Journal of International Money and Finance 30 (2011) 1303–1322

Contents lists available at ScienceDirect

Journal of International Money and Finance

journal homepage: www.elsevier.com/locate/jimf

Real exchange rate dynamics: The role of elastic labor supply[☆]

A.K.M. Mahbub Morshed [a], Stephen J. Turnovsky [b,*]

[a] Department of Economics, Southern Illinois University Carbondale, IL 62901, United States
[b] Department of Economics, University of Washington, Seattle, WA 98195, United States

JEL classification:
F31
F41

Keywords:
Elastic labor supply
Real exchange rate
Persistence
Volatility

A B S T R A C T

Empirical evidence suggests that the flexibility of labor supply is closely related to the dynamic adjustment of the real exchange rate. This paper investigates this relationship in a two-sector dependent economy model. While, the long-run equilibrium real exchange rate is independent of the elasticity of labor supply, our analysis confirms that the nature of the labor supply can be a crucially important determinant of its short-run dynamics. The extent to which this is so depends to some degree on the source of the underlying structural change that is driving the dynamics of the real exchange rate. Numerical simulations confirm that this mechanism may help explain the larger short-run volatility and more rapid convergence typically associated with developing countries having less flexible labor markets.

1. Introduction

The real exchange rate (RER) puzzle has spawned an extensive literature, stimulating researchers to propose different explanations (Rogoff, 1996; Betts and Devereux, 1996; Hau, 2000; Obstfeld and Rogoff, 2001; Bergin and Feenstra, 2001; Chari et al., 2002; Devereux and Engel, 2002; Morshed and Turnovsky, 2004; Chen and Hsu, 2009; Carvalho and Nechio, 2010). Two key aspects of the

☆ This paper has benefited from presentations to seminars at the Universities of Manchester, Reading, and Warwick. The constructive suggestions of an anonymous referee are also gratefully acknowledged. Turnovsky's research was supported in part by the Castor endowment at the University of Washington.

* Corresponding author.
E-mail address: sturn@u.washington.edu (S.J. Turnovsky).

0261-5606/$ – see front matter
doi:10.1016/j.jimonfin.2011.06.018

puzzle are: (i) the long-term persistence of the real exchange rate following a structural change, and (ii) its short-term volatility, both of which exhibit systematic patterns across economies. With respect to the persistence of the real exchange rate, the rate of convergence to its long-run equilibrium value is significantly slower for developed countries than it is for developing countries (Cheung and Lai, 2000). These authors examined a number of structural characteristics such as inflation, productivity growth, trade openness, and the size of government spending to account for these cross-country differences in the rate of convergence. They observe that only inflation and government spending yield a weak relationship with the observed pattern of persistence. Consequently, their findings underscore the need to identify the determinants of the persistence of the PPP deviation in order to explain these differences.[1] With regard to volatility, Hausmann et al. (2006) show that developing countries have substantially more volatile real exchange rates than do developed countries, a difference that cannot be explained by differences in the magnitudes of the underlying shocks.[2] In addition, Hau (2002) finds that increased openness is associated with less volatility in the real exchange rate.[3]

A natural framework for addressing the dynamics of the real exchange rate is the dynamic "dependent-economy model", which determines the real exchange rate within a two-sector production framework.[4] But if one employs the standard Heckscher-Ohlin production structure, in which the aggregate labor supply is fixed and the productive factors are perfectly mobile across sectors, the model is unable to generate plausible real exchange rate dynamics. Depending upon relative sectoral capital intensities, the real exchange rate adjusts too rapidly or even worse, instantaneously.[5]

To generate realistic exchange rate dynamics, some source of sluggishness must be introduced into the adjustment process. Steigum and Thørgesen (2003) and Morshed and Turnovsky (2004) do so by relaxing the conventional assumption that capital can be instantaneously and costlessly shipped across sectors. Instead, they assume that the inter-sectoral movement of capital involves adjustment costs, reflecting the costs of retrofitting, an idea that can be traced back to Mussa (1978) and later to Gavin (1990, 1992).[6]

One key element of the adjustment process involves the role of differences in the production structures between rich and poor countries in explaining differences in the dynamics of the RER. An empirical study by Duffy and Papageorgiou (2000) suggests that the elasticity of substitution between capital and labor exceeds 1 in rich countries, but is less than 1 in poor countries. Drawing upon this empirical evidence, Morshed and Turnovsky (2006) show that the more rapid speed of convergence

[1] In a separate, but related, strand of literature, researchers found that price convergence in cities is faster for developing countries than it is in developed countries (Cecchetti et al., 2002; Chen and Devereux, 2003, Sonora, 2005; and Morshed et al., 2006).

[2] Ganguly and Boucher (2010) show how the inclusion of various nominal factors can reduce the spread in volatility between developed and less developed economies.

[3] Novy (2010) obtains a similar result, showing that trade costs, which reduce trade flows, thereby reducing openness, have the effect of increasing exchange rate volatility.

[4] Several versions of the "dependent-economy model", emphasizing the difference between traded and non-traded goods can be identified. These include: the "Australian" model (e.g. Salter, 1959, Swan, 1960), the Balassa-Samuelson model (Balassa, 1964, Samuelson, 1964), the "Scandinavian" model (e.g. Aukrust, 1970, Lindbeck, 1979), and the contribution from Latin America due to Diaz-Alejandro (1965). These early contributions were static and focused on different aspects. For example, Balassa and Samuelson focused on the supply-side determinants of the relative price of non-traded goods, in contrast to the Australian school's emphasis on the demand-side determinants of the relative price of nontradables, taking the supply-side of the economy as given. The basic dynamic version that is being extended here is summarized by Turnovsky (1997) and incorporates both demand and supply effects.

[5] See e.g. Turnovsky (1997).

[6] Chen and Hsu (2009) apply the Morshed-Turnovsky model to the Blanchard (1985) finite horizon model. Craighead (2009) shows how the introduction of costly inter-sectoral labor adjustments increases the volatility of the real exchange rate. In contrast to these studies, which rely on impediments to sectoral factor mobility, most of the previous literature addresses the issue of RER dynamics by introducing sticky goods prices; see e.g. Obstfeld and Rogoff (1995), Betts and Devereux (1996, 2000), Bergin and Feenstra (2001), Chari et al. (2002), and Ng (2003). In addition, Hau (2000) introduces sticky factor price while Carvalho and Nechio (2010) introduce firms that are different in the extent of price stickiness. Devereux and Engel (2002) emphasize price formation with special emphasis on local currency pricing, while Rogoff (1996) and Obstfeld and Rogoff (2001) introduce market segmentation resulting from trade frictions.