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Informative trading or just costly noise? An analysis of Central Bank interventions ☆

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Abstract

We conduct an empirical investigation of the impact of Central Bank intervention on the process of price formation in foreign exchange markets. The main contributions of this paper are (i) in considering the effects of official interventions on multiple dimensions of such a process beyond the first and second moment of currency returns and (ii) in exploiting insights from the analysis of market liquidity in proximity of these trades to explain their effectiveness. For that purpose, we employ a unique dataset of tick-by-tick indicative quotes and intraday (informative) sterilized spot interventions and (uninformative) customer transactions executed by the Swiss National Bank (SNB) on the Swiss Franc/U.S. Dollar exchange rate (CHFUSD) between 1996 and 1998. Using several empirical strategies (some of which are novel to the exchange rate literature), we find that the effectiveness of these trades is crucially related to their perceived information content, rather than to imperfect substitutability or inventory considerations. Indeed, regardless of their size, only SNB interventions (especially when unexpected or leaning against the wind) have significant and persistent effects on daily CHFUSD returns, although they often fail to smooth currency fluctuations. Nonetheless, only SNB interventions, regardless of their effectiveness, induce significant misinformation and heterogeneity of beliefs among market participants and deteriorate market liquidity. These

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externalities always translate into higher, economically significant transaction costs borne by investors.

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1. Introduction

Central Bank interventions are one of the most interesting and puzzling features of the global foreign exchange (forex) markets. Central Banks often engage in individual or coordinated efforts to influence exchange rate dynamics, either to strengthen or resist market momentum, to calm disorderly market conditions, to signal current or future economic policies, or to replenish previously depleted reserves. There is strong consensus in the economic literature (e.g., Adams and Henderson, 1983) that *unsterilized* interventions, by affecting the existing stock of high-powered money, influence the exchange rate through the traditional channels of monetary policy. The effectiveness and necessity of *sterilized* interventions, i.e., those accompanied by offsetting actions on the domestic monetary base, are instead still controversial, and, as such, at the center of the current theoretical and empirical debate.[1]

Within the standard macroeconomic approach, sterilized interventions may affect the exchange rate through either of two channels: imperfect substitutability or signaling. The first channel is usually examined in the context of portfolio balance models (e.g., Branson, 1983, 1984) in which risk-averse market participants need to be compensated for holding sub-optimal portfolios following the intervention. The second channel (Mussa, 1981; Bhattacharya and Weller, 1997) allows sterilized intervention to affect prices by conveying not only information on policy intentions, but also fundamental information about the future value of the currency. Yet, according to Dominguez (2006, p. 1052), ‘‘neither of these channels is easily reconciled with the empirical evidence’’ on whether and how interventions influence exchange rate movements and volatility, especially in the short run.[2]

Within the newer market microstructure approach to currency determination (see Lyons, 2001; Evans and Lyons, 2002), theoretical research concentrates on the process through which traders revise their expectations and dealers adjust prices, either temporarily or permanently, in response to sterilized interventions (e.g., Evans and Lyons, 2003; Vitale, 2003; Pasquariello, 2005). Two recent empirical advances, surveyed in depth by Neely (2005), have enhanced our understanding of these mechanisms. The first is

[1]See Sarno and Taylor (2001) for a survey.

[2]The empirical literature on imperfect substitutability (see Edison, 1993 for a review), with the exception of Dominguez and Frankel (1993a), finds that portfolio balance effects of official interventions on exchange rates are small and short-lived in the 1970s and the 1980s. More recently, however, Evans and Lyons (2003) show that even sterilized, secret, and uninformative Central Bank trades may impact exchange rates if they generate interdealer order flow. There is somewhat stronger evidence in support of the signaling channel (e.g., Dominguez, 1987; Kaminsky and Lewis, 1996; Payne and Vitale, 2003).