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Exchange rates and fundamentals: new evidence from real-time data

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Abstract

This paper analyses the link between economic fundamentals and exchange rates by investigating the importance of real-time data. We find that economic news in the United States, Germany and the euro area have been a driving force behind daily US dollar–euro/DEM exchange rate developments in the period 1993–2003. The larger importance of US macroeconomic news is at least partly explained by their earlier release time compared to corresponding German and euro area news. The exchange rate is also shown to respond more strongly to news in periods of large market uncertainty and when negative or large shocks occur. Overall, the model based on real-time data explains about 75% of the monthly directional changes of the US dollar–euro exchange rate, although it does not explain well the magnitude of the exchange rate changes.

JEL classification: F31; F42; E52

Keywords: Exchange rates; Fundamentals; Announcements; News; Real-time data; United States; Euro area; Interdependence; US dollar–euro; EMU

1. Introduction

Twenty years after the influential paper by Meese and Rogoff (1983), only modest progress has been made in explaining and predicting exchange rate movements with

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macroeconomic fundamentals. While fundamentals-based models have been developed over the years that perform reasonably well in explaining exchange rate developments in the long-run, econometric attempts to explain short- and medium-term movements in exchange rates have had limited success so far.[1] There is a broad consensus that the poor performance of empirical models to account for exchange rate developments on a short- and medium-term horizon has not only to do with econometric problems, such as small sample biases, but also with irrationality of market participants, bubbles, herd behavior etc., i.e. factors which are hard to capture in econometric models.

Over the past decade, two approaches have emerged in the literature that have made some progress in understanding exchange rate dynamics at short- to medium-term horizons. One of these approaches suggests that the chartist behavior of market participants, i.e. the pursuit of technical trading rules that are unrelated to fundamentals, may account for some of the large movements and overshooting of currencies (e.g. Allen and Taylor, 1990; Cheung and Chinn, 1999; De Grauwe and Dewachter, 1993; Gehrig and Menkhoff, in press). A more recent approach based on the seminal work by Evans and Lyons (2002) has shown that exchange rates at short horizons are to a significant extent driven by order flow, i.e. excess buyer-initiated or seller-initiated trading which reflects a market's information processing mechanism and which may be unrelated to existing macroeconomic fundamentals. However, Evans and Lyons (2003) and Love and Payne (2002) find that much of this order flow is in fact closely linked to news about fundamentals.

This paper takes a third approach to analyzing the link between fundamentals and exchange rates. We argue that a potentially important shortcoming of standard, fundamentals-based models of the exchange rate is that they use measures of fundamentals that do not accurately reflect the true information market participants have when making trading decisions. In this paper, we use real-time data – similar to Andersen et al. (2003), Faust et al. (2003) or Galati and Ho (2003) – for the announcements of monetary policy decisions and important macroeconomic variables in the United States, Germany and the euro area, as measures of fundamentals. More precisely, exploiting survey data on market participants' expectations of such announcements, we are able to extract the surprise or "news" component of each variable. We then test whether these news about fundamentals explain the behavior of daily exchange rate movements of the US dollar vis-à-vis the euro and German mark for the period 1993–2003. This approach has the key advantage of allowing us to test much more directly whether fundamentals – as they become available to market participants – can account for the price discovery process in foreign exchange markets.

The paper attempts to make a contribution to the literature in two central regards. First, it focuses on the presence of asymmetries in the reaction of exchange rates, and in particular on the question whether the reaction of the conditional means of exchange rates to macroeconomics news depends on existing market conditions. Such a non-linear behavior is predicted e.g. by the theoretical work on herd behavior

[1] See e.g. Mark (1995) and Cheung et al. (2002) for an evaluation of exchange rate models of the 1980s and 1990s.