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Announcements, financial operations or both? Generalizing central banks' FX reaction functions

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ABSTRACT

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This paper generalizes the reaction functions of central banks' FX interventions to include oral interventions alongside actual ones. Using Japanese data for the 1991–2004 period, we estimate an ordered-probit model explaining the occurrence of each type of intervention and evaluating the extent to which oral and actual interventions are substitutes or complements. In addition, the effectiveness of interventions is examined using an event-study approach. Our results indicate that the Japanese authorities tended to adopt progressively stronger measures as the exchange rate was found to behave in an increasingly unfavorable way. This suggests that words and deeds were only coordinated (i.e. used in a complementary way) in extreme cases. Overall, interventions are found to be moderately successful in correcting unwanted exchange-rate developments, especially volatility. *J. Japanese Int. Economies* **xxx** (xx) (2009) xxx–xxx. DULBEA, Université Libre de Bruxelles, 50 Av. F. D. Roosevelt, 1050 Bruxelles, Belgium; Louvain School of Management - Namur Campus, Rempart de la Vierge 8, Belgium.
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1. Introduction

The Japanese authorities have so far limited themselves to verbal [oral] *intervention, with Vice-Finance Minister Koji Tanami warning overnight that Japan will take appropriate measures in the event of drastic currency market fluctuations. But traders said the Bank of Japan would have to spend money intervening to convince the market that Japan was resolute about halting the yen's rally* (Reuters, January 11, 1999).

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Although all monetary authorities intervene in the foreign exchange (FX) market in order to influence exchange rates, different types of intervention can be distinguished. Actual interventions involve financial transactions (i.e. currency sales or purchases) whereas oral interventions do not (i.e. they are simply oral announcements). While evidence from the major economies (the United States, the Eurozone and Japan) indicates a clear shift toward fewer actual interventions, oral interventions continue to be frequently used. Understanding why one type of intervention is used rather than another is an important issue. Researchers have mainly concentrated on actual interventions largely focusing on their determinants and effects for various countries and periods (Dominguez and Frankel, 1993; Almekinders and Eijffinger, 1996; Dominguez, 1998; Beine et al., 2002; Ito and Yabu, 2007 among many others). It is only recently that researchers have become interested in the authorities' communications policy and particularly in the role played by oral interventions as substitutes for or complements to actual interventions (see Beine et al., 2009; Fratzscher, 2008a).

This paper aims to identify useful factors to facilitate our understanding of why each type of intervention occurs. We propose to analyze the FX intervention topography in the light of the signaling theory (Mussa, 1981), which assumes that actual and oral interventions share the ability to influence market agents' expectations by conveying central banks' private information. According to Dominguez (1998), it is the nature of interventions (i.e. their signal "strength") that determines their effect on the exchange-rate dynamics. We thus need to classify interventions according to the strength of the signal they convey. As secret interventions (i.e. actual interventions not contemporaneously detected by the market) do not carry an explicit or visible signal, they cannot be distinguished from private trades (Evans, 2001). Secret-intervention days can thus hardly be differentiated from non-intervention days. By contrast, interventions that are perceived by market participants naturally convey a strong and explicit signal that must be assessed. In this regard, as the total cost supported by the authorities depends on the type of operation carried out, we assume that the cost associated with the different types of visible intervention is an indicator of the signal strength. In other words, we infer that the authorities' determination to correct a bad exchange-rate dynamics is given by the cost of their intervention.

To understand the occurrence of different types of intervention, we estimate an extended intervention reaction function on traditional determinants (i.e. the deviations of the exchange rate from a particular target, the exchange-rate volatility, and the general environment of the economy). We use an ordered probit specification, which is convenient for modeling ordered variables and obtaining threshold estimates determining the levels of imbalance leading to the use of increasingly strong interventions. These thresholds also determine whether oral interventions play the role of substitute for or complement to actual interventions. Furthermore, given that interventions are used by central banks in an attempt to regulate exchange rates, a natural extension is to determine whether interventions (secret or not) are an effective policy at all. Therefore, in a final step, we propose to explore this question using an event-study approach over different time horizons.

The paper is organized as follows: The theoretical discussion of the different types of intervention and the way they have been studied in the literature is presented in Section 2. A discussion of the transmission channels of sterilized interventions and the methods used to classify interventions according to the strength of the signal they convey is contained in Section 3. The econometric model and the data are described in Section 4, while our empirical results are discussed in Section 5. The effects of the different policies on exchange rates are discussed in an extension in Section 6. Section 7 contains our conclusions.

2. Interventions on the foreign-exchange (FX) markets

According to Dominguez and Frankel (1993), an intervention can be broadly defined as "*any transaction or announcement by an official agent of a government that is intended to influence the value of an exchange rate*". Countries intervene in the FX market when they perceive that the exchange-rate

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