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Interventions in the Yen–dollar spot market: A story of price, volatility and volume

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Abstract

We test the effectiveness of Bank of Japan (BOJ)'s foreign exchange interventions on conditional first and second moments of exchange rate returns and traded volumes, using a bivariate EGARCH model of the Yen/USD market from 5-13-1991 to 3-16-2004. We also estimate a friction model of BOJ's intervention reaction function based on reducing short-term market disorderliness and supplementing domestic monetary policy. Important finding of this study are that: (i) we find ineffectiveness of BOJ interventions in influencing exchange rate trends pre-1995, in general, but effectiveness post-1995; (ii) FED intervention amplified the effectiveness of the BOJ transactions; (iii) interventions amplified market volatility and volumes through a 'learning by trading' process; (iv) BOJ's interventions were based on 'leaning against the wind' motivations on the exchange rate trend and volumes; and (v) BOJ interventions were vigorously used in support of domestic monetary policy objectives post-1995. Though some of our findings confirm recent studies, our analysis goes deeper to provide new findings with important implications for central banks and foreign exchange market participants.

JEL classification: E44; G14; G15

Keywords: Foreign exchange intervention; Bank of Japan; Exchange rate volatility; Trade volume

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1. Introduction

We examine the relations between exchange rate changes, traded volumes and central bank interventions in the Japanese Yen/United States dollar (Yen/USD) market. The Yen/USD was the second most traded currency pair (17% of all global transactions valued at USD1.88 trillion per day in 2004, the €-USD having 28%) in 2004 (BIS, 2004). Further, 83% of transactions occurred between foreign exchange dealers and brokers. This suggests that the huge daily volumes traded are largely driven by the need for resolution of asymmetric information issues amongst dealers and brokers, often prompted or halted by the interventions of the Bank of Japan (BOJ) and the United States Federal Reserve (FED). The BOJ has been one of the most active central banks in the foreign exchange markets in the last 15 years. It has the distinction of having made the biggest ever intervention on a day – USD20.3 billion sales on April 10 1998, when all East Asian currencies were depreciating, and Japan, on the brink of a full scale financial crisis, was proposing a massive fiscal expansion package. At the end of 2003, the BOJ had accumulated USD653 billion of reserves, which represented nearly 22% of all official reserves held globally.

Since the release of the historical intervention data by the BOJ in July 2001, a long list of researchers have investigated various aspects of the BOJ interventions. This literature has tested intervention effectiveness by determining whether the level and volatility of exchange rate returns are affected in the desired direction, or if prominent trends are reduced (Chaboud and Humpage, 2003; Fatum and Hutchison, 2003; Beine, 2004; Nagayasu, 2004; Frenkel et al., 2005). Possible responses of the BOJ's interventions to exchange rate returns have been examined (Ito, 2002; Beine and Bernal, 2004; Ito and Yabu, 2004). This literature has focused on higher frequency issues in a market environment (Dominguez, 2003). However this focus needs extending in the case of the BOJ, which has used foreign exchange intervention as an alternative instrument to achieve its domestic monetary policy objectives (for example, see Fatum and Hutchison, 1999; Sellon, 2003; Vitale, 2003). With short-term interest rates close to zero from 1995, intervention to stop the Yen appreciating (and perhaps to engineer a depreciation) was used to prevent further deflationary pressures.

However, there is a growing agnosticism about the ability of a central bank to successfully influence exchange rates. For example, Schwartz (2000) claimed that US and European monetary authorities no longer believe that intervention works. She challenges the BOJ for its obduracy in pursuing sterilized intervention[2] as an instrument targeted to domestic objectives. The basis for this challenge is essentially that there is no hard and robust evidence from around the world that interventions successfully affect exchange rates. What evidence exists suggests that interventions sometimes work because of the 'presence' effect of a central bank rather than the size of its operations and if it surprises the market. However, if there is going to be good evidence of successful size effects of transparent interventions, the chances are that it will be found from the BOJ's activities post-1995 when it very actively intervened as a non-traditional alternative to monetary policy implementation. In fact, we report such findings.

[2] The BOJ explains in a document on its website (www.boj.or.jp/en/about/basic/etc/faqkainy.htm) that any Yen funds to be sold on foreign exchange markets are raised by issuing Financing Bills. So it appears that it is sterilizing its interventions. However in numerous official statements, it claims that it aims to ensure domestic liquidity is optimal, and these interventions may be used to help achieve that.