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Pricing-to-market, staggered contracts, and real exchange rate persistence

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Abstract

This paper explores an explanation for the high degree of persistence and volatility observed in real exchange rate data. In particular, it considers a class of preferences that are translogin form, which exhibit the property that the elasticity of demand is not constant. This property is shown to be important for generating pricing-to-market behavior in price-setting firms and for helping staggered contracts to generate endogenous persistence. The paper finds that translog preferences generate significantly greater persistence in the real exchange rate than does the standard CES specification. While the model cannot fully reproduce the high level of persistence observed in the data under plausible parameter values, it can reproduce the level of volatility. © 2001 Elsevier Science B.V. All rights reserved.

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1. Introduction

A prominent question in international macroeconomics is why real exchange rates exhibit persistent deviations from purchasing power parity. Table 1 character-

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Table 1
Data[a]

	Serial correlations:			Standard deviation: s.d.(q)/s.d.(output)	Correlation: cor(s,q)
	q	q (not filtered)	Output		
Canada	0.88	0.95	0.89	2.05	0.94
France	0.78	0.91	0.84	7.57	0.99
Germany	0.74	0.93	0.74	4.35	0.99
Italy	0.79	0.93	0.83	4.26	0.98
Japan	0.81	0.93	0.67	5.87	0.98
United Kingdom	0.79	0.95	0.85	4.79	0.98
Average	0.80	0.93	0.80	4.81	0.98

[a] All series are quarterly and are Hodrick–Prescott filtered, unless otherwise stated. The real exchange rate (q) is computed as the CPI-adjusted bilateral exchange rate with the US dollar, using quarterly data from International Financial Statistics. The nominal exchange rate is represented in the table by s.

izes quarterly data for 1973–1997.[1] Averaging over countries, the one-quarter autocorrelation is about 0.80 in Hodrick–Prescott filtered data, and about 0.93 in unfiltered data.[2] A related time-series literature concludes that the real exchange rate may be even more persistent.[3] In addition, the table shows the real exchange rate is highly volatile, with a standard deviation between four to five times that of output on average.

Sticky prices are one explanation commonly offered for these real exchange rate movements. Monetary shocks could induce an immediate change in the nominal exchange rate, and this would translate into a change in the real exchange rate if national price levels remain fixed. Intertemporal models presenting this general view include Svensson and van Wijnbergen (1989), Obstfeld and Rogoff (1995), and Kollmann (1996).

A second explanation focuses on pricing-to-market, in which a firm intentionally sets different prices for its good across segmented national markets to compete with the firms serving those markets. This explanation is consistent with empirical work by Engel (1993), Knetter (1993), and others, which have documented significant deviations from the law of one price. First developed in a partial

[1] The table closely resembles standard findings in the real business cycle literature: see Backus et al. (1992); Chari et al. (1998a) and Chang and Devereux (1998).

[2] There is some controversy regarding whether the real exchange rate should be Hodrick–Prescott filtered, so we report results both for filtered and unfiltered versions. All other columns in the table refer to filtered data. The real exchange rate is computed as the CPI-adjusted bilateral exchange rate with the US dollar, using quarterly data from International Financial Statistics.

[3] See Froot and Rogoff (1995) for a summary of the time series literature. Several studies suggest real exchange rate deviations have a half-life of about four to five years. Some studies, such as Engel (1999), cast doubt on whether the real exchange rate is even mean reverting.