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The effects of exchange-rate volatility on commodity trade between the U.S. and Brazil

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ABSTRACT

As Brazil continues its emergence as a major world economy, it has enjoyed both increased trade and capital inflow-fueled currency appreciations. But while it is often thought that exchange-rate volatility hurts trade, the economic literature has found that this is not always true. This study examines bilateral export and import flows between the United States and Brazil from 1971 to 2010, using cointegration analysis to estimate the effects of this risk. This study arrives at three main conclusions. First, while the majority of industries are not affected by volatility in the long run, an unexpectedly large share of those that are affected responds positively to increased risk. Second, sensitivity to risk differs markedly by industry sector: Brazilian exports of agricultural products are particularly harmed, while U.S. machinery imports are not impacted at all. Finally, products with small trade shares more likely to respond to increased uncertainty than are major exporters.

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1. Introduction

The economic performance of the world's emerging markets has continued to be impressive, even in the aftermath of the Global Financial Crisis that began in 2008. In particular, both trade and capital

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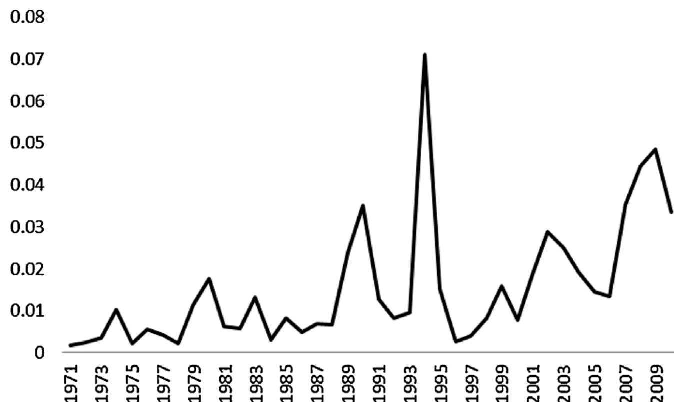

Fig. 1. U.S.–Brazilian real exchange-rate volatility, 1971–2010.

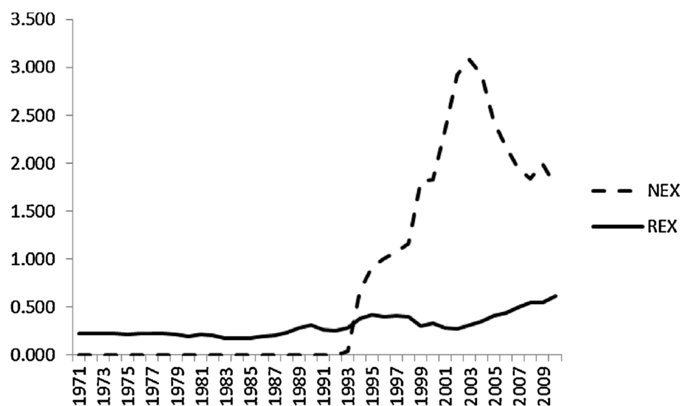

Fig. 2. U.S.–Brazilian nominal (NEX) and real (REX) exchange rates, 1971–2010.

flows in the so-called "BRICS" countries have performed well, especially in comparison to the United States and Europe. But, since much of these flows are based on commodity exports (such as diamonds in South Africa and oil in Russia), this has introduced macroeconomic instability as world demand and commodity prices fluctuate. Capital inflows can dry up if prices fall, lowering government revenue, GDP, and the exchange rate. As a result, these "commodity currencies" can be quite volatile.

What effect does this volatility have on emerging markets' trade flows? In this study, we look at Brazil's trade with the United States, for dozens of individual products, over the past four decades. We find that small industries are affected more than are large ones, and that U.S. imports of agricultural products are particularly hurt by exchange-rate variability. As Fig. 1 shows, the country's level of real exchange-rate volatility has increased in the past decade, even after spillover effects from the 1994 Mexican peso crisis subsided. Fig. 2 highlights that, while the nominal exchange rate has changed appreciably, particularly after Brazil's 1994 introduction of the real to replace the cruzieiro as its currency, the real rate has been somewhat steadier.[1]

The economic literature is full of studies that highlight the varying effects of exchange-rate volatility. One might expect that increased variability would automatically reduce a country's trade flows, since traders face the possibility of paying more in their own currency after an unexpected

[1] For more on monetary policy in Brazil, see Nogueira and León-Ledesma (2009) or Wu (2012). Hochreiter and Siklos (2002) discuss monetary union in the Western Hemisphere.

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