

Inter-Variety Equilibrium of Chinese Treasury Futures

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Abstract

Treasury futures, important tools in interest risk management, need to maintain price equilibrium between different varieties. In this paper, we conduct research on ten-, five-, and two-year Treasury futures in China's futures market. The auto-regression model is used to fit and predict the spot yield, the CTD (cheapest to deliver) price is used in valuing Treasury futures, and the transaction cost and market friction are considered in building the arbitrage-free spread interval. By comparing the amount of deviation and the equilibrium reversion speed, we analyse the inter-variety price equilibrium between Treasury futures. We find that there are many arbitrage opportunities among the three varieties, and the market is not fully efficient. Through further analysis of the pairwise spread relationship of the futures, we conclude that longer operation of the Treasury futures market will lead to higher market efficiency, shorter duration of arbitrage opportunities, and a faster return to equilibrium. The existing literature mainly focuses on the equilibrium relationship between two Treasury futures in statistical terms, but this paper examines the equilibrium relationship between all existing varieties of Treasury futures in China's market based on pricing, which expands the subject and methods of research on inter-variety equilibrium in Treasury futures.

Keywords: Arbitrage-free Equilibrium; Arbitrage-free Interval; Inter-variety Arbitrage; Deviation

JEL Classification: G13, G14

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