Central bank intervention and exchange rate volatility — Australian evidence

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Abstract

This paper examines the key characteristics of foreign exchange intervention by the Reserve Bank of Australia in the period 1983–1997, which can be broken into five distinct phases. We investigate the changing effectiveness of daily intervention on the US$/A exchange rate by decomposing the exchange rate response to the intervention into various separate components. We find contemporaneous positive correlation between the direction of intervention and the conditional mean and variance of exchange rate returns. We show that sustained and large interventions have a stabilising influence in the foreign exchange market in terms of direction and volatility. Without these interventions, the market would have moved further and exhibited more volatility. © 2000 Elsevier Science B.V. All rights reserved.

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1. Introduction

The effectiveness of foreign exchange intervention by central banks has been studied at length in the last 30 years. Much of the early literature focused only on the longer term implications and objectives of intervention, being constrained by the availability of only low frequency data on the central bank activities. Generally the evidence on the effectiveness hypothesis from this data was weak, and that is a generous interpretation. Yet central banks have continued to intervene, believing from their experience that intervention does indeed work. In the last 20 years, many central banks have made available information on their daily interventions, which have allowed researchers to study the inter-daily features of exchange rate intervention on the foreign exchange market. Although tick-by-tick data is really needed to fully evaluate the effectiveness on an intra- and inter-daily basis, daily data availability has meant that it is possible to test effectiveness arising from micro-structural features of the foreign exchange market.

There is a popular view that central banks (or their treasuries, where they are dependent) have no special knowledge or ability in the busy foreign exchange market place, nor do they have adequate reserve resources to determine the direction of the exchange rate. Any intervention is believed to add further confusion in periods of turbulence exacerbating uncertainty and thus volatility. If the case for a fixed exchange rate, or an EMS bandwidth system, cannot be supported, then the central bank is advised to keep out of the market altogether. Looking at intervention data, it is immediately apparent that there are often long stretches of time when intervention has been dormant, even in periods when there has been considerable turbulence in the markets. So this popular view has certainly had some influence.

In apparent support, almost all the empirical work with high frequency data has found that the intervention on any day is positively correlated to the conditional variance of exchange rate change for that day, or else uncorrelated. Dominguez (1998) finds some significant rises in conditional volatilities of US exchange rate returns on the days of secret intervention by the Federal Reserve Bank, the Bundesbank and the Bank of Japan (although there were some falls for reported interventions by the first two banks). Baillie and Osterberg’s (Baillie and Osterberg, 1997) GARCH research shows that foreign exchange intervention by these central banks in 1985–1990 had no significant impact on the conditional mean and variance of changes in the spot US exchange rates. Others who report significant positive intervention effects on exchange rate volatilities include Almekinders and Eijffinger (1994) and Bonser-Neal and Tanner (1996).

A similar phenomenon sometimes shows up with the conditional mean, which may suggest the central bank adds to destabilising speculation in the market. Baillie and Osterberg (1997) conclude that intervention generally had no effect on the change in the exchange rate, though purchases of the SUS by the Fed was correlated with contemporaneous depreciations of the dollar. Dominguez (1998) estimates but does not report conditional mean effects, though Dominguez and Frankel (1993) do find that in 10 out of 11 episodes of clustered interventions
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