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The effect of intervention frequency on the foreign exchange market: The Japanese experience

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Abstract

This paper examines the effects of the frequency of foreign exchange intervention on exchange rate volatility. Japanese intervention is characterized by differences in the frequency of intervention—there are high and low frequency intervention periods. Using the GARCH methodology, this paper models the changes in the yen/dollar exchange rate, with the frequency of intervention from April 1991 to December 2005 as the focal explanatory variable. The empirical results show that high frequency intervention stabilizes the exchange rate by reducing exchange rate volatility and that low frequency intervention is more effective.

JEL classification: F31

Keywords: Foreign exchange intervention; Frequency; Exchange rate volatility; GARCH

1. Introduction

This paper focuses on the relationship between the frequency of foreign exchange intervention and exchange rate volatility. I consider Japanese foreign exchange intervention from April 1991 to December 2005.[1] Since July 2001, the Japanese Ministry of Finance has been disclosing daily intervention records from April 1991 to date.[2] The largest Japanese intervention

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[1] Intervention in the U.S. is not discussed in this paper due to the low frequency of intervention.

[2] The intervention reports prior to April 1991 are not disclosed.

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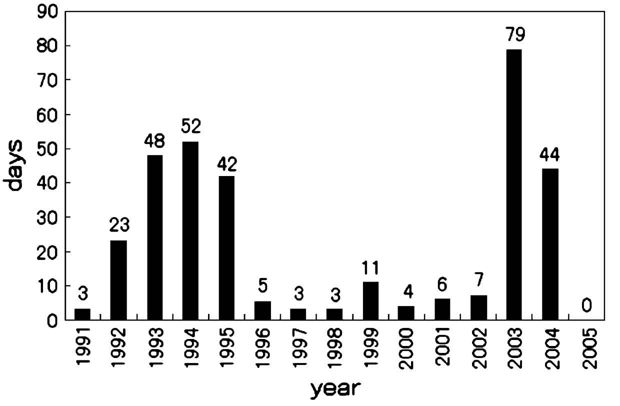

Fig. 1. Number of intervention days per year. Note: This figure shows the number of intervention days per year. The data source is the homepage of the Japanese Ministry of Finance (http://www.mof.go.jp/feio/034_133.htm). For 1991, the number of days is calculated from April 1 to December 30.

reported was the selling of 2620 billion yen (about 26 billion dollars at 100 yen/dollar) against the U.S. dollar on April 10, 1998.

Japanese intervention is characterized by differences in the frequency of intervention—there are both high and low frequency intervention periods. Fig. 1 depicts the number of intervention days per year. High frequency intervention by the Japanese authority can be observed from April 1991 to May 1995 and from 2003 to 2004. On the other hand, June 1995–December 2002 and the year 2005 were periods of low frequency intervention. These differences in frequencies are caused in part by the policy stance adopted by the person who holds the office of the Vice Minister of Finance for International Affairs. For example, shortly after Mr. Mizoguchi acceded to the post of Vice Minister on January 14, 2003, there were 8 interventions in January itself, and interventions were implemented tri-daily during his term in office. Prior to Mr. Mizoguchi's inauguration, there was no intervention from June 2002 to January 13, 2003.[3] Since July 2004, that is, after the next Vice Minister—Hiroshi Watanabe—took over, there have been no interventions in the exchange market.[4] Therefore, the Japanese exchange rate system can be classified as a managed floating system, because the Japanese authority frequently intervenes in the foreign exchange market.

Previous studies on foreign exchange intervention have scarcely paid attention to the effect of intervention frequency.[5] To begin with, it will be useful to examine the two effects of foreign exchange market intervention, namely, the effect of interventions (1) on the exchange rate level (first moment) and (2) on exchange rate volatility (second moment).

Ito (2002) analyzed the effect of Japanese intervention on the exchange rate level, using the daily intervention records disclosed by the Japanese authority. He concluded that a Japanese intervention of 100 billion yen moved the yen/dollar rate by 0.1%, and a U.S. intervention of 1 billion dollars had a 5% effect. With regard to the frequency of intervention, Ito (2002)

[3] In January 2003, the Japanese monetary authority implemented interventions on January 15–17, 20, 23, 24, 27, and 29. During his term, the monetary authority intervened on 123 of the 363 business days.

[4] Vice Minister Watanabe acceded to the post on July 2, 2004.

[5] See Dominguez and Frankel (1994, 1993), Sarno and Taylor (2001, 2004), Ramaswamy and Samiei (2000), and Working Group on Exchange Market Intervention (1983).