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# Adjustment patterns to commodity terms of trade shocks: The role of exchange rate and international reserves policies<sup>☆</sup>

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We analyze the way in which Latin American countries have adjusted to commodity terms of trade (CTOT) shocks in the 1970–2007 period. Specifically, we investigate the degree to which the active management of international reserves and exchange rates impacted the transmission of international price shocks to real exchange rates. We find that active reserve management not only lowers the short run impact of CTOT shocks significantly, but also affects the long run adjustment of REER, effectively lowering its volatility. We also show that relatively small increases in the average holdings of reserves by Latin American economies (to levels still well below other emerging regions current averages) would provide a policy tool as effective as a fixed exchange rate regime in insulating the economy from CTOT shocks. Reserve management could be an effective alternative to fiscal or currency policies for relatively trade closed countries and economies with relatively poor institutions or high government debt. Finally, we analyze the effects of active use of reserve accumulation aimed at

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smoothing REERs. The result support the view that “leaning against the wind” is potent, but more effective when intervening to support weak currencies rather than intervening to slow down the pace of real appreciation. The active reserve management reduces substantially REER volatility.

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*“I have wondered why it’s hard to make money in the foreign exchange market trading commodity terms of trade. Maybe this is the answer: central banks lean against the exchange rate effects of commodity price changes so that no opportunity exists.”*

*Michael Melvin, Black Rock and JIMF, September 2011*

## 1. Introduction

The recent (2010–2011) surge in commodity prices has brought to the forefront of policy debates the issue of terms of trade (TOT) volatility in emerging economies. An important aspect of this discussion relates to whether these price increases are permanent or transitory, and how they affect a country’s degree of international competitiveness. In many countries – Brazil being a prime example – terms of trade improvements have been accompanied by a surge in capital inflows. A number of prominent policy makers have argued that the combination of significant increases in export prices and higher capital flows has generated “Dutch Disease” type situations, where acute real exchange rate appreciation has resulted in the crowding out of non-commodities tradable industries. Within this picture, emerging countries’ policy makers have discussed a number of palliatives, including the imposition of controls on capital inflows, tax incentives to ailing tradable industries, and active central bank intervention in foreign exchange markets with the concomitant accumulation of international reserves. Most of these offsetting policies fall within the category of “selfinsurance.” These policy options, however, are shadowed by large opportunity costs, including forgone uses of international liquidity (e.g. in domestic investment), the loss of the independence of monetary policy (as posited by the famous “trilemma” proposition), and/or inefficiencies associated to the use of capital controls.

As a growing body of literature has shown, TOT volatility in emerging countries is 3 times higher than in industrial countries. This results in real income shocks that are 3.5 times as volatile as those affecting advanced countries (see IDB, 1995, and Hausmann et al., 2006). Among emerging markets, and over the last thirty years, Latin American economies have shown an over-exposure to shocks in their terms of trade (Edwards, 2010).

In this paper, we use a “commodity terms of trade” (CTOT) data set to analyze the way in which shocks to commodity prices affect the real exchange rate (REER), and the way international reserves and the exchange rate regime impact the transmission of CTOT to the REER. Our analysis focuses on the Latin American countries – the region that, as noted, has the highest volatility in CTOT – and covers the period 1970–2009. This concept of “commodity terms of trade” differs from the traditional measure in that it only includes the relative prices of a country’s commodity exports and imports, weighted by their country specific GDP shares. By excluding industrial goods, and concentrating on commodity prices, we focus on the most volatile component of import and exports prices. Specifically, this commodity terms of trade data set was constructed by Ricci et al. (2008), as follows:  $CTOT_i = \Pi(P_j/MUV)^{X_j^i} / \Pi(P_j/MUV)^{M_j^i}$ , where  $P_j$  is the price index for six commodity categories (food, fuels, agricultural raw materials, metals, gold, and beverages), and  $(X_j^i, M_j^i)$  are the average shares of commodity  $j$  in country  $i$ ’s exports and imports over GDP for the period 1970 through 2006, respectively. Commodity prices are deflated by the manufacturing unit value index (MUV). As Spatafora and Tytell (2009) have pointed out one of the desirable properties of CTOT is that, since  $X_j^i$  and  $M_j^i$  are averaged over time, the movements in CTOT are

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