Currency intervention: A case study of an emerging market[☆]

CrossMark

Renée A. Fry-McKibbin [a,∗], Sumila Wanaguru [a,b]

[a] Centre for Applied Macroeconomic Analysis (CAMA), Crawford School of Public Policy, The Australian National University, Canberra, ACT 0200, Australia
[b] Central Bank of Sri Lanka, Sri Lanka

ABSTRACT

Using a unique dataset on daily foreign exchange intervention and a new methodological framework of a latent factor model of central bank intervention, this paper addresses the effects of intervention in an emerging market. Events in financial markets from 2002 to 2010 provide a natural experiment to evaluate the short and medium term objectives of the central bank to contain excessive exchange rate volatility and to accumulate foreign reserves respectively. In the low volatility period in the first part of the sample, the central bank is successful in influencing the currency when pressure is to appreciate, accumulating international reserves. The same model estimated for the global volatility period in the second part of the sample shows the central bank intervening to mitigate excessive exchange rate volatility in line with the short-term objective. The results point to the need to consider the cross currency market interdependence between emerging markets when modeling intervention.

© 2013 Elsevier Ltd. All rights reserved.

1. Introduction

The motives for central banks to intervene in the foreign exchange market include reducing the economic costs associated with exchange rate volatility which affects international trade, financial

flows, foreign investment and economic growth, and accumulating international reserves to strengthen a country's macroeconomic fundamentals (Szakmary and Mathur, 1997; Sarno and Taylor, 2001; Disyatat and Galati, 2007; Pointines and Rajan, 2011). These objectives are particularly important for emerging markets as they are more prone to and affected by external shocks than their developed counterparts. Meanwhile, accumulating international reserves helps to establish the confidence of foreign investors in the domestic economy by positively affecting sovereign risk, and vulnerability to external shocks can be alleviated through a high level of reserve adequacy (Mulder and Perrelli, 2001; Dominguez et al., 2011). Using a unique dataset on daily foreign exchange intervention and a new methodological framework, this paper addresses the effects of intervention on exchange rate volatility and reserve accumulation for emerging markets using Sri Lanka as an example.[1]

The officially announced intentions of the Central Bank of Sri Lanka are exactly those mentioned above but with a time frame associated with each objective in that in the short term, intervention is to contain excessive volatility in the exchange rate, and in the medium term is to accumulate international reserves (Central Bank of Sri Lanka, 2007).[2] Determining the effects of intervention for emerging markets is constrained by data availability and with the exception of Disyatat and Galati (2007) for the Czech Koruna, there are few published works in this area.[3] Sarno and Taylor (2001) and Disyatat and Galati (2007) provide good surveys to evaluate intervention and its effects on exchange rate volatility with the conclusions tending to be that intervention can be effective and is conducted mainly in response to a rapidly appreciating domestic currency. From a reserve accumulation perspective, the large stocks of reserves held by emerging markets is now attracting attention following the economic and financial market collapses of the last five years. Important papers examining this issue include Dominguez et al. (2011) and Dominguez (2010).

A framework which naturally lends itself to modeling central bank foreign exchange intervention but which has not previously been applied to this topic is the latent factor framework.[4] This class of models is often used to calculate volatility decompositions to decompose financial market asset returns into specified sources of volatility associated with the factor structure such as global, domestic, asset market or country factors (Diebold and Nerlove, 1989; Mahieu and Schotman, 1994; Dungey, 1999). This paper constructs a factor model of intervention for a set of daily currency returns of Sri Lanka and its major trading partners as well as Sri Lankan intervention data which is modeled endogenously.

The weight placed on the objectives of a central bank's intervention policy at any point in time is a function of the prevailing external global economic environment, the domestic economic environment including policy regime choices, as well as the general level of development of a country. Our model reflects this environment for an emerging country by specifying each Sri Lankan and trading partner currency return as a function of global, domestic and intervention factors. The global factor affects all currency returns in the model but allows each market to respond in different ways. It captures movements external to the domestic economy and encompasses concepts such as but not exclusively global market fundamentals, global liquidity conditions and general trader risk aversion. A domestic factor is specified for each variable and captures movements specific to each market. Intervention is also a function of global and domestic factors. Using the fact that it is known on which days intervention policy is enacted, an additional intervention factor is specified for the Sri Lankan currency equation which shares features of the net intervention equation. This relationship exists only on days on which the central bank intervenes and the feature of known intervention days is also used as part of the identification of the model.

Events in financial markets in the sample period from January 2002 to December 2010 provide a natural experiment to evaluate the short and medium term objectives of the Central Bank. The model is

---

[1] We are grateful to the Central Bank of Sri Lanka for providing us with all data, particularly the intervention data.

[2] Intervention in Sri Lanka is not aimed at targeting an exchange rate level (Central Bank of Sri Lanka, 2007), implying that the intervention strategy is to 'lean against the wind' to reduce exchange rate volatility.

[3] Emerging country central banks and organisations such as the International Monetary Fund aim to fill this gap (Pattanaik and Sahoo, 2001; Mandeng, 2003; Guimarães and Karacadag, 2004; Herrera and Ozbay, 2005; Kamil, 2008; Adler and Tovar, 2011).

[4] The manuscript, Aruman (2003) considers intervention in a latent factor framework but uses a factor structure different to that adopted here.