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Quantitative easing and related capital flows into Brazil: Measuring its effects and transmission channels through a rigorous counterfactual evaluation



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ABSTRACT

We show that unconventional monetary policy in the United States appears to influence capital inflows to Brazil and, through this channel, its overall economic outlook and financial stability. In particular, quantitative easing leads to capital inflows, exchange rate appreciation, stock market price increases, credit growth and expansion of domestic activity related to consumption. Such effects are significant when considering both parameter uncertainty and a new significance test for abnormal behavior. According to a new channel identification method proposed in the paper, capital inflow is the only domestic propagation channel that systematically accounts for the estimated effects across variables and samples. Results are robust across a wide range of policy counterfactuals, regime break assumptions, testing procedures and model specifications.

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1. Introduction

Does unconventional monetary policy in major economies influence capital inflows to emerging markets and, through this channel, their overall economic outlook and financial stability? Most policy makers in emerging market economies would respond affirmatively to this question, even though there

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is little evidence connecting all the pieces of the argument.¹ We attempt to provide such evidence for the case of Brazil and the quantitative easing measures adopted by the Federal Reserve. At the base of the empirical exercise, there are a few general contributions. In particular, we develop a novel identification strategy to measure the capital inflow channel and propose a new significance test for abnormal behavior during quantitative easing episodes.

The definition of the effects of interest depends on the counterfactual for the global economy in the no quantitative easing scenario. In particular, the effects on domestic variables are measured by the change in conditional forecasts based on actual and counterfactual scenarios for the exogenous variables. Our scenarios are built from assumptions for the term spread on US treasuries (10-year yield minus 3-month yield) and historical correlations of the term spread with global covariates. This definition follows Pesaran and Smith (2012), except for the incorporation of possible correlation in the set of exogenous variables.

A large literature estimates the effect of quantitative easing on the US term spread. This well documented link allows us to talk about the effect of quantitative easing instead of the effect of the term spread *per se*. For event studies, the reported accumulated announcement effects on the term spread are in the range of 30 to 100 basis points, depending on the period (e.g., Bauer, 2012; D'Amico and King, 2013; Gagnon et al., 2011; Krishnamurthy and Vissing-Jorgensen, 2011; Williams, 2011). Estimates based on arbitrage models find persistent effects of 75 basis points across different policy rounds (e.g., Hamilton and Wu, 2012; Jarrow and Li, 2014). Some counterfactual arguments assume even larger effects to mimic a high stress scenario,² and the range is from 50 to 200 basis points (e.g. Baumeister and Benati, 2013; Chen et al., 2012; Pesaran and Smith, 2012). We consider all of these possible scenarios for the term spread and report only robust results.

For our sample, the US policy rate is near the zero lower bound and, therefore, it is set to be constant in the actual and the counterfactual scenarios.³ On the other hand, the long-term yield and, by extension, the term spread, are explicit objectives of monetary policy.⁴ Other yardsticks, such as balance sheet information, have less stable correlation with exogenous variables. Therefore, given the nature of our exercise, we use the term spread and the range of effects of quantitative easing on this variable as our gauge of foreign monetary policy.

An important question is whether we can give a causal interpretation to our results. Conditioning on exogenous variables beyond the policy experiment goes in this direction, the more so if the conditioning set is large or at least summarizes the common factors driving a large set of exogenous variables. For example, Bañbura et al. (2015) shows that conditional forecast are largely the same using a large set of variables or a few factors, as long as some shrinkage is applied to avoid over fitting when using a large set of variables. Nonetheless, since the concept involves only conditional forecasts, one can always argue it is just reflecting the forecasting model.

To further advance in the direction of a causal interpretation, we propose something similar to the event study literature (see MacKinlay, 1997 for classical results). That is, we assess whether the actual behavior of the time series is abnormal relative to the forecasts conditional on the no quantitative easing scenario. We build on the test proposed by Pesaran and Smith (2012), which is the time series analogue of the event study literature, but we incorporate a cross section dimension associated with the different policy rounds of quantitative easing, therefore increasing the power of the test.

¹ There is evidence of separate pieces. Bowman et al. (2015) show unconventional monetary policy affected asset prices in emerging markets (EM), and that such effects were beyond historical levels for the case of Brazil. Fratzscher et al. (2013) show that US monetary is relevant for global portfolio inflows. Bauer and Neely (2014) and Neely (2012) show quantitative easing influence foreign bonds and currency values. Anzuini et al. (2013) show global liquidity drives commodity prices and EM spreads.

² Such a stress scenario involves higher demand for more liquid instruments than long-run treasuries, and no commensurable commitment to (neither expectation of) lower rates in the future.

³ In principle, with a proper scenario for the short rate, our methodology applies to periods of conventional monetary policy – see Bernanke et al. (1997) for an exercise along this line.

⁴ See Bernanke's speech at the Jackson Hole Symposium, Wyoming, August 31, 2012.

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