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The forex fixing reform and its impact on cost and risk of forex trading banks☆

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ABSTRACT

This paper quantitatively evaluates the cost and risk of banks trading at the Forex London fixing, and examines the impact of the reform of February 2015. Based on the model calibration, we find that (1) the widening of the fixing time window, a main reform agenda, did not reduce the cost for banks but increased the risk of using pre-hedge; (2) the path of the actual trading volume pattern after the reform is consistent with theoretical predictions in a case of not being able to influence the fixing price.

1. Introduction

The WM/Reuters daily closing rate (or London fix) is widely used as a benchmark exchange rate in the U.S. and U.K. market. This rate has been calculated and published by the WM companies and Reuters since 1994. Before the February 2015 reform, the fixing rate was determined at a median transaction price in the one-minute time window around 4:00 pm London time. The London fixing rates are used for numerous financial transactions involving foreign currencies, including evaluating mutual funds accounts and short-term loans, and settling transactions between banks and retail customers.

Trading practices among large banks before and during the fixing window were scrutinized when it was revealed that they shared order flow information in June 2013. The supervisory agencies in the U.K. and U.S. found evidence – mostly chat room records – that large global banks exchanged customers' order information before the fixing window. The UK FCA imposed fines on financial institutions for their behavior of collusion to manipulate the fixing price in the London market.[1] By building up positions before the beginning of the time window and making frequent, numerous transactions during the

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[1] The financial institutions are; Bank of America, HSBC, RBS, UBS, Citigroup, and JP Morgan (FCA release).

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window, they could influence the median and produce profits using their knowledge of order imbalances in the market. However, banks are also taking the risk that their average price of executed retail orders end up different from the median price. Following a recommendation by the Financial Stability Board (2014), fixing practices were reformed on February 15, 2015. One main reform, in addition to banning sharing information of customer orders, was to make it difficult to manipulate the median price during the window by lengthening the window to five minutes.[2] After this reform, the patterns of liquidity provision have changed dramatically. Preliminary findings on the effect of the reform were studied by the Financial Stability Board (2015) in October 2015. This paper is to assess the impact of the reform on the forex rate and volume behaviors around the fixing window based on the calibration model.

This is the first paper to evaluate the cost and risk for the traders, based on the optimal execution model of Obizhaeva and Wang (2013). With high-frequency data on the limit order book, we calibrate the behavior of traders, so that the trading pattern and the estimates of the trading cost and risk can be calculated. We find that a reduction in the transaction cost for fixing traders following the widening of the fixing window is not large enough to offset the increase in risk of an exchange rate drift. Moreover, when the traders are not allowed to share retail order flows with others inside or outside the bank, which is the case after the reform, the transaction cost increases dramatically.

2. Data

The main market exchange rate data on firm quotes, transaction prices, and volumes come from the trading platform of EBS,[3] whose Forex dataset contains the information of deals and quotes at each time-slice of a fraction of one second. Each observation has time-stamped prices (transaction prices and limit order prices if available) and volumes (transaction volumes and limit order volumes if available). The data set contains the limit order prices (quotes) and volumes up to the tenth best of the limit order book. This observation is a snapshot of the limit order book, which is recorded when any change occurs in the book.

3. Empirical analysis

3.1. Empirical facts: liquidity and trading volume

Fig. 1 shows the pattern of trading volume and depth around 4 pm London time. The depth is defined as the sum of the best ask and bid limit orders at the end of four-second interval.[4] The trade volume is the sum of each four-second interval. Each variable is averaged across days for each interval.

For both before and after the reform samples, we observe an increase in trading volume and depth in the window, measured by limit order volumes, but their patterns are quite different. Before the reform, the trading volume gradually increases before the fixing window and has its first peak a few seconds into the fixing window. After the few seconds, the trading volume gradually decreases, but with another peak at 4 pm. The dynamics of depth follows the trading volume and the peak of depth also appears at 4 pm.

After the reform, the trading volume suddenly rises at the beginning of the window. The surge in volume is far less evident; the trading volumes spread more evenly across the window. As before, there is a peak of trading volume at 4pm. The depth also follows the dynamics of trading volume: it suddenly increases at the beginning of the window.[5] The ratio of trading volumes of the first half of the window to the second half declined from 1.42 for pre-reform to 1.24 for post-reform periods.

The change in the volume pattern is important. As shown in the next section, fixing traders (or banks) can reduce the transaction cost by taking a large position before the fixing window starts. This pre-hedging behavior is criticized by regulators, and was discouraged after the London fixing scandal.

3.2. Analysis on the cost and risk of fixing trades

The extension of the fixing window from 1 min to 5 min was implemented to increase the cost of manipulation. It also helps reduce execution costs because fixing traders can split a big order into smaller parts in order to execute it slowly. However, after the extension, the fixing traders are subject to more risk that comes from the random-walk component of the rate fluctuations. In this section, we calibrate the execution cost and associated risks of fixing trading by using the model of the optimal execution strategy (Obizhaeva and Wang, 2013).

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[2] There are only a few paper investigate the Forex fixing: Melvin and Prins (2015), Evans (2014), and Ito and Yamada (2015).

[3] ICAP EBS Level 5 data (proprietary data, purchased by the first author): January 2006 to December 2013. EUR/USD. The proprietary data are commercially available. Observations on Saturdays and Sundays (at GMT) are dropped, and so are observations on Christmas and New Year's holidays.

[4] ICAP EBS changed the minimum tick size at March 11, 2011 and October 01, 2013. The first change lowered the minimum tick size to one-tenth (decimalization). The second change raised the tick size to one-half. The size of limit orders that stays at each limit price is affected by this change, and an adjustment is necessary. We adjusted the best-quote volume by summing up to four best quotes (between the first and second changes) or by summing up to two best quotes (from the second change to the latest).

[5] The FSB report points that this may be explained by manual trading.