Is foreign exchange intervention by central banks bad news for debt markets?: A case of Reserve Bank of Australia's interventions 1986–2003

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Abstract

We investigate the effects of the Reserve Bank of Australia's foreign exchange interventions on the USD/AUD market and 90-day and 10-year interest rate futures markets for the period July 1986–December 2003. Using recently released revised and updated intervention data, we investigate contemporaneous and disaggregated intervention influences and find significant evidence for (i) intervention effectiveness in moderating the contemporaneous exchange rate movements especially if interventions were cumulative and large, (ii) exchange rate volatility reducing effect with a day's lag, (iii) undesirable interest rate movements following interventions in some periods compromising monetary policy effectiveness, and (iv) a volatility reducing effect of cumulative interventions in the 90-day rate, and a volatility increasing effect of large interventions in both the 90-day and 10-year rate futures. These findings are a unique and significant contribution to the prevailing literature as they demonstrate that the RBA's interventions matter not only for the foreign exchange market but also for the debt markets.
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1. Introduction

Central bank intervention in the foreign exchange market has been based on a belief that central banks' participation in the market was indeed successful in achieving the twin aim of influencing the direction of exchange rate and calming volatility. The extant literature on interventions reports a common finding of a higher foreign exchange volatility and undesirable exchanges rate movements being associated with intervention on the days of intervention. Various researchers who examined the operations of major central banks (the Federal Reserve, the Bundesbank, and the Bank of Japan) to have arrived at this conclusion include: inter alia Beine (2004), Bonser-Neal and Tanner (1996), Baillie and Osterberg (1997a,b), Chang and Taylor (1998), Dominguez (1998), Frenkel et al. (2005). Similarly, the Reserve Bank of Australia's (RBA) intervention operations have been reported to be either ineffective in influencing the trend of the exchange rate or at the very worst to exacerbate second moment disturbances (Edison et al., 2003; Rogers and Siklos, 2003; McKenzie, 2004).

The most important factor that is common in these studies is the issue of simultaneity between the interventions and the first and second moments of contemporaneous exchange rate changes. Much of the empirical work has often assumed that the decision to intervene is made exogenous of market conditions. However, such an assumption is a rather extreme one considering that central monetary authorities have explicitly declared they intervene to calm disorderly markets (Baillie and Osterberg, 1997a; Dominguez, 1998; Frenkel et al., 2005; Kim and Sheen, 2002). As a consequence, models that do not take into account this endogeneity will likely indicate a positive correlation between conditional volatility and intervention and lead one to the erroneous conclusion that higher volatility is a consequence of intervention, rather than a rationale for it.

There are essentially two approaches in handling the simultaneity issue, modeling approach and data approach. The former aims to address the simultaneity by devising econometric models that avoid the endogeneity of intervention variables when modeling the intervention effects on exchange rates. This might be accomplished by utilizing instrument variables that are highly correlated with interventions but not correlated with exchange rate movements. If such instruments can be found, one might carry out an instrumental variable estimation of the first and second moments of exchange rate changes on the days of intervention. Alternatively, exchange rate changes and interventions can be jointly modelled as a part of systems estimation. However, parametric representation of such a system is very difficult, if not impossible, because of the non-standard nature of the distribution of the intervention variable. The intervention variable has three distinct types of observations, positive and negative values and zeroes, and so it would be appropriate to treat the intervention variable to have been generated from a mixture of three distributions rather than one continuous distribution. This makes it very difficult to jointly model intervention with exchange rate changes, which have a continuous distribution.[1] Kearns and Rigobon (2005) makes a contribution in this regard. They estimated a simulated GMM model of the mean

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[1] Kim and Sheen (2002) modified the friction model initially proposed by Almekinders and Eijffinger (1996) and effectively addressed this mixture of distributions in the intervention variable, albeit with a partial equilibrium framework, in investigating the reaction function of the RBA intervention.