view, the current pig price has achieved a good profit, as the cycle continues to rise, the performance of breeding enterprises is expected to gradually cash in. In addition, after a period of adjustment, the current valuation of pig breeding enterprises has returned to the bottom range, and it is recommended to prioritize high-quality enterprises with excellent cost control and continuous expansion. In terms of market integration, listed companies have more advantages.

5. Conclusion

To sum up, this paper draws some important predictions through in-depth analysis and discussion of China's past pig cycle and current industry status. First of all, the main reasons and amplitude of the rise and fall of each pig cycle are clarified. It provides an important reference for understanding this problem. Secondly, through analysis and discussion, the current situation of live pig prices, recent suppression, and second breeding, loss situation of live pig enterprises, the current situation of industry cover, and Capacity reduction are expounded. Finally, this paper makes a prediction from three aspects. On the corporate side, the warming of the pig cycle also indicates the arrival of the era

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of large-scale farming, and large-scale farms will receive a dividend after taking on continued debt. Enterprises with scale and modern management will be more competitive, able to better adapt to market changes and seize development opportunities. For the economy, the recovery of the pig cycle is also positive for economic development. From an investment point of view, it is recommended to prioritize high-quality enterprises with excellent cost control and continuous expansion. In short, this paper has a certain theoretical value and practical significance for the development of the live pig field.

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