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The impact of monetary policy on the exchange rate: A high frequency exchange rate puzzle in emerging economies

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A B S T R A C T

This study investigates the impact of monetary policy shocks on the exchange rates of Brazil, Mexico and Chile. We find that even a focus on 1 day exchange rate changes following policy events – which reduces the potential for reverse causality considerably – fails to lend support for the view that associates unexpected interest rate hikes with immediate appreciations. This lack of empirical backing for the predictions of standard open economy models persists irrespective of whether we use the US Dollar or effective exchange rates, whether changes in the policy rate that were followed by exchange rate interventions are excluded, whether "contaminated" events are dropped from the analysis or whether we allow for non-linearities. We argue that it is difficult to attribute this stronger version of the exchange rate puzzle to fiscal dominance, as unexpected rate increases are not associated with increases in risk premia, and similar results are obtained in the case of Chile – a country that has had the highest possible short-term credit rating since 1995 and a debt/GDP ratio below 10%.

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"*If the relationship between interest rates and exchange rate movements were predictable, the effectiveness of the exchange rate transmission channel would be helpful to monetary policy. But in practice this relationship remains rather inscrutable.*"

Ian Plenderleith, Deputy Governor, South African Reserve Bank

1. Introduction

The extent to which monetary factors determine the value of a currency has been one of the key questions of macroeconomics for a long time. While an extensive list of studies has addressed this question and the associated puzzles in the case of developed countries, the literature that looks at this issue in the context of emerging markets has been much more scant, in part because most emerging markets do not have a sufficiently long track record with a floating exchange rate regime. As the number of emerging economies that let the value of their currency be driven by market forces has increased, and the value of the currencies of these increasingly important players in the global economy has come to the forefront of the international policy debate, the need of a clearer understanding of the determinants of the value of their currencies has raised the necessity of such analysis. At the very least, some knowledge about the actual relationship between interest rate and exchange rate movements in emerging economies is required to guide model selection in the context of emerging markets and provide a clearer understanding of the transmission mechanisms that are at work.

Conventional open economy models that combine an uncovered interest parity condition with rational expectations, along the lines of the seminal paper by Dornbusch (1976), would suggest that an unexpected monetary contraction leads to an immediate appreciation of the currency, so as to create the conditions for a subsequent depreciation at a rate that equals the interest rate differential. More generally, the association of interest rate hikes with currency appreciations is also a standard feature of many other workhorse models of international macro and, indeed, of macroeconomic textbooks. Identifying the effects of monetary policy shocks on exchange rates in the data however is not a trivial task if one takes proper account of the issue of endogeneity, i.e. the possibility that monetary policy actions constitute a reaction to concomitant changes in the exchange rate or foreign monetary policy conditions. Indeed, an important study by Zettelmeyer (2004) has argued that the frequent association of positive interest rate shocks with currency depreciations – which is a well known feature of the VAR literature (see for instance Grilli and Roubini (1995) and Hnatkovska et al. (2011)) – can be attributed to this problem of reverse causality.[2] In order to control for this possibility, this paper follows the event study approach taken by Zettelmeyer, to study the impact of monetary policy committee decisions on the exchange rates of the Brazilian Real, the Mexican and the Chilean Peso using daily variations.[3] The main advantage of the event based methodology is that it allows us to properly control for the fact that the monetary authorities of these emerging economies have frequently intervened in the foreign exchange markets – something that has been ignored in earlier developing country studies. Furthermore, a second advantage of our methodology is that our results are not model dependent and, in particular, do not rely on VAR based identification of monetary policy shocks and the strong information assumptions that underlie it. It is important to remember that VAR based procedures require the strong assumption that the information set of the central bank is fully described by the variables contained in the system. The main caveat of our choice is that we are unable to draw any conclusion about the dynamic response of the exchange rate to monetary policy shocks.

The focus on the cases of Brazil, Mexico and Chile allows us to compare the effects of monetary policy in emerging economies that have established floating exchange rate regimes, but have had markedly different levels of gross indebtedness. According to the *de facto* classification of Reinhart and Rogoff (2004) – and later

[2] Hnatkovska, Lahiri and Vegh's study argues that the exchange rate depreciates in response to positive shocks to the interest rate differential in 37 out of 49 developing countries. Their conclusions are based on monthly data.

[3] In contrast to Zettelmeyer, however, we do not restrict our study to monetary policy decisions that led to changes in the policy rate (as decisions to hold may also have a surprise component) and do not include periods in which the central banks responded to exchange rates in an explicit way.