



# The relative effectiveness of sterilized and non sterilized foreign exchange market interventions

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## Abstract

This paper examines the impact of non sterilized and sterilized foreign exchange market operations on both the exchange rate and domestic interest rate within the context of a rational expectations portfolio balance model. The results show that non sterilized intervention will be more effective than sterilized intervention in affecting both the exchange rate and domestic interest rate. Both types of operations affect a market risk premium that is shown to be a function of relative asset supplies in the hands of the private sector. When domestic and foreign bonds are perfect substitutes, the risk premium vanishes and so to does the effectiveness of sterilized foreign exchange market interventions.

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## 1. Introduction

There is a considerable literature examining the impact of foreign exchange market interventions by central banks see, for example, [Adams and Henderson \(1983\)](#), [Argy \(1982\)](#), [Fatum and Hutchison \(2003\)](#), [Genberg \(1981\)](#), [Kenen \(1982, 1987\)](#) and the excellent survey by [Taylor and Sarno \(2001\)](#). This literature has tended to focus primarily upon the exchange rate effects of intervention, however, it is equally important to focus the interest rate effects

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of such operations. The impact on the domestic economy of foreign exchange market intervention is combination of these two effects. In this paper, we use a dynamic specification of the portfolio balance model to show how both the exchange rate effects and interest rate effects are linked to their impacts on a risk premium that is a function of relative asset supplies in the hands of private agents. The only other paper to examine the effects of exchange market intervention on the risk premium has been [Dooley and Isard \(1983\)](#) who used a static expectations model.

## 2. The model

The model we draw upon for analysing the effects of sterilized and non sterilized intervention in the foreign exchange market is a rational expectations version of the portfolio balance class of exchange rate models attributable to [Branson \(1976\)](#) and [Kouri \(1983\)](#). There are three assets that are held in the portfolios of the private agents and the authorities: Domestic monetary base,  $M$ ; domestic bonds denominated only in the domestic currency,  $B^*$ ; foreign bonds denominated only in the foreign currency,  $F^*$ . Domestic bonds may be held by either domestic agents or the authorities. The supply of domestic bonds is assumed to be fixed as:<sup>1</sup>

$$B^* = B + B_a \quad (1)$$

where  $B^*$  is the fixed net supply of domestic bonds,  $B$  is the domestic bond holdings of private agents and  $B_a$  is the domestic bond holdings of the authorities. The country's net holding of foreign bonds is held by private agents and the authorities which we assume to be positive in both cases and equal to the summation of previous current account surpluses. The holdings of foreign assets may be increased or decreased over time via a current account surplus or deficit. Thus, we have:

$$F^* = F + R \quad (2)$$

where  $F^*$  is the net foreign bond holdings of the country,  $F$  is the foreign bond holdings of private agents and  $R$  is the stock of foreign bonds held by the authorities in their reserves valued in foreign currency. The domestic monetary base liability of the authorities is equivalent to the assets of the authorities<sup>2</sup> so that:

$$M = B_a + SR \quad (3)$$

where  $S$  is the exchange rate defined as domestic currency units per unit of foreign currency. Total private sector financial wealth at any point in time is given by the identity:

$$W = M + B + SF \quad (4)$$

<sup>1</sup> In essence, this means we are considering balanced budgets.

<sup>2</sup> It is assumed that capital gains or losses to the authorities as a result of exchange rate changes do not affect the monetary base.

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