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## Accounting for reserves



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Views on the effectiveness of sterilized reserve intervention vary. Sterilized intervention is generally seen as ineffective in advanced countries while persistent intervention by some emerging markets is often cited as contributing to undervalued exchange rates and current account surpluses. This paper argues that capital controls reconcile these views. We find strong and highly robust evidence that sterilized intervention is fully offset by outflows of private money in countries without controls, while controls partially block this offset. For a country with extensive capital controls, every dollar in additional reserves increases the current account by some 50–100 cents. This is mainly offset by an opposite adjustment in the current account of the United States—the dominant reserve currency issuer with the deepest and most liquid bond markets—with a smaller diversion to emerging markets.

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### 1. Introduction

Views on the effectiveness of sterilized reserve intervention vary both in the academic literature and among policymakers (Sarno and Taylor, 2001; Neely, 2005, 2008).<sup>1</sup> On the one hand, sterilized intervention is regarded as generally ineffective in all but the very short run in advanced economies such as Japan, on the other hand, persistent intervention by emerging economies such as China is often

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<sup>1</sup> Unsterilized intervention can be effective through the implied change in the monetary policy stance.

cited as leading to undervalued exchange rates and massive current account surpluses with global implications (Bernanke, 2005; Blanchard and Milesi-Ferretti, 2010).<sup>2,3</sup>

This paper reconciles these apparently competing views by examining the role of capital controls in conditioning the effectiveness of sterilized intervention. Economic theory suggests that sterilized intervention should generally be ineffective in advanced economies where reserve currency assets are perfect, or at least near-perfect, substitutes for domestic assets. The reason is that any sterilized increase in reserves (i.e., an increase that has no immediate impact on domestic activity via monetary policy) will be offset by an equal and opposite flow of private money.<sup>4,5</sup> By contrast, in a country with imperfect asset substitutability, the offsetting flow may only partially take place or not at all, thus rendering intervention effective (Dominguez and Frankel, 1993; Disyatat and Galati, 2007). In this paper, we test a related hypothesis of why intervention is effective in some countries but not in others, namely that the intensity of capital controls explains whether the offsetting flow takes place or not. Intuitively, with capital controls in place, the offsetting private flow may not take place even if domestic and foreign assets are otherwise perfectly substitutable.

If intervention is indeed effective in strengthening current accounts at least in some countries, such policies have important global implications (Bernanke, 2005); by accounting identity, the current account elsewhere must deteriorate. Hence, as a corollary to the analysis of the effectiveness of reserve accumulation, we also investigate if we can find its counterpart in the current accounts of other economies. We test a variety of hypotheses in this regard. In particular, we examine whether the counterpart to reserve accumulation in closed economies is a weaker current account in countries that issue reserve currencies (exorbitant privilege), whether it is splayed across large economies with open capital accounts more or less proportionately, or whether it disproportionately affects large emerging markets with open capital accounts.

The existing literature concentrates on factors that explain medium-term movements in current accounts but mostly does not consider official reserve flows (Chinn and Prasad, 2003; Gruber and Kamin, 2007; Chinn et al., 2011). The limited empirical work that does take reserve accumulation into account as a factor driving current accounts includes Gagnon (2011, 2012) who suggests that one dollar sold in support of the domestic currency translates into an improvement of about 40 cents in the average country's current account; Gagnon (2013) suggests the coefficient might be as large as 0.6–1. Reinhart et al. (2010) also suggest that reserve accumulation be positively associated with the current account, mainly for countries with closed capital accounts.

Our empirical approach is based on the regression framework in Gagnon (2012) which models the current account as a linear function of a range of structural determinants as well as a variable representing reserve accumulation. We add a range of interaction terms between reserve accumulation and measures of capital controls to this framework to test our hypotheses.

Anticipating our results, we find that for a country with a closed capital account every dollar in additional reserves increases the current account by between 50 and 100 cents—in other words, between zero and half of the accumulation of reserves is offset through private capital flows. For a country with an open capital account, however, the accumulation of reserves is fully offset, rendering it ineffective. We also find that the average effect across countries has fallen over time with the trend toward

<sup>2</sup> Intervention tends to be more effective when conducted as part of a coordinated action by major central banks. Since 1995, advanced economies have mostly avoided using intervention as a policy tool (Switzerland is a recent exception). Coordinated interventions of central banks in the major advanced economies have taken place in June 1998 to support the yen, in September 2000 to support the Euro and in March 2011 in the aftermath of the Japanese earthquake (Neely, 2011). Using an event study approach, Fatum and Hutchinson (2003) find evidence in favor of effectiveness of sterilized intervention in the dollar-mark market in the short run.

<sup>3</sup> See <http://www.federalreserve.gov/boarddocs/speeches/2005/200503102/default.htm>.

<sup>4</sup> Sterilized intervention should affect neither prices nor interest rates but could affect exchange rates through signaling and coordination channels or when there is a lack of substitutability between domestic and foreign assets, for instance when the magnitude of intervention is very large relative to the stock of outstanding assets (Sarno and Taylor, 2001; Neely, 2011). Our argument effectively assumes that these channels are muted in their effects on exchange rates and current accounts.

<sup>5</sup> Garcia (2011) suggests that sterilized intervention might have an expansionary impact on domestic activity even when it is not effective at depreciating the exchange rate. Céspedes et al. (2012) illustrate that sterilized interventions can matter because the shift in asset holdings in the private sector can relax financial frictions.

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