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On the determinants of "small" and "large" foreign exchange market interventions: The case of the Japanese interventions in the 1990s

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Abstract

During the past 30 years, central banks have often intervened in foreign exchange markets, and the magnitude of their foreign exchange market interventions has varied widely. We develop a quantitative reaction function model that renders it possible to examine the determinants of "small" and "large" interventions. We apply the model to analyzing the intervention policy of the Japanese monetary authorities (JMA) in the yen/U.S. dollar market during the period from 1991 through 2001. To this end, we use recently released official data on the foreign exchange market interventions of the JMA. We find that the JMA tended to conduct large interventions when the yen/U.S. dollar exchange rate drifted away from an "implicit target exchange rate."
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1. Introduction

During the past 30 years, central banks have often intervened in foreign exchange markets in an attempt to manage exchange rates. Therefore, it is not surprising that a substantial body of literature has analyzed

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the factors that led central banks to intervene in foreign exchange markets. When analyzing these factors, most researchers have regularly assumed that central banks decide merely whether or not to intervene in the foreign exchange market. As a consequence, relatively little is known about the factors that determine the *magnitude* of central banks' foreign exchange market interventions. In this article, we develop a quantitative model that aims at examining whether central bank take specific economic factors into consideration when deciding on the magnitude of their foreign exchange market interventions.

Identifying the factors behind the magnitude of interventions can be regarded as important for at least two reasons. First, the empirical evidence on the intervention policies of the central banks of all major industrialized countries suggests that the magnitude of central bank intervention during the last 30 years has varied significantly. Hence, the determinants of foreign exchange market interventions cannot be completely understood as long as empirical research has not uncovered the factors that determine the magnitude of interventions. Second, it can be assumed that a large central bank intervention demonstrates the willingness of a central bank to calm "disorderly markets" and to correct an exchange rate level it finds inappropriate. This assumption suggests that understanding the determinants of the magnitude of central banks' foreign exchange market interventions can improve our understanding of the factors central banks deem important when deciding how forcefully and to what extent they should intervene.

In the empirical literature on foreign exchange market interventions, the factors triggering interventions are usually identified by estimating reaction functions of central banks. We follow a similar route and estimate a quantitative reaction function model that belongs to the class of so-called qualitative dependent variable models. Such models have recently been used in the empirical literature on foreign exchange market interventions of central banks by, for example, Baillie and Osterberg (1997a), Beine, Benassy-Quere, and Lecourt (2002), and Dominguez (1998).[1] However, the qualitative dependent variable models that have often been used in this literature are in general not suited to shed light on the factors that determine the magnitude of central banks' foreign exchange market interventions.[2] Therefore, we use an alternative qualitative dependent variable model. More specifically, we apply the ordered probit model. Recently, the ordered probit model has been successfully applied by, for example, Davutyan and Parke (1995) and Eichengreen, Watson, and Grossman (1985) to estimate reaction function models describing central bank discount rate policy.

We apply the ordered probit model to analyze the intervention policy of the Japanese monetary authorities (henceforth referred to as JMA).[3] To this end, we make use of the fact that the JMA recently released a comprehensive data set on their interventions in foreign exchange markets during the period from 1991 through 2001. This release of data on their foreign exchange interventions constituted a significant change in the information policy of the JMA. Until the beginning of 2002, the JMA did not publish any data on their foreign exchange market interventions. In fact, official intervention data were in general only made available to researchers mainly by the Fed and the Deutsche Bundesbank. For this reason, most empirical studies have focused on the central bank

[1] Useful surveys of the earlier empirical literature are presented in Almekinders (1995) and Edison (1993).

[2] See, however, the models developed by Almekinders and Eijffinger (1994, 1996).

[3] In Japan, the jurisdiction over decisions on whether or not to intervene in the foreign exchange market rests with the Japanese Ministry of Finance. The Bank of Japan conducts transactions as an agent of the Ministry of Finance. See Ito (2002) for a discussion of the institutional details.

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