

# ***Research on the Development Experience of the Dairy Futures Market and Exploring the Feasibility of the Dairy Market in China***

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**Abstract:** With the dairy business across the world increasingly growing, a study of how Europe and the US established their dairy futures markets helps to understand whether they will be viable in China. For both of these regions, there are well-established dairy futures markets that play an important role in price risk management for both producers and buyers. This will help us to anticipate what we might face as challenges or opportunities when we introduce such a market in China. The significance of European and American markets is reflected by the various roles played by dairy futures. It highlights the necessity of strong infrastructure, efficient legal frameworks and regulations, vibrant market participation, and information dissemination that is transparent and efficient. It has been a stabilizing element for transparency in European dairy future markets. Various initiatives introduced by the EU have supported the development, including standardization of contract terms and provision of adequate liquidity. In contrast, the United States has multiple exchanges that trade dairy futures where each exchange trades different kinds of dairy contracts. This variety allows for individualization, but it also hinders uniformity in market operations and limits liquidity. In conclusion, we discuss the significance of developing strong infrastructures, effective legal frameworks, and regulations, encouraging active market participation, as well as ensuring transparency and efficiency in information dissemination. Lastly, through an examination of these European and American experiences coupled with the main ingredients underlying their achievements, we can support China to have a robust dairy industry future market.

**Keywords:** Dairy futures, Market Participants, Trading Strategies, Infrastructure Construction, Transparency.

## **1. Introduction**

China's dairy market has faced numerous challenges since its inception, evolving from a few small processing plants to becoming the world's second-largest dairy market. Despite the rapid growth in demand for dairy products, issues such as geographical influences and environmental unpredictability have caused significant fluctuations in dairy prices and product quality. To maintain market stability, futures trading has become essential.

Drawing on the experiences of the dairy futures markets in Europe and the United States, it is crucial to restore and expand China's dairy futures market, especially after crises like the Sanlu Milk

Powder incident and the COVID-19 pandemic. While Chinese scholars like Liu Binghua[1] and Zhou Minghua[2] have researched dairy industry risk management and agricultural price fluctuations, respectively, there is a lack of analysis on the mature dairy futures markets in Europe and the United States.

This paper aims to compare the dairy futures markets in China with those in Europe and the United States, analyze research reports from both domestic and international scholars, and ultimately achieve the goal of sustainable development and comprehensive revitalization of China's dairy futures market.

## **2. Overview of the European and American Dairy Futures Market**

In recent years, global dairy consumption trends not only show an increase in total volume but also an optimization of the consumption structure and an increase in demand for high-quality, organic dairy products[3]. Europe and the United States have a mature dairy market, which has advanced with technological improvements and growing demand. They also have large dairy cooperatives and multinational companies dominate the market, controlling significant production and distribution.

### **2.1. Development History of the European and American Dairy Futures**

Dairy futures markets in America and Europe were established during the early 20th century. Chicago Mercantile Exchange (CME) pioneered organized dairy futures trading in the United States in the 1970s, which served as a platform for price risk management. Europe initiated its own first dairy futures market at Rotterdam, Netherlands, in the late 1980s that mainly dealt with milk future contracts. Both markets have evolved despite several challenges, such as regulatory restrictions and a lack of necessary infrastructure.

After that, CME expanded its product offering to include cheese, butter, and whey contracts to allow farmers to have more hedging options against price volatility. In Europe, though, it has been motivated by price discovery and risk management and was supported by the Common Agricultural Policy CAP of the European Union, which helped to build market infrastructure in the 1990s.

Market liquidity and efficiency have been furthered by the globalization of the dairy industry, technological advancements, and real-time data, among others. Nevertheless, there are still some obstacles, like inconsistent rules governing trading activities or low involvement from sellers or buyers. Continued efforts to improve market infrastructure and address regulatory challenges are crucial for further growth.

### **2.2. Functions and Roles of Dairy Futures**

To the European and American dairy markets, Dairy futures are very important as they offer crucial benefits and functions. Firstly, Dairy futures aid risk management by making it possible for farmers, processors, and traders to lock in future prices through hedging against price fluctuation which is a key requirement for those who depend on the income from dairy.

Also, Dairy futures enable speculation and arbitrage where speculators profit from price trends without handling physical products while arbitrageurs take advantage of differences between prices prevailing in dissimilar markets.

Dairy futures also contribute to market stability and fairness. The increase in trading opportunities and a reduction of transaction costs enhance market efficiency and liquidity for dairy futures. They prevent manipulation, hence promoting transparency and leading to fair competition. Thereby stabilizing the market, future contracts guide long-term plans by giving price signals used to make production as well as investment choices.

The last point is that dairy futures promote the efficiency of market operations by creating more buying or selling chances at minimal fees which reduces transaction expenses. As a result of these

regulations on minimum standards being used in the European Union, imports that do not meet European quality standards into the region's mainland through China's domestic dispute settlement system or at border points with Hong Kong land.

### **3. Analysis of the Current Situation and Demand in China's Dairy Market**

#### **3.1. Overview of China's Dairy Market**

China has a large population base, and in recent years the Chinese dairy market has expanded its consumer base to become one of the largest dairy markets in the world. But the market's shortcomings are also obvious. The Sanlu milk powder and other similar incidences have, in one way, reduced public confidence, and so the Chinese dairy market needs to have better and stricter laws as well as enforcement agencies.

Besides, China has a vast territory, but it causes the issue of geographical imbalance in production and consumption levels. Heavy production regions are centered on Inner Mongolia and Hebei, while some are slow; hence, they are rewarded with logistics issues and expensive transport. And another point is that there is stiff competition from foreign firms. Because foreign companies have introduced new technologies and management practices into the country while at the same time threatening to monopolize the local market.

In order to overcome these issues, governments need to pay adequate attention and take effective action in the areas of infrastructure, laws and regulations, and foreign investment.

#### **3.2. Market Demand and Risks**

With a population of 1.4 billion, China has a huge demand for dairy products and strict quality standards. However, the emergence of counterfeit and substandard dairy products has seriously jeopardized the health of the population, and also environmental sustainability has not been addressed. So there's still a lot of room for improvement in China's dairy market.

China's dairy industry experienced sharp declines in raw milk prices in 2003 and 2015, which led to incidents of "dumping milk and killing cows", seriously affecting the healthy development of the dairy industry. Scholars basically agree that the most important risks faced by the dairy industry are still natural risks and market risks, while market risks are mainly manifested in price fluctuations. According to Rakotoarisoa [4], Blayney [5], Zhou Minghua [2], and other scholars, it is concluded that market supply and demand, production costs, international raw milk prices, and policy adjustments are the main reasons for price fluctuations. [1]

In order to effectively minimize the losses of the participants. In recent years, research in the U.S. has favored more livestock insurance, especially dairy cow price insurance and income insurance, and dairy cow insurance is a basic management tool for avoiding risks in the dairy industry. China needs to avoid market risks by improving the dairy industry to establish a risk-sharing benefit linkage mechanism and implementing order farming. On the other hand, the establishment of a dairy risk fund is considered an effective way to protect dairy farming enterprises and avoid market risks [1].

### **4. Implications of the European and American Experience for China's Dairy Futures Market**

#### **4.1. Infrastructure Construction**

Market institutions are considered to be one of the success factors of futures markets, including the European and American dairy futures. We are going to focus on analyses of specific aspects of market structure in these regions and how they may relate to China's dairy future market.

The infrastructure of the market in Europe and America comprises physical trading facilities, the achievement of higher technologies, and effective trading techniques. There are modern and well-established futures trading venues in Europe and the United States. On the other hand, Clearinghouses are another important element as these play the role of facilitators to facilitate trade settlements and risk mitigation. Therefore, these markets have strong clearinghouse systems that can be used to monitor market activities in real time, providing timely and accurate market data.

The roles that are being played by the accountability authorities and organizations are one of the most important parts, like the European Securities and Markets Authority (ESMA) and the U.S. Commodity Futures Trading Commission (CFTC). Their job is to ensure that when dealing with other parties there is adherence to the right business practices that check cases of market manipulation as well as fraud.

In contrast, the infrastructure of China's dairy futures market is inadequate. Therefore, China can learn from the European and American markets when it comes to the delivery system, technology, clearing system, regulation, arbitration and cooperation, and partnership with the industry and help to minimize the impact of potential defaults. Addressing these issues will require putting in place the right delivery systems to help gain the necessary market confidence in China. Besides, in these markets, the trading efficiency and liquidity have been enhanced by advanced technologies like electronic trading platforms and real-time data feeds. The same should be used by China to enhance trading and to ensure that the process is more efficient as compared to a complicated one. The markets also have a strong clearing and settlement system that helps in making trades conclusive and few disputes. Therefore, to maintain efficiency and fairness, China can establish a reasonable clearing and settlement system.

On the other hand, establishing a strategic orientation for guaranteeing the security of the supply of dairy products and optimizing the structure of production and demand. Attach great importance to the structural imbalance between production and demand for dairy products and its growth demand, and optimize the production structure of the industry. Not only should we optimize the mismatch caused by the structural adjustment of dairy production lagging behind the upgrading of the demand structure, and realize the rebalancing of dairy production and demand; at the same time, we should optimize the regional structure of dairy production, and give full play to the production potential of each region; and realize new leaps and bounds in milk production, and a new increase in the self-sufficiency of the milk source[3].

China's regulatory measures and market monitoring have been gradually improved over the years, but they still need to be constantly updated and kept in focus. Arbitration and mediation are also mechanisms that prove very effective in how disputes can be handled among the parties. China should establish such systems to ensure that the conflicts are also solved quickly and the integrity of the market is preserved.

## 4.2. Legal Regulations and Supervision

Strict legal requirements and law enforcement agencies are of great importance in the formation of any futures market, inclusive of the dairy futures market. Legal requirements and proper supervision and regulation systems provide fair and transparent trading exercise. The European Futures and Options Association (EFOA) in Europe and the Commodity Futures Trading Commission (CFTC) in America have explicitly set rules that govern market participants specifically in issues such as margins, positions, hours of trading, etc. These regulations ensure that people do not invest a lot of money in specific commodities and avoid disruptions in the market.

To gain the trust of the people, investor and consumer protection is extremely important. Regulators create conditions that guarantee fairness and accountability, such as offering ways of

solving a dispute, such as arbitration and mediation. Measures such as stiff regulations against market manipulation and insider trading assist in enhancing the integrity of the market.

### **4.3. Market Participants and Trading Strategies**

Market participants are vital to the success of any futures market, including the dairy futures market.

#### **4.3.1. Market Participants and Trading Strategies in Europe and America**

The European and American dairy futures markets include producers, processors traders, investors, and speculators. Each participant plays a unique role in the market dynamics and contributes to the overall functioning of the futures market.

Producers are the main suppliers of dairy products to the market, and they not only purchase dairy products but also use futures trading strategies to lock in prices for future production.

Processors are then responsible for converting raw milk into a variety of dairy products such as cheese, butter, and yogurt. They need to plan production and manage inventories, as well as establish a stable supply chain to reduce price volatility.

A dealer is an intermediary that facilitates the purchase and sale of futures contracts between different market participants. They help producers and processors find buyers or sellers for their futures contracts and profit from market fluctuations using a variety of strategies, such as taking long or short positions based on analysis of market trends and news events.

Investors, including institutional investors and individual traders, are primarily interested in the future price movements of dairy futures. They aim to capitalize on price fluctuations by buying and selling futures contracts and often rely on technical analysis, fundamental analysis, and market sentiment to make informed trading decisions.

Speculators are individuals or entities that actively seek to profit from market fluctuations and are willing to take risks in order to earn high returns. Speculators often use leverage to magnify their trading positions, but this can also result in large profits or losses.

In order to effectively utilize the complex dairy futures market, market participants employ a variety of trading strategies. One common strategy is hedging, whereby traders or producers use futures contracts to protect against potential losses in the spot market.

Another strategy is speculation, and speculation is an attempt to make profits by taking advantage of changes in the price of a commodity without the desire to acquire the product. Arbitrage is a process that entails the purchasing of one futures contract along with the selling of other futures in order to make a profit out of the price differential. Recognizing these roles and approaches may prove useful in managing the market for the participants.

#### **4.3.2. Current Market Participants in China**

China's dairy futures market is small and short-lived, but participation is growing. A few decades ago, the market was dominated by a few large state-owned enterprises; with the emergence of new entrepreneurs, foreign investors, and global traders, among others, the market has become increasingly competitive.

The business structure of state-owned enterprises has also changed, with the latter experiencing a lot of competition from private and global firms in the region. There is growing participation of private firms in the innovation, marketing, and distribution channels to become key players in the market. In particular, it indicates that trading firms from different countries introduce better trading models and effective risk management systems to intensify competition and ensure the indicated markets' availability. Propagation of share trading, coupled with the presence of a large number of individual traders in the market, may be due to a huge number of retail traders who are actively



participating in the market because of the advancement of online trading portals and various investment instruments.

#### 4.3.3. Trading Strategies in China

A considerable number of participants, including government organizations, overseas trading companies, and individuals, were attracted by the emergence of China's milk market in the future. The development has resulted in hedging, speculative, and arbitrage strategies among traders so as to meet their objectives and earn from trading opportunities. Market players' activities have to be monitored and regulated to ensure that the competition is equitable and the market remains intact as it progresses.

#### 4.4. Transparency of Information and Market Efficiency

Transparency is also a very important factor, it applies to futures such as European and American dairy futures, as due to this, the prices are accurately forecasted. Transparency in Europe and America is attained through central markets offering a piece of one-stop market information, regulatory authorities overseeing the markets and preventing manipulation, and efficient technologies such as electronic trading platforms and real-time data feeds.

Also, another point is that the US dairy commodity futures markets are unique because all dairy futures, at contract expiration, settle to a government (USDA)-determined minimum cash settlement price. Federal Milk Marketing Orders (FMMOs) are designed to stabilize dairy market conditions. Among other things, FMMOs require milk handlers to pay milk producers uniform prices for milk and adhere to other specified rules. They are designed to assure milk producers of fair treatment in the marketplace while assuring consumers of a consistent and adequate supply of dairy products[6].

By comparison, the performance of the China dairy futures market has some problems in the aspects of both openness and efficiency. The lack of a harmonized reporting framework hampers the flow and reliability of information and boosts the elements of risks and uncertainties in the market. Besides, insider selling and telling rules, and especially the absence of clear pricing mechanisms and information disclosure rules, affect negatively the market efficiency and the competitive fairness.

In conclusion, China can work towards increasing the implementation strategies as used in the European and American markets. Having a reporting system in place that requires prices to be reported, stock positions and any necessary information increases the level of openness which remains helpful in decision-making. The transparency created through benchmark prices and reference indices gives a fixed price for the commodities and eliminates fluctuations in the market. Computerized trading can enhance the extent of information sharing since real-time data exchange is possible. Industry-settled creation of regulations and supervision policies and procedures may provide the rules and procedures for the market participants to follow and guarantee that the regulatory bodies will enforce them to avoid fraudulent activities in the market.

### 5. Conclusion

An analysis of global dairy production and consumption trends reveals that Europe and the United States have mature and developed dairy markets. Europe is the world's largest producer of dairy products, while the United States is the largest exporter. These markets have evolved through the establishment of trading systems, clearing houses, and robust legal frameworks that support price discovery, risk management, and hedging through dairy futures.

China's dairy consumption is growing, but challenges such as quality, food safety, and import restrictions constrain market growth. To develop its dairy futures market, China can learn from Europe and the U.S. by focusing on infrastructure development, legal frameworks, market player

diversification, and market openness. By adopting these measures, China can strengthen its dairy market architecture, legal structure, and information transparency. Due to the limitations of data collection, this paper focuses on summarizing the experiences in Europe and the United States and suggesting improvements in the Chinese dairy futures market.

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