

# Hog Futures Impact Analysis

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**Abstract**—Futures are an important way of risk avoidance. China's hog industry is huge in number and wide in area, but the hog industry is often plagued by cyclical price fluctuations. Correctly identifying the role of futures can achieve better results in risk prevention and control and stable returns. International hog futures trading is active and has accumulated rich experience, which provides a good precedent for China to carry out hog futures trading. Listed hog futures can reduce information asymmetry and play an obvious role in stabilizing hog prices, standardizing breeding, integrating scale and improving hog quality, thus promoting the stable and sustainable development of China's hog industry.

**Keywords**—Hog futures; status quo; impact

## I. OVERVIEW OF DOMESTIC AND INTERNATIONAL HOG FUTURES

Hog futures is to use hogs as the underlying assets of futures contracts. As a risk management tool, the hog futures contract can cope with the risk of market price changes, has the function of reducing business risks, effectively compensate for market failure and untimely macro-control, etc., and has a positive effect on the stable and sustainable development of the hog market and the optimization of the hog industry.

In February 1966, the world's first hog futures contract was born in the United States and the trading of hog futures was unveiled, then with the growing volume of hog futures trading, the hog futures market had gotten initial development in the United States [1]. Then, major exchanges in the Netherlands, Hungary, Poland, Germany and South Korea also launched pig futures varieties one after another [2]. With the continuous development and operation of the economy and society, as well as the improvement of information technology level, the changes of consumer demand and global market environment make the trading of pig futures also change constantly. In 1996, it developed into lean pig futures; in February 1997, the trading was changed from physical delivery to cash settlement because of the problems of storage and transportation; within Asia, the introduction of lean pig futures in the Korean Exchange in 2008 was the first pig futures in Asia [1].

Dalian Commodity Exchange has been exploring hog futures since 2001 and went to the Chicago Mercantile Exchange to learn from the experience of hog futures; in 2004, a bill related to the listing of hog futures was proposed in the National People's Congress [3]. At present, the development of China's hog spot market has reached a certain level and on the basis of learning from the successful experience of foreign markets, a more optimistic premise has been prepared for the listing of futures. First of all, China is not only a major producer of pork in the world, but also a major demand country. With the development of science and technology, the pig industry is becoming more and more large-scale and process-oriented and the hog quality standard system is becoming more and more standardized, which make it suitable to carry out futures trading in our country [4]. Secondly, the spot price of hogs is highly volatile and the trading participants such as farmers, processors and distributors have the need to hedge the price risk [5]. Finally, there is much successful trading

experience of hog futures in the international market, which can provide good ideas for the sustainable development of hog futures trading in China. In 2017, the hog futures affected by African swine fever failed to be listed on schedule. In 2019, the vice chairman of the SFC, proposed that hog futures would be the futures varieties that China's current market needs to focus on.

## II. THE CURRENT SITUATION OF CHINA'S PIG INDUSTRY

### A. Current status of pig farming

China is a big country of pig breeding and consumption. Chinese residents prefer pork in the consumption of meat products and this eating habits originated in the ancient customs of the people's sacrifice. Moreover, the taste of the pork is improved because of the Song dynasty's castration of pork technology which makes the diet of cooking pork become prevalent. Pigs are also considered to be "the first of six livestock" and the status of hog farming in agricultural production is self-evident. However, from the perspective of the current hog market in China, the "spider web phenomenon" of hog prices in China persists with frequent price fluctuations, which is not conducive to the healthy development of the whole industry [6].

TABLE 1 PIG BREEDING STATISTICS, 2013-2018

Year	2013	2014	2015	2016	2017	2018
Number of meat pigs crop (tens of thousands)	72768	74952	72416	70074	70202	69382
Number of pigs at the end of the year (tens of thousands)	47893	47160	45803	44209	44159	42817
Pork production (tons)	5618.6	5820.8	5645.4	5425.5	5451.8	5403.7
Meat production (tons)	8632.8	8817.9	8749.5	8628.3	8654.4	8624.6
Percentage of pork (%)	65.08%	66.01%	64.52%	62.88%	62.99%	62.65%

SOURCE: CHINA STATISTICAL YEARBOOK 2019

the traditional breeding industry of large livestock and hogs has developed rapidly as the economic level continues to improve. In terms of total pork production, from 1980 to 2018, the total production increased from 11.34 million tons to 54.04 million tons, with an average annual growth rate of 4.2%. In addition, Table 1 shows that from 2013 to 2018, the number of slaughtered animals was around 700 million each year and the number of live pigs was over 400 million by the end of the year. At the same time, the annual meat production was over 86 million tons, of which the pork accounting for over 60%, showing the importance of pig breeding in traditional agriculture.

**B. Current status of pork consumption**

TABLE 2 NATIONAL PER CAPITA MEAT CONSUMPTION, 2013-2018

Year	2013	2014	2015	2016	2017	2018
Pork(kg)	19.8	20	20.1	19.6	20.1	22.8
Beef(kg)	1.5	1.5	1.6	1.8	1.9	2
Lamb(kg)	0.9	1	1.2	1.5	1.3	1.3
Total(kg)	25.6	25.6	26.2	26.1	26.7	29.5
Percentage of pork (%)	77.34%	78.13%				

SOURCE: CHINA STATISTICAL YEARBOOK 2019

Since the reform and opening up, China's economy has been showing rapid development. At the same time, the living standard of the residents as well as their consumption demand has been improving and the consumption demand for pork has been increasing year by year while the concept of nutritious diet has changed with life. From the data in Table 2, it can be seen that the per capita pork consumption of residents nationwide from 2013-2018 rises from 19.8 kg to 22.8 kg and the proportion of pork consumption in per capita meat product consumption are over 75%, which shows that the main meat consumption species is still pork.

**C. Causes of pork price volatility**

From the perspective of the current pig market in China, there is a "spider web phenomenon" in the price of the pig market, that is, in a cycle of about 3-5 years, the cobweb phenomenon of "difficult to sell - market price decline - breeding reducing-supply decreasing - market price rising-farming growing - difficult to sell" [2]. Pork is a common consumer good and its consumption elasticity is low, but the changes of market prices have a large impact on suppliers, leading farmers to make rapid adjustments to the replenishment and slaughter of hogs.

In addition to the reasons for the lag in market information transmission, as the standard of living increases, consumer demand and views on nutritious diet are also changing. As can be seen from the data in Table 2-2, the per capita demand for beef and mutton is also increasing and the price of other meat substitutes will have an impact on the price of pork.

Besides, the epidemic is also the reason for the large difference in pork prices [3]. In addition to SARS, avian flu, swine flu, the pig epidemic on the pig production industry has a more serious impact on the price change of pigs. In 2007, due to the great impact of highly pathogenic blue ear disease in pigs, the pig stock declined [7]. And the African swine fever that occurred in August 2018 coupled with the nationwide environmental cleanup of pig farms in 2017, has severely depressed China's pig industry in 2019, with increased mortality rates bringing about a significant decline in the amount of edible pork, resulting in the 2019 "sky-high pork prices".

**III. IMPACT OF HOG FUTURES**

Risk can be effectively managed through futures. From overseas experience, futures contracts on hogs have played a positive role in the sustainable and stable growth of the hog industry. Conducting futures trading on hogs can effectively promote the improvement of the hog industry chain, mitigate the impact of spot price fluctuations, strengthen cooperation with the distribution industry and ultimately increase farmers' income.

**A. Promote the farmers to achieve stable income**

At present, "Cobweb phenomenon" exists in China's pig market. The price of hogs fluctuates greatly and is cyclical and there is a lag in the transmission of information in the hog market, which make many farmers to expand production at inopportune times, making supply outstrip demand in the market and eventually leading to a price drop. However, the futures market can provide short-term price forecast information in the future and farmers can manage risk through the hog futures contract to avoid the risk brought about by large price changes. Also Timely understanding of the future hog market price trend through futures trading market, and then reasonable adjustment of breeding scale can help guide the industrialization of pig production, effective prevention and control of diseases, rapid improvement of varieties and scientific breeding process and finally achieve stable income.

**B. Promotion of pig farming and processing and distribution**

Hogs are not only cyclical in terms of production, but also in terms of market price, and market forces alone cannot solve the cyclical problem. Through futures contracts, producers can adjust production according to market demand in a timely manner, and farmers, processors and distributors can choose the right point in the market to sell or buy futures contracts, so as to determine a reasonable transaction price, to overcome the risks associated with cyclical price fluctuations, to ensure a stable income. Pork processing enterprises can also conduct risk management through the contract, in raw material prices and storage. To promote large-scale farming is helpful for processors in advance to sign a reasonable raw material purchase contract, which not only make the scientific design of the raw material inputs of farming, but also the improvement of the quality of pork, promoting the sustainable development of the hog industry chain.

**C. Facilitating the effective operation of government macro control.**

The futures market is an important force in the operation of socio-economic development, based on the market spot price, providing a forecast of the future short-term price movements of products. Risk management of hog prices through futures can improve problems such as the behavior that market itself cannot regulate prices timely. Through the futures contract, the relevant government departments can observe and analyze the trading situation of the futures market, get timely information and forecast the future price changes, which can achieve the effect of prevention while controlling the matter, reduce the disadvantages caused by information asymmetry and make the spot market show a positive development situation.

**CONCLUSION**

Due to the cyclical nature of both production and market price, the problems of the hog market cannot be solved only through market forces or only through government regulation, but pig futures contracts can make up for market failures. Based on the analysis of overseas experience on hog futures trading and combined with the current actual situation in China, the conditions for the listing of hog futures in China have gradually matured. All things considered, hog futures is conducive to promoting the realization of stable income for the majority of farmers, to promoting the development of hog breeding and processing and distribution industries and to promoting the effective operation of the government's macroeconomic control.

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