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The market microstructure of central bank intervention

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Abstract

How quickly do central bank intervention operations impact the foreign exchange market? And, do intra-daily market conditions influence the effectiveness of central bank interventions? This paper uses high-frequency intra-daily data to examine the relationship between the efficacy of intervention operations and the ''state of the market'' at the moment that the operation is made public. The results indicate that some traders typically know that the Fed is intervening at least 1 h prior to the public release of the information in newswire reports. Also, the evidence suggests that the timing of intervention operations matters—interventions that occur during heavy trading volume, that are closely timed to scheduled macro announcements, and that are coordinated with another central bank are the most likely to have large effects.
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1. Introduction

How does information influence intra-daily exchange rate behavior? Standard models of exchange rate determination distinguish the types of information that should influence exchange rate movements, but there has been little focus on the way this information is assimilated by market participants. For example, in most

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models of exchange rate determination an unanticipated (and exogenous) monetary contraction in the home country leads to an appreciation of the home currency relative to foreign currencies. Standard models have little to say about how market participants learn of the monetary contraction, or of how the state of the foreign exchange market might influence the immediate and longer-term reactions of individual foreign exchange traders to the news of such a contraction. One possible explanation for the inadequate empirical performance of standard exchange rate models is that they put so little emphasis on the market microstructure of the foreign exchange market.[1]

This paper focuses on one important source of information to the foreign exchange markets, the intervention operations of the G-3 central banks. Previous studies using daily and weekly foreign exchange rate data suggest that central bank intervention operations can influence both the level and variance of exchange rates,[2] but little is known about how exactly traders learn about these operations and whether intra-daily market conditions influence their effectiveness. This paper uses high-frequency intra-daily spot market data to examine the relationship between the efficacy of intervention operations and the ''state of the market'' at the moment that the operation is made public to traders. The results indicate that some traders know that the Fed is intervening at least 1 h prior to the public release of the information in newswire reports. Also, the evidence suggests that the timing of intervention operations matter—interventions that occur during heavy trading volume and that are closely timed to scheduled macro announcements are the most likely to have large effects. Finally, results indicate that interventions that are coordinated with another central bank have the largest price impact.

The data used in this study include all the days that the Fed intervened in the USD–DEM or USD–JPY markets over the period 1987 through 1995, allowing tests for systematic influences of interventions over a relatively long time series, though the nature of the data do not allow tests for the persistence of interventions' influence beyond the day.[3] Previous intra-daily studies of intervention have had to focus on much shorter time spans due to the relative unavailability of both intervention data and high-frequency exchange rate data.[4] This study is also able to control for the influence of other intra-daily news using time-stamped Reuters' newswire reports.

Section 2 of the paper presents stylized facts on the foreign exchange market,

[1] See, for example, Meese and Rogoff (1983) and Frankel and Rose (1995), and see Lyons (2001) for a thorough discussion of the role of market microstructure in international finance.

[2] See, for example, Dominguez (1992, 1998) and Dominguez and Frankel (1993a,b).

[3] Two additional Fed intervention operations have occurred since August 1995. On June 17, 1998 the Fed sold $833 million against the yen in cooperation with the BOJ and on September 22, 2000 the Fed purchased a total of 1.5 billion euros against the dollar in cooperation with the ECB, the BOJ, the Bank of Canada and the Bank of England.

[4] For example, Goodhart and Hesse (1993), Peiers (1997), Chang and Taylor (1998), Beattie and Fillion (1999), Fischer and Zurlinden (1999), Payne and Vitale (2000), and Neely (2002).

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