A Study of Index-Futures Arbitrage and the Intraday Behavior of the Mispricings

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Philosophy

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December 2003
Abstract

This paper examines the arbitrage efficiency between the Hang Seng Index futures contract and the underlying cash index. The Hang Seng Index futures contract is among the most liquid in the world. The study explicitly considers the market depth of the component stocks in the construction of the index basket and in determining the actual price of the index portfolio. Since the study adopts the bid and ask quote records as well as the corresponding volume obtained from an electronic screen-based trading system, the observed quotes and volumes are traders’ firm commitments and hence they are potentially executable. The data and the methodology permit an accurate determination of the potential magnitude and the feasibility of the arbitrage opportunities.

The study finds that, for the sample period included in the study, index arbitrage opportunities do exist with the Hang Seng Index futures contract. The results show that negative mispricings dominate positive mispricings in both magnitude and frequency, a reflection of short-selling difficulties facing index arbitrageurs in Hong Kong. Based on the price and volume information from the order queue, the study also identifies arbitrage opportunities beyond the best bid or best ask price. Unlike the conventional research that focuses on the magnitude of mispricing of “an” index basket based on the transactions prices or best bid/ask quotes, the study also calculate the “total” potential arbitrage opportunity at a particular point in time. Hence, from this angle, the conventional research has grossly understated the magnitude of “potential” arbitrage opportunity.

The study also examines the intraday behavior of the mispricings and performs a test of the relationship between the arbitrage opportunities and the intraday liquidity in both the stock and the futures markets. We find that a U-shaped intraday pattern with a concentration at both open and close appears in the arbitrage opportunities. Such intraday pattern is also observed in market turnover, bid-ask spreads in the stock and futures markets, and market volatility. Moreover, the arbitrage profit is negatively related to the bid-ask spread, and is positively related to market volatility and turnover.
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