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Models of exchange rate expectations: how much heterogeneity?

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Abstract

In this paper we use a unique disaggregate expectations data base to model the expectations formation of around 40 leading foreign exchange forecasters/dealers. Panel estimators are used to increase the power of the tests and to study various types of heterogeneities across forecasters. We find that both model heterogeneities and coefficient heterogeneities are important across individual forecasters, although the latter seem to be reduced at the 12-month compared with the 3-month horizon.

Keywords: Foreign exchange rates; Expectations formation; Heterogeneity

JEL classifications: C33; D84; F31

1. Introduction

The dynamic properties of exchange rates (particularly their excessive volatility) has proved a challenge to theorists, who emphasise the importance of economic fundamentals in explaining exchange rate movements. This is perhaps most clearly seen in the apparent failure of fundamentals-based exchange rate models to

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outperform a simple random walk, a finding which 'continues to exert a pessimistic effect on the field of empirical exchange rate modelling in particular and international finance in general' (Frankel and Rose, 1995)[1]. One way in which theorists have tried to address this issue is by relaxing the assumption of rational expectations which is central to many traditional theoretical models, such as the monetary approach to the exchange rate. Indeed, several approaches have been developed where the market 'consensus' is the result of heterogenous beliefs based on differing models (chartists vs. fundamentalists, Frankel and Froot, 1986), and differing information sets (informed vs. uninformed, Lyons, 1991), differing capabilities (sophisticated vs. naive agents, De Long et al., 1990). Although some efforts have been made to show that specific forecasting methods like imitation can be reconciled with rational expectations (see for example, Orléan, 1986), little empirical work has been conducted to support the often ad hoc assumptions made in the theoretical literature[2].

In order to understand the behaviour of foreign exchange market participants, researchers have turned to examining the properties of survey based expectations, and this has recently become a very popular research avenue. Much of this work focuses on explaining the biasedness of the forward premium in terms of either a time-varying risk premium or expectational errors, or both (see Frankel and Froot, 1986, or Liu and Maddala, 1992). A relatively smaller portion of this work focuses on the actual formation of expectations. For example Frankel and Froot (1987a,b, 1990), Cavaglia et al. (1993a,b), MacDonald and Torrance (1988), Prat and Uctum (1994) find that bandwagon effects tend to be prevalent at short horizons (3 months and less) while expectations appear to be stabilising at longer horizons (greater than 3 months). In a further paper, Prat and Uctum (2000), using consensus expectations, show that the best model to describe aggregated (average) predictions is a model mixing extrapolative, adaptive and regressive forecasts. However, the interpretation of such a result is difficult since it is unclear if it stems from individuals using different models, or from heterogeneous interpretation of the same information structure.

A preliminary answer to this question comes from the work of Ito (1990), MacDonald and Marsh (1996); Elliott and Ito (1999). All of these studies are based on the following type of regression equation:

$$s^{e}_{jt} - s^{e}_{At} = g_j + \varepsilon_{jt}$$

where s^{e}_{jt} is the individuals expectation, s^{e}_{At} is the (cross section) average forecast and ε_{jt} is an error term. In an estimated version of this equation, a finding that g_j is significantly different from zero indicates that individuals j's forecast differs significantly from the cross section average and this may be interpreted as evidence

[1] Although this view is not universally accepted—see MacDonald (1995).

[2] Such models have typically been simulated to reproduce some stylised features of exchange-rate dynamics, especially chaos-like dynamics (De Grauwe et al., 1993) and fat tail distributions (Lux, 1998). Such tests are, however, reduced-form in nature.