Late-mover advantages and disadvantages in China's futures market

Qing Chang
Department of Future Research, China Agricultural University, Beijing, China

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Abstract

Purpose – This article aims to provide an in-depth analysis of the late-mover advantages and disadvantages of China's futures market.

Design/methodology/approach – This paper reviews the establishment and evolution of China's futures market via historical and comparative analysis, deeply analyzing the market's late-mover advantages and disadvantages.

Findings – The establishment and evolution of China's futures market as a late-mover enjoys benefits in overall design, pilot, and post-development. However, it also suffers disadvantages brought by institutional transformations, advantage enjoyment, catch-up strategies, and international integration.

Originality/value – This paper is the first to systematically explore the laws affecting the formation of the price system in China's futures market. The findings of this research provide important policy implications for the development of China's futures market and references for other developing countries.

Keywords Dual-track system, Futures market price system, Late-mover advantages, Late-mover disadvantages, China

Paper type General review

1. Introduction

Chinese economic reform and entry to the world market created a leap in economic growth, especially via the establishment of its market-economy system, which provided a steady stream of institutional dividends. During the transition from the planned to the market-economy system, price reform played a key role. As the planned price system evolved, the commodity price system generated by market activities regulated the rational allocation of resources and promoted rapid economic growth. While establishing the system, the government-led futures market construction also played a key role, including the formation of the market price of bulk commodities based on the futures market to facilitate the formation of a real commodity-market price system.

The price reform in China moved forward gradually with a dual-track transition and the development of a market price system based on the futures market, which was dominated by the government at the time. The establishment of a futures market was led by the government, who fully enjoyed the late-mover advantages, for which the market's formation and evolution were accelerated greatly. It took only 3 decades for China to achieve a futures market that took other world economies 1 century to achieve. Therefore, questions arise, such as "what are the late-mover advantages and disadvantages of the establishment and evolution of China's futures market?" and "how can we eliminate the late-mover disadvantages?" This paper explores these questions based on review of the evolution of China's futures market.

The second section of this paper reviews the establishment and evolution of China's futures market throughout its price reform. The third and fourth sections analyze its late-mover advantages and disadvantages. The fifth section provides a conclusion and proposed recommendations on the future development of China's futures market.

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No.	Goods	Listing date
Zhengzhou commodity exchange		
1	White Sugar SR	January 06, 2006
2	No. 1 cotton CF	June 1, 2004
3	Cotton yarn CY	August 18, 2017
4	Thermal coal ZC	September 26, 2013
5	Flat glass FG	December 03, 2012
6	Refined terephthalic acid TA	December 18, 2006
7	Methanol MA	October 28, 2011
8	Strong gluten wheat WH	March 28, 2003
9	Common wheat PM	March 24, 2008
10	Early indica rice RI	April 20, 2009
11	Late indica rice LR	July 08, 2014
12	Round-grain non-glutinous rice JR	November 18, 2013
13	Rapeseed RS	December 28, 2012
14	Rapeseed oil OI	June 08, 2007
15	Rapeseed meal RM	December 28, 2012
16	Ferrosilicon SF	August 08, 2014
17	Manganese silicon SM	August 08, 2014
18	Fresh apple AP	December 22, 2017
Dalian Commodity Exchange		
1	Cardamom M	July 17, 2000
2	Soybean oil Y	January 09, 2006
3	Yellow Soybean No.1 A	March 15, 2002
4	Yellow Soybean No.2 B	December 22, 2004
5	Palm oil P	October 29, 2007
6	Yellow corn C	September 22, 2004
7	Corn starch CS	December 19, 2014
8	Fresh egg JD	November 08, 2013
9	Block board BB	December 06, 2013
10	Medium-density fiberboard FB	December 06, 2013
11	Linear low-density polyethylene (plastic) L	July 31, 2007
12	Polyvinyl chloride V	May 25, 2009
13	Ethylene glycol EG	December 10, 2018
14	Polypropylene PP	February 28, 2014
15	Metallurgical coke J	April 15, 2011
16	Coking coal JM	March 22, 2013
17	Iron ore I	October 18, 2013
Shanghai Futures Exchange		
1	Cathode copper CU	March 1993
2	Aluminum AL	May 28, 1992
3	Zinc ZN	March 26, 2007
4	Lead PB	March 24, 2011
5	Nickel NI	March 27, 2015
6	Tin SN	March 27, 2015
7	Gold AU	January 09, 2008
8	Silver AG	May 10, 2012
9	Rebar RB	March 27, 2009
10	Wire WR	March 27, 2009
	Wire re-listing time	October 16, 2018
11	Hot rolled coil HC	March 21, 2014
12	Fuel oil FU	July 16, 2018
13	Petroleum asphalt BU	October 09, 2013

Table I.
Timetable of Chinese future goods

(*continued*)

No.	Goods	Listing date
14	Natural rubber RU	November 1993
15	Bleached Sulfate Softwood (Pulp) SP	November 27, 2018
China Financial Futures Exchange		
1	Shanghai and Shenzhen 300 Index IF	April 16, 2010
2	SSE 50 Index IH	April 16, 2015
3	CSI 500 Index IC	April 16, 2015
4	Medium- and short-term nominal treasury bond (2 years) with a par value of 2-million RMB and a coupon rate of 3% TS	August 17, 2018
5	Medium-term nominal treasury bond (5 years) with a par value of 1-million RMB and a coupon rate of 3% TF	September 6, 2013
6	Long-term nominal treasury bond (10 years) with a par value of 1-million RMB and a coupon rate of 3% T	March 20, 2015
Shanghai International Energy-Trading Center		
1	Medium-quality sulfur-bearing crude oil SC	March 26, 2018

Table I.

Options		
1	Cardamom Options MC/MP	March 31, 2017
2	Corn Options CC/CP	January 28, 2019
3	Sugar Option Contract SRC/SRP	April 19, 2017
4	Cotton Options CFC/CFP	January 28, 2019
5	Shanghai Copper Options Contract CUC/CUP	September 21, 2018
6	Natural Rubber Options Contract (10 tons) RUC/RUP	January 28, 2019
7	SSE 50ETF Options Contract	February 09, 2015

Table II.
Timetable for options-listing in China

2. Background of the establishment and evolution of China's futures market

The futures market has been the main feature of China's market-economy system since price reform. To study the late-mover advantages and disadvantages of this futures market, history must be fully considered. Price reform in China endured two stages. The first stage included the liberalization of price controls over increments of basic industrial products and some commodities that were less related to the national economy and people's livelihood. It enabled the establishment of the dual-track system for bulk commodities. The second stage included the integration of those two tracks. A unified market price mechanism for the bulk commodities in circulation was built, followed by the deregulation of the planned stock controls. Then, the two parts were both incorporated into a market price system, comprising a unified commodity system and price deregulation of other consumer goods.

The industrial product price reform in China drew on successful rural reforms. Starting with the liberalization of price controls over the incremental economy, China created the dual-track transitional path of reform. In 1978, when the contracted responsibility system linking remuneration to output was introduced, Farmers exchanged their surplus for a new living at the nearest bazaars, a holdover in the rural economies from the planned-market times. Some agricultural and sideline products at the bazaars were traded with free market prices. Via rural reform, the system of household-based field allocation and husbandry naturally led to the dual-track grain price system aligning with China's national conditions, which proved a great success in practice. When the Chinese government diverted its focus from rural reform

to urban economic reform in 1984, the decision-makers took lessons-learned from the dual-track price circulation of grain and agricultural by-products and implemented another dual-track system for incremental industrial products.

The deregulation of incremental industrial products and the formation of the dual-track price system were substantial steps made by China toward reform and is consistent with the overall gradual and incremental routing, which avoided significant economic turmoil while enabling the market mechanism to slowly improve productivity. However, the dual-track price system of industrial products encountered unexpected problems. Owing to the power intervention, profiteering officials who comingled planned commodities aroused public outrage. Administrative divisions and regional blockades and rogue departments interfered with prices of industrial products in circulation, causing a market price signal disorder. Some liberalized commodities were circulated in limited channels but endured redundant links, leading to serious disorder. Other liberalized industrial products in in short supply faced skyrocketing prices. At that time, people didn't understand these issues, and criticized the price reform. Some of them advocated returning to the planning system (Fan and Lu, 1989; Yuan, 1990; Zhu, 1991). However, others argued that price liberalization was not equal to market formation (Gao *et al.*, 1993; Yang, 1993).

To complete the historical price reform for commodities, reliable price reformers, including the authors and another group of researchers, began to seriously study the Western commodity pricing system (Chang, 1989; Zhang, 1993). In Western developed countries, thousands of industrial products were priced for free transactions under the premise of legal protection. The efficiency of this price system was determined by whether the most fundamental commodities, such as industrial and agricultural products, were priced on a true and valid basis. We then discovered the role of the futures market, where the prices of the most fundamental commodities were fixed for orderly futures trading (Chang, 1991). The futures market enables the prices of bulk commodities in a time series. As with the most fundamental commodities, their pricing determines the pricing of products in the entire industrial chain, affecting the whole commodity price system.

In 1988, a working group for the futures market research was officially built in China. The group originally comprised relevant researchers from the Development Research Center of the State Council and the State Commission for Restructuring the Economic System. Later, experts from the Ministry of Commerce and other ministries and commissions joined to improve China's dual-track price system and to promulgate an overall plan for China. However, no examples existed in the establishment of the futures market under a dual-track system. Only by mind emancipation and truth-seeking based on national conditions and foreign experience could we succeed. On January 10th, 1989, the Futures Market Research Working Group under the Development Research Center of the State Council and the State Commission for Restructuring the Economic System submitted a final general plan for the trial of the futures market. It was called the *Report on the Trial of the Futures Market Based on National Conditions*. Simultaneously, the local exchanges pilot ensued, on which the Futures Market Research Working Group held two national pilot program seminars. By the beginning of 1989, the Zhengzhou Grain and Oil Futures Research Group, the Wuhan Futures Research Group, the Jilin Futures Market Research Group, and the Shijiazhuang Municipal Materials Bureau all submitted their own pilot exchange programs.

In 1990, under extremely severe economic conditions, the first pilot of China's futures market, the China Zhengzhou Grain Wholesale Market, was born. At that time, the Wall Street Journal reported that it was a milestone in China's reform and economic opening. Subsequently, the working group actively participated in the pilot work of the Shenzhen Nonferrous Metals Exchange, and quickly launched centralized auction transactions based on the strong standardization of non-ferrous metal copper and aluminum commodities, laying a foundation for standardized futures trading. After the spring of 1992, various local

authorities and ministries actively responded to the suggestions of the reformers and piloted the exchanges. The working group also proactively participated in the construction of exchanges in Shanghai, Suzhou, and Dalian. By the spring of 1993, standardized futures contracts were successively introduced on future commodities, such as bulk agricultural products, non-ferrous metals, and energy, marking the nationwide futures trading. By this process, these commodities unified their prices nationwide, realizing uniform and orderly market price signals and a completely transparent market. The disorderly circulation and price confusion that long plagued China in the past was resolved, and official and private profiteering were eliminated. The conflicts of the dual-track system were completely solved via the effective operation of the futures market. Subsequently, the unified commodity-market price system was sound, and the market mechanism could effectively play the role of economy regulator.

3. Late-mover advantages in the establishment of China's futures market

3.1 Establishment of futures exchanges

The premise of a futures market is the futures exchange. To set up a futures exchange, the working group carefully studied the membership structure and charters of the Chicago Board of Trade (CBOT). The data at the time showed that international exchanges were organized two ways: CBOT's membership system and corporate structure. Considering the actual situation of government dominance with a lack of funds, the membership system was adopted. The trading members were required to invest hundreds of thousands of RMB as the registered capital, which not only raised capital in a short time, it also maintained a close relationship among members. Each member was motivated to develop the market to realize a certain scale of trading in a short period.

The clearing rules of the exchange were formulated by learning from the trading rules of CBOT. Because the authors and designers neither had working experience in an exchange nor hands-on trading in futures, developing trading and clearing rules was a challenge. In this case, they drew on the transaction rules of CBOT, translated to Chinese trading practices and drafted simple and feasible transactions and clearing rules of the exchange. They also consulted William D. Grossman, CBOT's vice president, for details about specific rules. The concise rules, despite imperfections, were immediately piloted to ensure smooth trading.

According to the actual situation in China, the members of the futures exchange fell into two categories. One was the large-scale production and trade processor, a self-operated member, who could represent other companies or individuals entering the market. The other was a futures brokerage company approved by the State Administration for Industry and Commerce. Such companies were mainly engaged in trading transactions on behalf of clients, but they also directly traded. It is worth noting that futures brokerage companies and futures exchanges in China emerged at the same time. Most of futures companies traded in the international futures market on behalf of clients. After international future trading was banned, they turned to domestic futures. The development of futures brokerage companies also provided conditions for the expansion of the exchanges' businesses. Most exchanges at that time were industry-specific, such as the Shenzhen Nonferrous Metals Exchange, the Shanghai Metal Exchange, the Shanghai Crude Oil Exchange, etc., and the members mainly comprised the same industry. The selection and business of the member companies also learned from the early practice of international membership companies.

3.2 Successful pilot of futures trading

Required by the price reform, the working group chose a large number of bulk commodities for pilot transactions. According to their research on the listed varieties on major international

futures exchanges, they learned from the fresh food wholesale market in Japan about pricing and circulation, avoiding many detours for the listing of fresh foods. Meanwhile, we seriously studied the international experience and learned that to quickly extend futures trading to various production and operation units, we must rely the government to organize systematical training for the relevant personnel in the production and operation units. Thus, the working group for futures market research, the State Administration for Industry and Commerce, the Ministry of Commerce, the Ministry of Foreign Trade, the Ministry of Materials, the China Nonferrous Metals Industry Corporation, and local governments conducted a several intensive trainings, and the futures exchanges in construction trained their member units so that we had a large amount of talent in a short time.

At the early stage, China's futures trading pilot was gradually explored according to China's situation and available international trading methods. The Zhengzhou Futures Exchange originally adopted an open-bidding system similar to CBOT, but was found inapplicable to Chinese business. Thus, for the Shenzhen Nonferrous Metals Exchange, dealers were required to write down the tender price on a whiteboard and show it to the public. When it came to the Shanghai Metal Exchange, suggestions from many experienced people were adopted. With a local-area network in the trading hall, the latest minicomputer was used as a host to link each member terminal, and dealers input purchase orders, which were sent to the minicomputer to conclude the transactions. Such a competitive price transaction method was the result of long-term interaction between the rules designer and the computer programmer. The minicomputer-enabled trading method that originated from this time- and price-first bidding mechanism was a major innovation of the time.

When drafting the futures contract, the working group again referred to CBOT. Only one topic aroused wide discussion: the contracting unit. CBOT adopted a volume unit, and the unit of each contract of agricultural products was 5,000 bushels. Considering that the wagon was the main form of transportation in mainland China, the unit adopted there was one wagon per contract in the first draft. However, it was inaccurate to calculate the weight of different goods by using a wagon as the unit volume. Thus, it was finally changed to 10 tons per contract. For physical delivery, 5–6 contracts could be bought to fill up a wagon.

3.3 Evolution of the futures market

As futures contracts were released and traded, the incompleteness of trading rules emerged. To this end, the working group refined the rules of the Chinese exchanges by drawing on the rules of successful international exchanges. For example, the range of the price limit, the handling of continuous price-limit reach, the position limit rules for members and customers before the clearing month, and the major reporting system were all borrowed internationally. With the development of China's market-economy reform, more and more goods were in need of price liberalization and rationalization. Drawing on the successful international experience in product listings, we successively listed several new varieties that had basically smooth operations (see Tables I).

During the evolution of the futures market, the working group drew on mature international experience and continuously introduced options trading. Owing to the mature international experience, options trading in China ran smoothly. After the listing, the liquidity was gradually expanded, enabling successful option trading in a short time (see Tables II).

4. Late-mover disadvantages in the establishment of China's futures market

4.1 Late-mover disadvantages in institutional reform

China's economic reform maps to the incremental transition from the planned economy to the market-economy system. During this transition, the operation of the new advanced system was constrained laggard systems.

First, the price based on the futures market fluctuated with the changes in supply and demand, sometimes very violently, for which the public paid wide attention and offered mostly criticism. From the initial pilot to around 1995, some economists came forward to criticize the futures market, stating that the price fluctuations were mainly attributed to the poor function of the market, which was considered a "premature baby" not applicable to a Chinese environment. Until today, the price fluctuations in the futures market are the focus of public opinion. For example, in the spring of 2016, the price of black varieties rose sharply. The price of rebar increased from 1,800 yuan per ton to 2,800 yuan in just a few months and was criticized by the public. The fundamental reason for the rise was a fundamental change in supply and demand. An article published by the authors in the *China Securities Journal* in September of that year led to a consensus and ended the discussion. Still, it was thought-provoking to have this debate after 2 decades of price reform.

Second, owing to the lack of supporting facilities for reform, the relevant government departments made excessive administrative interventions on the development of the futures market, hindering its development. Since 1992, China has enjoyed a period of rapid economic development. Investment and consumption inflation and a large number of currency issuance has led to skyrocketing prices. Therefore, at the time, some well-known scholars and academicians believed that the transitional speculative trading in the futures market inflated prices and became a major cause of inflation. To this end, the relevant government departments ordered the closure futures trading for many commodities. Crude oil, steel, sugar, and government bonds were suspended, and varieties related to the national economy and people's livelihood, such as food, were basically frozen. Only the non-ferrous metals and oils were excepted, because the two were imported and their prices were mainly dominated by the international market. Their price fluctuations were totally consistent with the international market, which could explain the price increase. During rectification, the futures intermediaries recently developed according to international practice were nearly destroyed. Without the guidance of futures laws and government rectification, customers who had lost money in market transactions sued the futures brokerages for compensation, and this substantially hit the market. As can be seen in Figure 1, the turnover of the futures market shrank from 10-trillion in 1995 to 1.61-trillion yuan in 2000.

The development of the futures market was thus seriously hampered, manifest by the suspension and re-listing of listed products. For example, crude-oil futures traded well in the early 1990s. The prices of crude oil, gasoline, and diesel were determined by the market. However, owing to the rectification of the oil circulation system, it was not until 2018 that crude-oil futures began trading, with gasoline and diesel to be listed. They were delayed for nearly 30 years. Additionally, the development of futures brokerage companies fell under strict control. A single business could not create an international company with diversified businesses. Companies were not competitive.

Third, the development of the China's futures market has lagged behind the development of the national economy and has not met the objective requirements for national economic development, mainly because of the unmatched institutional reforms. After the establishment of the China Futures Association on December 29, 2000, China's futures market entered a period of recovery and development.

In terms of scale, although China's positions and trading volume have a certain amount in statistics, it cannot meet the transaction needs of large-scale enterprises. Large state-owned enterprises still use the US market for hedging. There was also a problem of insufficient liquidity, mainly with the continuity of contracts. During a period, products with the highest institutional liquidity saw many positions and trading volume only in intermittent months with almost no transactions or positions for several months in between. This seriously impacted the function of the market.

In terms of the diversification of listed varieties and trading methods, the varieties were listed at a very low speed. For example, the research on hog futures started at the beginning of 1988 but failed to gain approval, which stuck the pig industry in the cyclical fluctuations of ups and downs. The evolution of trading methods was even more difficult, because the staff of most government agencies were not specialized in derivatives, such as options, and were forced to take the pilot approach.

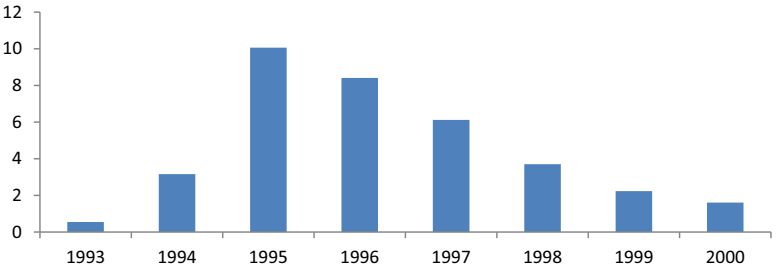
Currently, active varieties have pricing functions for domestic trade. Yet, the market in general is the shadow of the one desired, having limited influences on international pricing, but without pricing power. Most varieties do not have a pricing function for domestic trade, and there is one extremely inactive type of trading (i.e. rice, wire, and wheat). Generally, the market function of price allocation resources is limited.

From the perspective of market participants, retail investors are the mainstay, owing to institutional constraints. Specifically, no commodity funds have been approved, futures companies only act as agents, and futures practitioners are not allowed to participate in futures trading. Most state-owned enterprises, restricted by the system, do not participate in futures trading. This presents a bottleneck to the futures market's development.

4.2 Late-mover disadvantages in foreign experience learning

The construction of China's futures market is led by the government. With reference to foreign experience, China strove to quickly establish the futures market and narrow the gap between developed countries in the shortest time. However, this market construction model also gave birth to problems.

First, during the trial of the futures market, the government authority dominated the process to build a futures exchange as quickly as possible. For example, the Zhengzhou Commodity Exchange was initiated by the Ministry of Commerce and the Henan Provincial People's Government, granting itself a strong government-run nature. The working group adopted a membership system. All registered funds were subscribed by members, and the highest power was granted to the general assembly. This kind of system was highly market-oriented at the time, but it was fundamentally a strong government-run entity, leaving room for the continuous strengthening of the government force. When rectifying the futures market, the relevant government departments further improved the exchange's government-run nature to regulate the behaviors of the exchange. For example, executives (e.g. general manager of the futures exchange) were approved by the China Securities Regulatory Commission, and, later, the executives were appointed by the China Securities Regulatory Commission. In this case, the general assembly and the council were just formalities, and the



Source(s): China Futures Association

Figure 1.
Total turnover of the futures market

exchange finally evolved into a business unit directly managed by the China Securities Regulatory Commission.

The property rights of the China Futures Exchange were very clear, because they were registered and established by the members of the exchange with same capital at the earliest stage. In 1995, when the China Securities Regulatory Commission rectified the futures market, it carried out a so-called "membership reform" on the futures exchange and allocated a huge amount of assets accumulated by the exchange since its opening to establish a state-owned asset-management company. The bureaucratic nature of the exchange hardly generated a mechanism for the continuous selection of expert executives, which weakened its core competitiveness.

Second, the construction of the government-led futures market was often directly interfered by officials. Some administrative officials are very familiar with the operating rules of the futures market and can make correct decisions such that the futures market develops rapidly over a period of time. However, in this system, not all officials have enjoyed a deep understanding of the operating rules. Particularly when making major decisions about the futures market, the departments of state have strong sway. Officials of some departments know little about futures and are often affected by incorrect views, which in turn affect the development of the market. Two examples can be given. The rectification of the futures market that began in 1995 was a near-devastating disaster to the futures market. Some investors who made wrong decisions in futures trading did not think wrong of their investment, but attributed the loss to the market. Additionally, they complained to the administrative officials in various ways, trying to recover the losses using the instructions of the executive leadership. As a result, many varieties of trading were suspended, and the normal trading order was disrupted. For another example, according to regulations, the varieties for listing futures trade should have been approved by the China Securities Regulatory Commission, but, in fact, any variety to be listed must be discussed and approved by various ministries. Thus, for a long period of time, future varieties listings and options trading could hardly proceed. From the research of new varieties to be listed to the real listing, some can take 10 years.

The main components of China's futures market have seen extremely uneven development. Because the exchange is an administrative institution directly managed by the CSRC, it is in a monopoly position, resulting in a very uneven distribution of interests between it and its member companies. Taking CBOT as an example, the exchange's first-hand agricultural product-contract charges members only a few cents, so member units can charge customers a few to tens of dollars. However, the agricultural product contracts of China's exchanges cost a few yuan in RMB, and futures companies only charge a few tens of RMB to the customer. This income distribution pattern can hardly support the operation of futures companies, which, in turn, makes futures companies unable to train and educate customers. Thus, the institutional clients participate less.

The policy of the futures brokerage industry changes with leadership. For a considerable period of time, owing to personal preferences of the official, the policy of "supporting the big and limiting the small" was put forward, which publicly destroyed the principle of fair competition in terms of provisions. As a result, the futures companies degraded from business diversification into homogenization. All companies adopted the same style, which further exacerbated vicious and unfair competition.

Third, it is harder to perfect laws and regulations on the futures market with the market's development. In the early stage of the pilot, China quickly built a system with reference to many trading and clearing rules to ensure that futures trading ran successfully for a short period of time. However, with the development of the futures market, the fully market-oriented futures market conflicted with the old economic system, inevitably affecting the legislation progress of the market.

Legislation for the futures market is a rather long process. In the early 1990s, during the overall design of the futures market, the working group immediately drafted a futures law after the successful operation of the futures market pilot and ensured the healthy development of the market while improving the regulations. For more than 2 decades, the authors have participated in the discussion of the futures law many times, but, thus far, it has been difficult to formulate futures. We can only rely on the China Securities Regulatory Commission to use the departmental administrative regulations to ensure a steady development. Compared with the objective requirements of China's economic internationalization, this one lags behind. With the internationalization of China's economy, China's futures market must also be international. However, the lack of futures law has seriously affected the internationalization of the market.

4.3 Late-mover disadvantages in the catch-up process

First, the benchmarking countries have made continuous efforts. Thus far, the world's commodity pricing system is still dominated by the futures markets of developed countries. Although some developed countries' futures exchanges lost the basic conditions for being pricing centers in the past, these exchanges continue to use the new conditions of world economic development to keep pace with the times and maintain their positions. For example, the London Metal Exchange (LME), which was born during the Industrial Revolution, is currently neither a production center nor a distribution center for actual trade or consumption. However, the exchange has always been the pricing center for the world's non-ferrous metals. The LME takes advantage of world economic integration and progress in communication technology to cover the Far-East market, which does not weaken its position as a pricing center. Alternatively, it has strengthened its role. Exchanges in other developing countries, despite their continuous efforts, are always in the shadow-price level. Because LME keeps pace with the times, we must consider the ability of these pioneers to continue to lead.

Second, the impact of Internet technology on the world is critical. Since the 21st Century, owing to the development of Internet technology, the world economy has rapidly integrated. Exchanges that were traditional pricing centers now use economic and technological changes to increase their competitiveness and market radius to attract production, trade and consumption scattered around the world into their exchange system, further consolidating the position of the exchange in the world pricing system and rapidly expanding its function to developing countries. In contrast, developing countries are still learning to build a futures market and are unable to catch-up in the management and institutional innovation levels of exchanges. Therefore, most exchanges established in developing countries are regional without an international pricing function. Trade pricing is also merely a shadow price.

Third, innovative genes impact growth. Futures exchanges in developed countries are market-oriented from beginning to end. Only by constantly innovating and advancing with the times can we adapt to the changes in production and circulation of bulk commodities. Therefore, these exchanges have strong innovation genes. It can be said that innovation and development are the leading factors of these exchanges. Trading at the learning stage develops rapidly in developing countries but lacks intrinsic innovation and genetics, characterized by continuous learning, constant imitation, and lack of innovation. With no inherent innovation genes in the futures exchange, it is difficult to compete with the exchanges of developed countries at a high level.

The fourth is the resistance from vested interests. Japan's futures market construction does not match its economic development, because of Japan's monopoly chaebol. These monopolies participate in the competition of international futures markets, but they do not adopt competitive markets in their country. Therefore, there is much resistance to the listing of large-scale industrial products in Japan, and it is extremely difficult to develop the market in that direction. Similarly, when developing countries list the leading varieties for their

economic developments, the ecological environment of an industry changes. Therefore, it is normal to be hindered by vested interests that have a dominant position in pricing. This is also a major obstacle for developing countries.

Finally, there is a heavy psychological factor of the market construction leader. Important business of futures exchanges in developed countries continuously develop new varieties required by the economic development and keep listing them for trading. If the variety is listed successfully, it should be kept. If the listing fails, the variety should be recalled. Statistically, the success rate of varieties is very low, but the continuous development of new varieties is a major research and development task of the exchange. It is very simple and easy to list futures products in developing countries during the learning stage, and it is possible to immediately list successful futures varieties. However, these varieties can hardly have a pricing function. In fact, developing countries differ from developed countries in their economic development stages. Developing countries focus on infrastructure and require large quantities of bulk commodities. According to the development stage of the country, the commodity futures varieties that are not available in developing countries are precisely what the developing countries urgently need to list. However, without a reference system, the market construction leaders are psychologically worried and afraid of failure. Thus, they are very cautious in their approval.

4.4 Late-mover disadvantages in the internationalization process

First, there is an influence of one-sided extreme opinions. In the context of economic globalization, the price of bulk commodities is determined by worldwide supply and demand. Most prices in China's futures exchanges are shadow prices that are mainly determined by international exchanges. Therefore, some sensitive commodity price changes, as with crude oil, become very complicated, arousing speculation in the media, accusing market and state manipulation. Then, the media reviews the price from the narrow perspectives of producers or consumers and regards the fluctuation as unreasonable. This "hot" news usually triggers public dissatisfaction, further socially hindering the construction of a futures market. Moreover, in some cases of agricultural price inflations caused by natural disasters and supply-and-demand relations, all sectors of society can rush to appeal to the government for intervention because of concerns about the residents. Additionally, China's public opinion circles have a feeling of inferiority, believing that China's own industrial and financial capital has no pricing capability.

Second, some large state-owned enterprises have been hit hard in international market transactions, affecting the construction of the domestic futures market. For example, the CAO incident that occurred in 2004 and the huge loss of Sinopec in 2018 both had a great impact on the image of the futures market. These two events were actually caused by a lack of talent, scientific operational procedures, and decision-making mechanisms in the integration of Chinese large-scale state-owned enterprises into the international market. However, the huge losses, whatever the reason, granted the executives and policy makers of the state-owned enterprises, lacking understanding of the futures market, to take an incorrect view about the market, instilling a lack of confidence in market development. Simultaneously, it also produces a series of side effects, such as doubts about the development of financial derivatives and OTC options and concerns about the introduction of international capital into the internationalization of China's futures market.

Third, the incompatibility of regulations continues to have impact. China's futures trading rules and regulatory systems have their own distinct characteristics, as a result of constant adjustments to trading rules since the reorganization of the futures market in 1995. With the internationalization of the futures market, our rules have become incompatible with many internationally accepted business rules, which is very unfavorable for the

internationalization of our futures market, especially for the introduction of institutional investors. For example, the domestic investor suitability system and the "one code for one account" penetrating supervision of investors are considered to be very common domestically but can hardly be accepted by international institutional investors. This has greatly hindered the internationalization of the futures market.

5. Discussion and conclusion

Via the above review and analysis, the authors believe that the following aspects are worthy of in-depth study by the academic community.

First, the most successful experience of China's price reform was solving the problem of the dual-track transition by establishing the futures market in a relatively short period after liberalizing incremental price controls. Historically, after WWII, countries such as Japan eliminated wartime price rules and restored regulation through the reopening of exchange order. Because there was no futures exchange in China then, we could only build a futures market in a relatively short period of time to ensure the marketization and effectiveness of the price system. Therefore, the price liberalization and the establishment of futures markets are both dominated by the government today. The main reason is to minimize reform costs, shorten reform time, overcome the constraints of the original economic system, and achieve reform goals as soon as possible.

Second, the price reform and construction of the futures market in China are all led by the government and fully enjoy late-mover advantages. Based on the experience of the international community and the actual situation in China, they have completed the pilot of the futures market in a short period of time. However, they also gave birth to late-mover disadvantages. The leading role of the government is our institutional advantage, and it can mobilize a large amount of resources in a short period of time to quickly complete the construction of a market. However, we must also pay attention to the side effects. Owing to the theoretical understanding of certain officials, the construction and development of the futures market can suddenly halt or deviate from its originally intended path. Therefore, we must not only focus on one side; we should also pay attention to the weakness of our government-led market construction.

Finally, in terms of the experience of developed countries, China should consider its own national conditions and thoroughly study the general operating law of the market price system instead of indiscriminate imitation. Because of the Industrial Revolution, Western developed countries evolved from contractual free trade to a market price system. However, China has developed their system using a dual-track transition from a planned price system. Thus, we cannot directly borrow from foreign experience. Despite this, China can still draw on the inevitable general rule of the Western market price system. When designing an operation model of China's futures market, we fully demonstrate the characteristics of various modes. Then, we select the one most suitable for Chinese national conditions. For example, the LME is distinctive in its mode, but our country is unlikely to cultivate main core trading members right away. With regard to the small size of the market participants and the large number of retail investors, we benchmark the CBOT for the mode of the Chinese futures market and draw on proper experience from other trading models.

In summary, the establishment and development of China's futures market not only makes full use of late-mover benefits, it also has obvious late-mover disadvantages. To this end, the question of how to maintain late-mover advantages and overcome late-mover disadvantages in the future development of China's futures market is an important topic. Financial decision-makers should absorb proper suggestions from all sides and eliminate late-mover disadvantages in practice. Moreover, scholars clearly recognize that deepening

the reform and opening trade is the most fundamental way to remove late-mover disadvantages.

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About the author

Dr Qing Chang is an honorary professor of MBA Education Center for life and Director of Futures Research Center of China Agricultural University. He also is Chairman of Jinpeng Futures Brokerage Co., Ltd. Dr Chang is one of the founders of Chinese Future Markets, former secretary-general of futures market research working group at the Development Research Center of the State Council-State Commission for Restructuring the Economic System of the People's Republic of China. He also is former vice president of the China Futures Association. Qing Chang can be contacted at caer@cau.edu.cn