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Nominal rigidity, desired markup variations, and real exchange rate persistence

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Abstract

This paper develops and estimates a dynamic general-equilibrium sticky-price model that accounts for real exchange rate persistence. The key feature of the model is the dependence of the firm's desired markup on its relative price. Desired markup variations exacerbate the nominal rigidity that results from the exogenously imposed frictions in the goods market. The model is estimated by the maximum-likelihood method using Canadian and U.S. data. The estimated model successfully replicates the properties of the Canada–U.S. bilateral real exchange rate. In particular, the model closely matches the persistence found in the real exchange rate series. More importantly, this is achieved with a plausible duration of price contracts and a moderate convexity of the demand function.

Keywords: Desired markup variations; Persistence; Real exchange rate

JEL classification: F31; F41

1. Introduction

In recent years, a new line of research on exchange rate determination, pioneered by the seminal work of Obstfeld and Rogoff (1995), has developed. The new approach examines

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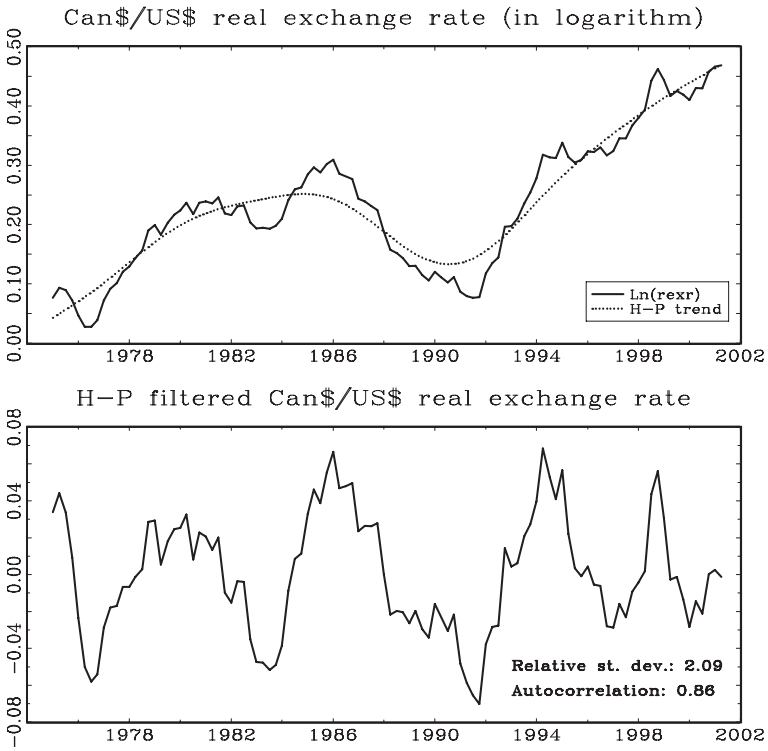

Fig. 1. Can$/US$ real exchange rate properties.

exchange rate dynamics within dynamic general-equilibrium (DGE) sticky-price models. Examples of studies that use this approach include Betts and Devereux (2000), Chari et al. (2002), Bergin and Feenstra (2001), and Kollmann (2001). In each of these studies, price stickiness is motivated through monopolistic competition in the goods market, while departures from the purchasing power parity (PPP) are due to the failure of the law of one price (LOP) in traded goods. The latter feature arises from pricing-to-market behaviour by monopolistic firms that segment markets by country.

A primary objective of the literature on exchange rate determination is to account for the well-documented volatility and persistence of the real exchange rate. Fig. 1 illustrates these stylized facts in the case of the Can$/US$ real exchange rate. The logged and Hodrick–Prescott (H–P) filtered Can$/US$ real exchange rate has a relative standard deviation of 2.09 with respect to Canadian real GDP and a serial correlation of 0.86.[1] Other bilateral real exchange rates with the U.S. dollar exhibit a similar degree of persistence and even higher volatility.[2] Overall, the above-noted studies have been successful in generating high real

[1] These statistics are computed from quarterly data on the consumer price index (CPI)-based real exchange rate over the period 1975Q1–2001Q2.

[2] The average standard deviation (relative to that of output) of bilateral real exchange rates with the U.S. dollar for G-7 countries is about 4.8. See Bergin and Feenstra (2001).