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Testing the monetary model of exchange rate determination: new evidence from a century of data

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Abstract

We test the long-run monetary model of exchange rate determination for a collection of 14 industrialized countries using data spanning the late nineteenth or early twentieth century to the late twentieth century. Interestingly, we find support for a simple form of the long-run monetary model in over half of the countries we consider. For these countries, we estimate vector error-correction models to investigate the adjustment process to the long-run monetary equilibrium. In the spirit of Meese and Rogoff [Journal of International Economics 14 (1983) 3–24], we also compare nominal exchange rate forecasts based on monetary fundamentals to those based on a naïve random walk model.

Keywords: Nominal exchange rate; Monetary model; Cointegration; Forecasting

JEL classification: C22; C32; C53; F31; F47

1. Introduction

The monetary model of exchange rate determination posits a strong link between the nominal exchange rate and a simple set of monetary fundamentals.

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The monetary model's clear-cut intuition—that a country's price level is determined by its supply and demand for money and that the price level in different countries should be the same when expressed in the same currency—makes it an attractive theoretical tool for understanding fluctuations in exchange rates over time. It also provides a long-run benchmark for the nominal exchange between two currencies and thus a clear criterion for determining whether a currency is significantly ''overvalued'' or ''undervalued.''

Despite its theoretical appeal, the monetary model did not escape the Meese and Rogoff (1983) trap that seemingly ensnared all models of exchange rate determination. In their seminal paper, Meese and Rogoff (1983) find that a naïve random walk model outperforms an array of structural models, including those based on monetary fundamentals, in predicting U.S. dollar exchange rates at horizons of up to 12 months during the late 1970s and early 1980s. Mark (1995) rekindled hope for the monetary model by showing that deviations from a simple set of monetary fundamentals—relative money supplies and relative real output levels—are useful in predicting U.S. dollar exchange rates at longer horizons over the 1981–1991 period.[1] However, Berben and van Dijk (1998) and Berkowitz and Giorgianni (2001) show that Mark's (1995) findings hinge critically on the assumption of a stable cointegrating relationship among nominal exchange rates, relative money supplies, and relative output levels. When this assumption is relaxed, the evidence for exchange-rate predictability in Mark (1995) is greatly diminished, and, in fact, Mark (1995) fails to find evidence of cointegration among nominal exchange rates and monetary fundamentals in preliminary testing.[2] A number of other studies also find little evidence of cointegration among nominal exchange rates and monetary fundamentals during the post-Bretton Woods float; see, for example, Meese (1986), Baillie and Selover (1987), McNown and Wallace (1989), Baillie and Pecchenino (1991), and Sarantis (1994).[3] The lack of empirical evidence for a stable long-run relationship among nominal exchange rates and monetary fundamentals renders the monetary model a seemingly plausible theoretical model with little practical relevance.

A ready explanation for the failure to find cointegration between nominal exchange rates and monetary fundamentals in much of the extant literature is the

[1]Chinn and Meese (1995) also find that monetary fundamentals are helpful in predicting U.S. dollar exchange rates over the 1983–1990 period.

[2]Chinn and Meese (1995) also fail to find strong evidence of cointegration among nominal exchange rates and monetary fundamentals.

[3]MacDonald and Taylor (1994) find evidence of cointegration between the U.S. dollar–U.K. pound exchange rate and a set of monetary fundamentals from 1976 to 1990, but their cointegrating vector is difficult to interpret theoretically. They only claim that it ''does not, in fact, do great violence to the monetary model.'' Cushman (2000) finds evidence of cointegration between the U.S. dollar–Canadian dollar exchange rate and a set of monetary fundamentals during the modern float, but the estimated cointegrating coefficients differ widely from those predicted by the monetary model. Cushman (2000) thus concludes that the U.S.–Canadian data do not support the monetary model.