

## Price Discovery Ability of China's Treasury Bond Futures

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**Abstract.** Relevant research at home and abroad shows that the strength of a national treasury bond futures price discovery has an important impact on the information efficiency of the national treasury bill market. Throughout the development process of our country's national debt futures: from the end of 1992, when the government bond futures products went public until May 1995, the government bond futures trading was forced to be interrupted and then reopened in 2013, the course is really twists and turns. In 2015, China's 10-year treasury bonds futures were officially listed, further promoting the simultaneous, coordinated and orderly development of China's treasury bond futures and spot markets, and played a positive role in the continuous improvement of the financial market. So far, there have been many literatures on the price discovery function of five-year government bond futures, and the ten-year government bond futures are relatively late, and whether it has a price discovery function remains to be seen.

### Introduction

Treasury futures first appeared in the United States in the 1970s, and were initially used to circumvent possible interest rate risks in financial markets and to reduce losses caused by interest rate fluctuations. . After the reform and opening up, our country's economic development momentum is rapid, and the treasury bill market has ushered in the spring of development. In order to better improve our country's financial market, treasury bond futures products are ready to go. In 1992, treasury bond futures products were listed on the Shanghai Stock Exchange but not In the past two years, it was forced to interrupt due to malicious violations. Eight years later, our country tried to reopen the treasury bond futures market. Overall, the development process is really twists and turns, and the three-year treasury bonds futures of our country in March 2015. The contract was born and the overall operation was good.

### China's National Debt Futures Status

In recent years, as an emerging financial derivative product, treasury bond futures have been used by many investors. Before examining the relationship between the current price of treasury bills and futures prices in our country, we first need to understand some of the current status of Chinese treasury bonds. Therefore, the chapter of this paper expounds the basic concepts, characteristics and functions of treasury bonds futures, and reviews the development history of treasury bonds futures in our country.

**Introduction to China Treasury Bond Futures.** Treasury futures refers to a product that predicts the price of a government bond spot that will be traded in the future at an organized trading venue and delivers the money at a later point in time. It is a more advanced and high-end financial derivatives. Our country launched the treasury bond futures in 1992, but ended in failure. With the steady improvement of China's comprehensive national strength and the continuous development of the economic level, China has reactivated the trading of treasury bonds futures, and related products are listed on CICC.

**China's National Debt Futures Market Development Process.** At the beginning of reform and opening up, China's monetary policy was too loose and inflation was relatively serious. Although the Chinese government raised the deposit interest rate twice in the next two times, in order to reduce the amount of money in the market, the effect was too unsatisfactory. In order to change the bad situation of China's national debt depreciation and promote the positive development of China's economy, China began the pilot work of Treasury futures at the end of 1992. At the end of the year, the Shanghai Stock Exchange launched 12 contracts [Source: Shanghai Stock Exchange]. Many investors began to pay attention to the treasury bond futures, and gradually became interested in them. They began to try to trade, and more and more investors joined in. Until February 23, 1995, the "3·27" incident broke out in the market like a bomb. Serious speculation in China's national debt futures market was exposed. Due to illegal operations and excessive speculation, it brought significant losses to investors. The market has had a huge impact. The Ministry of Finance of the People's Republic of China and the China Securities Regulatory Commission issued regulations and notices on regulating the trading of treasury bonds in the future, two days after the incident, but unfortunately, in May of the same year, a "3·19" of serious violations occurred. event. In order to prevent these major emergencies from appearing in the future, the China Securities Regulatory Commission, the securities regulatory authority of our country, will issue a stop order for all futures transactions in government bonds.

The relevant authorities summed up the lessons of failure afterwards and immediately proposed that the production of the national debt futures market in our country should be based on the fact that China's interest rate marketization is basically completed. Its scale and degree of development are stronger than those of the majority of investors. Frequency and market related needs are inextricably linked. In recent years, our country's economic level has developed steadily, and the supervision and management mechanisms for various transactions have been gradually reformed and improved. The risk control measures and management systems of the treasury bill market have become increasingly mature. On September 6, 2013, our national bond futures market disappeared back to the historical stage after eight years of disappearance. It has an epoch-making significance. The 5-year Treasury bond futures trading initiated by CICC continued to operate normally, after which the unit issued a 10-year Treasury bill on March 20, 2015 to further enrich the diversity of the Chinese government bond futures trading market and promote Chinese government bonds. Market development. According to statistics, in December 2018, the volume of China's national debt futures contracts reached 812,968 contracts, and the total transaction amount reached 78,845,823,250,000 yuan [source: China Financial Futures Exchange], the market transaction rate is very high and is still in steady progress. Both the public and investors can see the bright performance of our national treasury market and the corresponding futures market.

## Overview of Futures Price Discovery Theory

The chapter of this paper gives a systematic introduction to the basic status of national debt futures in our country. Because treasury futures are one of the futures products, we need to put it on the price discovery function of treasury futures. The relevant theory is thoroughly understood. Therefore, the following chapter begins with the elaboration of relevant theories. It introduces the definition, formation and influencing factors of the futures price discovery function, and provides a solid analysis for the subsequent related analysis. Theoretical basis.

**The Meaning of Futures Price Discovery.** Merton Miller, a Nobel laureate in the United States, once proposed that the charm of the futures market lies in our view of the true price, and the current theoretical community has not yet reached a consensus on the definition of futures price discovery. There are some differences. After reviewing the relevant literature, the following concepts related to the price discovery of each rhetoric are summarized: Some academic experts and scholars believe that the price of futures can be quickly reflected in the market compared to the spot price, which has a predictive effect on the future fluctuations or trends of the spot market; The market price discovery function refers to an unbiased estimation relationship between the current market price and the future market price. The current market price can predict and discover the future market price; there is also a definition of price discovery. The mutual guidance relationship between the current market price "leading-lag" and the corresponding contribution of the pricing of the current market in the price discovery. In my opinion, the price discovery function means that the price of the futures can be used to roughly speculate the price trend of the spot and the change of the futures price will lead the spot price so that it shows the corresponding fluctuation.

**Formation of Futures Price Discovery.** In a fully effective market, both the futures market and the spot market can respond to new information in the capital market in a timely manner, and there will be no more efficient market reaction than the current market. In the actual market, futures are different from the trading mechanism and related details of the goods, which accelerates the speed of the futures market's response to information compared with the spot market. The reasons for its formation are as follows: (1) Short selling mechanism. The futures market is not the same as the spot market in the trading mechanism. The futures market can not only conduct two-way trading like the spot market, but also can short or long trade. The short-selling mechanism is good for investors who have already mastered the bad news in the market, and more investors are attracted and involved. Futures trading can feedback good news, making the final futures price more accurate and realistic, greatly improving the efficiency of the price discovery function. (2) Bidding transactions. In the trading process of the spot market, the information of each competitor's counterparty is limited, and the phenomenon of "price distortion" is likely to occur in the transaction, which causes the transaction price to deviate from the equilibrium price. The emergence of the futures market has improved this phenomenon, and both parties can conduct fair bidding activities through open exchanges in the country, and their quotations fully reflect the subjective intentions of individuals. In addition, the futures market trading parties can keep abreast of the latest orders and trading volume in the market, and can correct or withdraw the prices they expect in time. This market-based bid trading mechanism has more reaction. The information of both parties is greatly beneficial to the price discovery mechanism. (3) Leverage trading. Generally speaking, it is the margin trading system, that is, investors can buy or sell a large proportion of positions with a small amount of principal. This system has greatly reduced the transaction costs of investors and created more profit opportunities, but At the same time, the trading risk will increase greatly. Leveraged trading will attract a large number of investors who hold high-quality information on the market to conduct future trading of more positions. Therefore, the information of the entire financial market is immediately fed back to the futures market, and the futures price will fluctuate earlier than the spot price.

**Influencing Factors of Futures Price Discovery.** In theory, the premise that the discovery function of futures prices plays a good role is that the operating environment of the entire futures market is completely competitive, but in fact we find that different futures varieties have different price discovery capabilities. Through the analysis of the differences between different futures markets and futures contracts, the following three points are summarized in the factors affecting the futures price discovery ability: (1) Transaction investment costs. Cost usually determines the occurrence of

investment behavior. Transaction investment costs include: trading commissions, trading commissions, and opportunity costs. By consulting a large amount of data, it is found that the market with lower transaction costs has a more significant effect on price. When the transaction cost of the transaction is low, investors will prefer to trade in the futures market, especially those who hold a large number of high-quality market information resources. (2) Market fluctuations. If there is a large fluctuation in the market, then the more Noise traders in the market, the more they value the value of the investment target in order to maximize their profits. Participants who pay too much attention to noise information and therefore make investment behaviors are largely irrational, and their existence has led to distortions in the relevant transaction prices in the market. (3) Proportion of institutional investors. Individual investors are far less knowledgeable about the depth of relevant knowledge, the reasonableness of the investment structure, and the information resources of the products they care about, because professional institutional investors are more sensitive to trading information in financial markets.

## Summary

This article has studied and researched a large number of predecessors' research results, combined with relevant domestic actual conditions and relevant data for analysis and exploration. From the current situation of China's national debt futures and the theory of treasury bond futures price discovery, the paper studies and finds that the price changes of treasury bonds can predict the change of the spot price of treasury bonds, and understand the reasons why futures prices predict the fluctuation of spot prices. Influencing factors.

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