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Debt thresholds and real exchange rates: An emerging markets perspective

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ABSTRACT

In this paper we empirically analyze nonlinearities in short-run real exchange rate dynamics. Our findings suggest that real exchange rate misalignments are considerably less persistent and more volatile during times of high debt. Assessing the variance of changes in misalignments, we retrieve evidence indicating that the nominal exchange rate and inflation differentials are more important determinants in states of high debt than in states of low debt. Overall, our results imply that nonlinearities have non-negligible implications for the mechanics of real exchange rate adjustment in emerging markets.

1. Introduction

Public and external debt have historically played central roles in emerging market crises, often imparting substantial exchange rate effects. As Reinhart and Rogoff (2009) note, emerging market defaults can occur at much lower debt levels that would appear to be quite feasible by the standards of most advanced economies. During times of higher debt close to the default threshold, sharp real exchange rate depreciations arise as debt-intolerant locals and foreign investors flee the currency and other local assets, rebalancing their portfolios toward less risky and more liquid securities. Similar adjustments are less frequent in environments of low debt. The goal of this paper is to investigate the empirical relevance of debt for real exchange rate dynamics.

It is widely accepted that high levels of debt can have significant repercussions for the economy. Reinhart and Rogoff (2009), Jorda et al. (2011), Gourinchas and Obstfeld (2012) and Catão and

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Milesi-Ferretti (2014) provide evidence suggesting that high stocks of external debt enhance the risk of a financial crisis. Krugman (1988) identifies the situation of a "debt overhang" in which the anticipated repayment ability on external debt falls short of the contractual value of debt. A possible implication of this observation is that up to a certain point foreign debt accumulation can promote investment and growth, whereas past that point the debt overhang begins to diminish investors' willingness to supply further capital. This may have negative repercussions for output growth and debt sustainability, in turn putting downward pressure on the real exchange rate.[1]

While these studies suggest potential channels for debt-driven asymmetries in exchange rate adjustment, Galstyan and Velic (2016) emphasize the long-run relation between the level of gross public debt and the real exchange rate. They show that high public debt associated with high levels of distortionary taxation affects the relative supply of goods and services, thus necessitating relative price adjustment for a given relative demand. The sign and magnitude of this adjustment depend on the relative factor intensities.

In this paper we investigate the empirical relevance of debt for exchange rate dynamics using a panel of emerging market economies and relatively novel nonlinear econometric techniques. Our empirical base builds on the fundamental equilibrium exchange rate methodology (Galstyan, 2015; Galstyan and Lane, 2009; Galstyan and Velic, 2016; Ricci et al., 2013).[2] Adopting a panel-cointegrating framework, we extend the conventional set of controls to include public debt.[3] Our findings suggest that countries with higher government debt levels tend to have more depreciated exchange rates.

The introduction of debt-contingent short-run nonlinear real exchange rate dynamics in the context of a panel cointegrating setup is the distinguishing other novelty of our methodological approach.[4] Employing a regime-switching error-correction model, we retrieve evidence of nonlinear real exchange rate adjustment in the short run. In particular, the speed of exchange rate adjustment is found to be faster during episodes of high public or external debt, with misalignments typically characterized by higher volatility and relatively low half-lives across the different specifications.[5] Decomposing the real exchange rate and examining its underlying components, we also retrieve evidence indicating that nominal exchange rate changes and inflation differentials explain more of the volatility in real exchange rate misalignments during high-debt episodes than during low-debt episodes.

The remainder of the paper is organized as follows. Section 2 provides a description of the empirical framework adopted. Section 3 describes the data. In section 4 we offer some preliminary findings, while in section 5 we discuss the primary panel results. Section 6 describes our findings on the underlying sources of the variability in exchange rate misalignment fluctuations across different states of debt. Lastly, section 7 concludes.

2. Empirical approach

2.1. Long-run equilibrium relation

Of primary interest is the misalignment of the real exchange rate from the long-run equilibrium. To construct this benchmark, we first examine the long-run relation between the real exchange rate and a set of fundamentals by estimating the following panel cointegrating equation:

[1] A theoretical model positing the nonlinear impact of foreign borrowing on investment is provided by Cohen (1993). For developing countries, Adam and Bevan (2005) find evidence of threshold effects in the relation between fiscal deficits and growth, with high debt stocks exacerbating the adverse consequences of the former, while the study of Pattillo et al. (2011) suggests nonlinear effects of external debt on growth.

[2] See Chinn (2012) for a survey on macro approaches to exchange rate determination.

[3] See Appendix S1 for a proposed mechanism. Pesaran (1997) associates cointegration with the empirical analysis of steady-state relations.

[4] Hansen (1999) introduced the non-dynamic panel threshold regression model that allows discrete shifts in coefficients across regimes. Building on this work, González et al. (2005) developed the panel smooth transition regression model that facilitates a smooth and gradual transition of coefficients between regimes.

[5] Univariate studies focusing on exchange rate dynamics often seek to incorporate nonlinearities in the adjustment process that are rationalized by the existence of transaction costs, heterogeneous foreign exchange traders or discrepancies in central bank interventions for instance. See Michael et al. (1997) and Taylor et al. (2001).

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