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Macroeconomic shocks, structural change and real exchange rates: Evidence from historical data☆

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Abstract

We present empirical evidence on the forces driving real exchange rates in the long-run. Using data from the US, UK and Italy across different exchange rate regimes, we find support for the hypothesis that productivity and fiscal shocks matter. However, in some cases fiscal shocks cause depreciations, likely triggered by the monetary accommodation of fiscal shocks. We also find that the traditional Harrod–Balassa–Samuelson effect of productivity on real exchange rates is reversed in some cases, which confirms the importance of the distributive sector in driving productivity gains.

JEL classification: F31; E44; C32

Keywords: Real exchange rates; Macroeconomic fluctuations; Structural change

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1. Introduction

A large literature has investigated the determination of real exchange rates in the long-run. Research on purchasing power parity (PPP) broadly shows that we have only a partial picture of why deviations from PPP are so persistent over time.[1] Monetary (nominal) shocks cannot provide an explanation for this persistence, unless one assumes an unrealistic degree of nominal rigidity (see Rogoff, 1995). In contrast, fiscal and productivity shocks could be driving real exchange rates in the medium and long-run. Harrod (1933) originally used international productivity differences to explain the pattern of deviations from PPP. Balassa (1964) and Samuelson (1964) formalised this explanation (the so-called Harrod–Balassa–Samuelson hypothesis, HBS, henceforth). Both Keynesian aggregative models (Dornbusch, 1976) and intertemporal models of the open economy (Obstfeld and Rogoff, 1997) have analysed the impact of fiscal shocks on real exchange rates.

In this paper, we employ a VAR modeling framework to evaluate the importance of different shocks to real exchange rates over various time horizons. Clarida and Gali (1994) and, more recently, Prasad (1999) and Rogers (1999) have used just-identified VARs in the modeling of the open economy. Our study extends this literature in a number of ways. First, we use long runs of yearly data, covering more than 120 years, for three countries. This enables us to capture both medium and long-run effects, compared to studies based only upon post-World War II data.[2] Second, the nature and impact of real and nominal shocks on the real exchange rate have varied over time.[3] Shifts in the underlying production structure of the industrial economies (for instance the different relative growth of the distributive sector and other non-traded services), and changes in the international financial system likely explain this time variation. To measure these shifts, we estimate VAR models with time-varying parameters (TVP, henceforth). We also demonstrate that our TVP VARs fit the data better than standard fixed-parameter VARs, or VAR models that allow for discrete regime changes. Our results show the much greater persistence of both nominal and real shocks in the post-World War II era, not only compared to the inter-war years, but also to the classical Gold Standard period. Third, in contrast to previous studies, we do not detect unambiguous support for the HBS effect. For instance, we find that in some instances productivity shocks cause a real exchange rate *depreciation*. This is consistent with certain intertemporal models.

Finally, instead of imposing certain restrictions on the long-run properties of our VAR model, we analyse the relative persistence of fiscal and productivity shocks. We find some support for the hypothesis, which derives from intertemporal models, that fiscal shocks, like all pure demand-side shocks, only have temporary effects on the real exchange rate. However, there are important exceptions, and in the case of the data on Italy, there is a strong linkage between fiscal shocks and depreciations, which is supportive of fiscal policy dominance theories.

The rest of the paper is organised as follows. In Section 2, we outline some of the basic theoretical results in this area, which are now part of standard open economy macroeconomic

[1] For broad surveys, see Froot and Rogoff (1995) and Rogoff (1995, 1996).

[2] Rogers (1999) uses a VAR to model the real dollar–pound exchange rate from the late 1880s. Our work covers a larger sample of countries and a wider range of results.

[3] For instance, Rogoff (1995, 1996) and Muscatelli and Spinelli (1999) show that the deviations from PPP are more persistent post-1946.