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Journal of International Economics 63 (2004) 179–208

**Journal of
INTERNATIONAL
ECONOMICS**

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The liquidity effects of foreign exchange intervention

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Received 24 February 2000; received in revised form 30 December 2002; accepted 21 January 2003

Abstract

This paper examines the effectiveness of foreign exchange intervention in a two-country, two-currency, general equilibrium model that allows for liquidity effects. Both sterilized and non-sterilized intervention operations have significant impacts on the allocation of liquidity in international financial markets. Whether intervention is successful in moving the exchange rate in the desirable direction depends upon the degree of sterilization of intervention and the intratemporal elasticity of substitution of the consumption goods. The model shows that there exist circumstances in which the response of exchange rate to intervention is ‘perverse’ as documented in the empirical literature.

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Keywords: Foreign exchange market; Sterilized and non-sterilized intervention; Liquidity effects

JEL classification: F31; F41

1. Introduction

In order to affect the exchange rates, monetary authorities intervene in foreign exchange markets by buying or selling foreign exchange, normally against their own currency. There are two types of interventions: non-sterilized intervention and sterilized intervention. Non-sterilized intervention affects the supply of domestic currency in the foreign exchange market, and results in a change in the domestic monetary base. Its effect on the nominal exchange rate is therefore analogous to that of a change in domestic monetary policy. Sterilized intervention neutralizes the effect of foreign exchange intervention on the domestic monetary base by an offsetting open market operation of domestic-currency-

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denominated bonds, and causes only a ‘pure’ change in the currency denomination of assets held by the public. Hence, sterilized intervention is independent of monetary policy, and if it is an effective instrument for exchange rate management, monetary authorities can maintain greater flexibility of their monetary policy. Because of this reason, there has been a large research effort on the effectiveness of sterilized intervention in theory and practice.

In the literature, sterilized intervention has been viewed as having effects on exchange rates through either of two channels: the portfolio-balance channel and the signaling channel.¹ However, the evidence on the effectiveness of intervention via the two channels is inconclusive. Given the data showing that interventions in the markets for major currencies have been substantial and frequent in recent years, there is a clear need to provide a satisfactory explanation of why central banks engage in foreign exchange interventions to such a large extent.

As both sterilized and non-sterilized intervention operations result in changes in asset supplies, such changes can have significant impact on liquidity in international financial markets. When economic agents are subject to liquidity constraints, liquidity effects induced by official intervention should be taken into account. The analyses of the effectiveness of intervention via the portfolio-balance channel and the signaling channel have ignored the crucial function of international financial markets in allocating liquidity across market participants. Hence, it will be beneficial to investigate theoretically the impacts of intervention within the context of a two-country, two-currency, general equilibrium model that allows for liquidity effects.

Recent work on liquidity effects of monetary policy shocks in closed economy settings by [Bernanke and Blinder \(1992\)](#), [Christiano and Eichenbaum \(1995\)](#), and [Strongin \(1995\)](#) have provided strong empirical support for liquidity effects.² [Eichenbaum and Evans \(1995\)](#), and [Grilli and Roubini \(1995\)](#) extend this line of research to open-economy settings and find that expansionary shocks to US monetary policy are followed by sharp declines in US interest rates and sharp depreciations in US nominal and real exchange rates.³ These findings are consistent with the predictions of the open-economy models allowing for liquidity effects studied by [Grilli and Roubini \(1992\)](#), [Ho \(1993\)](#), and [Schlagenhauf and Wrase \(1995a,b\)](#). By following [Lucas \(1990\)](#)’s approach to modeling an asymmetry of monetary injections, these theoretical models examine the liquidity effects of monetary shocks on the world economy.⁴ As economic agents are affected by the

¹ See [Edison \(1993\)](#) and [Dominguez and Frankel \(1993\)](#) for detailed surveys of the empirical research on the effectiveness of intervention via the two channels documented in the earlier literature, and see [Sarno and Taylor \(2001\)](#) for a survey of the more recent literature on official intervention.

² These papers find that positive shocks to money lead to reductions in the short-term nominal interest rates and increases in output in the United States.

³ [Grilli and Roubini \(1995\)](#) examined data of the G-7 countries and found that while US interest rates rise and the US dollar appreciates significantly on impact following a positive interest rate shock in the US, such shocks in the non-US G-7 countries are often associated with an impact depreciation of their currency value relative to the US dollar. However, they showed that after controlling for US monetary policies and expected inflation, the response of exchange rates to positive interest rate shocks was a persistent currency appreciation in most of the G-7 countries.

⁴ [Fuerst \(1992\)](#) is the first paper to introduce production into [Lucas \(1990\)](#)’s closed-economy model.

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