Discussion of How riskless is "riskless" arbitrage? Kozhan & Tham

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6th Annual Central Bank Workshop on the Microstructure of Financial Markets,
Federal Reserve Bank of New York
8th October 2010

What is this all about?

- Contribution to *limits to arbitrage* literature
- “Riskless” arbitrage such as covered interest parity, put-call parity, triangular arbitrage in FX
- Focuses on **execution risk in arbitrage exploitation** not to be confused with execution risk in trading
- Crowding effect of arbitrageurs competing for assets to form arbitrage portfolio

What does the paper actually do?

- **Theory**: Each arbitrageur maximizes her trading profits, taking into account direct transaction costs, execution risk, and expected actions of other arbitrageurs.
- **Data:** Event level FX electronic limit order Book
- **Analysis:** Describe presence, persistence and pattern of triangular arbitrage opportunities. Test congruence with model.

Testable Hypotheses

- Riskless deviations from arbitrage exist and are persistent
- The more arbitrageurs the lower the profits
- Riskless deviations are decreasing in liquidity and in the cost of inventory

Application

- Triangular arbitrage in FX
- 2 years of event level data from Reuters Dealing 3000
- Dollar/euro, dollar/sterling, euro/sterling

Results

- Triangular arbitrage opportunities exist and are persistent
- Latency only explains 62% of the total profitable opportunity
- ***Using a simulation***, arbitrage profits are decreasing in the number of arbitrageurs
- ***Using a simulation***, deviations from triangular arbitrage are increasing in illiquidity and inventory cost

Data Doubts

- Reuters Dealing 3000 main liquidity source for two sterling pairs.
- EBS had more than 90% of the liquidity in the main pair.
- The spread in $/€ rarely exceeds 1 pip on EBS: in this data, the average is 2.13 pips.

Triangular arbitrage doubts

- Minimum trade size is 1 million units of base currency
- Base currency is euro for $/€ and £/€ but dollar for £/$
- Each leg of triangle will leave residual
- Dealers can use customers platforms like OANDA: more costs and possibly wider spread
- Marginal cost of trades

More doubts

- Theory: Price impact of arbitrage order flow?
- Theory: Pre-trade transparency?
- Does the number, size and persistence of arbitrage opportunities increase in the number of arbitrageurs?
- Inventory costs and Illiquidity measures neglect the fact that there are other trading platforms.

Overall

- A very well written paper
- Asks an excellent question
- Offers an interesting answer.