

Foreign exchange market intervention in two small open economies: the Canadian and Australian experience

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Abstract

We examine intervention by the Bank of Canada and the Reserve Bank of Australia for daily data from 1989 to 1998. Both central banks intervene in response to excessive exchange rate volatility and uncertainty. Volatility is the implied volatility of foreign currency futures options. Uncertainty is the kurtosis of the implied risk-neutral probability density functions. We also examine the impact of inflation targets. Unlike other studies we also consider commodity futures prices. These turn out to help explain the effectiveness of intervention. Central bank intervention was largely unsuccessful in both countries though volatility and kurtosis were modestly affected.

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1. Introduction

Is foreign exchange intervention, especially in small open economies such as Canada and Australia, effective? What is its impact on market volatility and uncertainty and how might regime changes influence the results? Why Canada and Australia? Both are archetypical small open economies. Moreover, both have introduced inflation targets and have made their central banking operations more transparent.

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Taylor (2000) argues that a flexible exchange rate and inflation targeting are two elements in the “trinity” that defines a sound monetary policy (the third being the adoption of a monetary policy rule). Both countries’ currencies are viewed as being sensitive to similar factors such as interest rate and inflation differentials vis-à-vis the US, and investors’ expectations of domestic policies. In addition, financial markets often portray both of these currencies as being “commodity currencies”.¹

Yet there are also some interesting differences between the two countries. The Bank of Canada (BoC) has targeted inflation longer than has the Reserve Bank of Australia (RBA) and, until recently perhaps, its commitment to inflation targeting was considered more formal.² Also, the BoC has, at various times, emphasized the role of a monetary conditions index (MCI)³ while the RBA does not rely on such an indicator (Stevens, 1998). Finally, as we shall see, the record of interventions by the BoC and the RBA also reveal some interesting differences.

Some studies of foreign exchange intervention examine particular events (e.g., the Quebec Referendum, the Mexican and Asian financial crises) to determine if central bank intervention is successful (Murray et al. (1997) is an exception). Here we take a time series view and ask: what is the impact of intervention in foreign exchange markets, and has the adoption of inflation targets played a role in the scale and intensity of intervention over time? More importantly, we investigate whether intervention has an impact not just on exchange rate levels and their volatility but also on the uncertainty surrounding extreme movements in the exchange rate.

The rest of this paper is organized as follows. First, we briefly summarize the extant literature. Section 3 describes the model to be estimated, while Section 4 discusses the data and econometric specifications. Volatility is proxied by the implied volatility of currency futures options while uncertainty of extreme outcomes is proxied via the kurtosis of the implied risk-neutral probability density functions derived from these same implied volatilities. Finally, our specifications explicitly capture the effect that commodity prices might have on volatility, kurtosis, and intervention. This is a potentially important feature in the context of two currencies often labeled “commodity currencies,” and heretofore unaccounted for in comparable empirical work. Section 5 presents the empirical evidence.

We find that the RBA was effective in reducing volatility but that its intervention increased market uncertainty. BoC interventions were not found to influence volatility or kurtosis.⁴ Finally, the period since inflation targets were introduced in both countries produces significantly different outcomes for both implied volatility and

¹ In Canada, this is implicitly recognized in the (monthly) Bank of Canada equation used to predict the real exchange rate since it includes the commodity terms of trade as a determinant. For a recent application of the so-called Bank of Canada equation. See Murray (1999).

² The Bank of Canada inflation target is a range, currently at between 1–3% in the CPI. The RBA’s inflation target is an “average” of 2–3%. See Siklos (1999) for more details.

³ The MCI is a linear combination of exchange rate and interest rate movements. See www.bank-banque-canada.ca/english/backgrounders/bg-p3.htm and Siklos (2000).

⁴ A referee has pointed out that increased uncertainty as a result of intervention can be taken as a sign that it has been effective by introducing two-way risk in the market. While this might be true it was not the stated intention of intervention, at least according to central bank policy statements.

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