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Long run trends and volatility spillovers in daily exchange rates

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Abstract

Recent evidence has suggested that a model capable of capturing multiple volatility dynamics best describes daily exchange rate volatility. Estimation of a model that can capture long-run and short-run volatility movement also allows issues relating to financial and economic integration between countries to be examined. More specifically, the long-run component for comovement can be examined and spillover effects tested for in mean and volatility, the latter of which is suggestive of policy co-
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Notes

Whilst non-negativity constraints on the parameters of Equation 4 are sufficient to ensure a non-negative GARCH variance, they are not necessary since weaker sufficiency conditions on the ARCH (∞) inversion of Equation 4 also exist (Nelson and Cao, 1992). For example, in the empirically relevant GARCH (1,2) case below, $\omega > 0$, $\alpha_1 \geq 0$, $\beta_1 \geq 0$ and $(\beta_1\alpha_1 + \alpha_2) \geq 0$ are sufficient to ensure

, such that α_2 may be negative. For generalizations of this results see Nelson and Cao (1992) and Drost and Nijman (1993). However, it remains necessary and sufficient that the sum

in order for a finite unconditional variance to exist, that sum also providing a measure of the persistence of shocks to

, permitting the quantification of shock half lives as $\lambda = [\ln(0.5)/\ln(\rho)]$, and defining the limiting integrated-GARCH (IGARCH) case for $\rho = 1$, $\lambda = \infty$.

See Engle and Lee (1993) for further details of stationarity and non-negativity conditions.

Nevertheless, it remains possible that long-run movements in these exchange rates are determined either by their own individual set of fundamentals, or by some common set of fundamentals. Given that all six currencies appear to be described by I(1) processes, the potential for common movement between them can be examined through testing for cointegration that is the presence of one or more long-run stationary relationships between these exchange rate series. The results of applying tests for up to five cointegrating vectors using the well known and widely applied framework of Johansen
(1991, 1 one long-run
equilibri s outlined in
Diebold 7), test
stati ng equation
and t or any
subset o egration
results a om the
authors.

All the estimation in this paper is executed using EViews 4.0.

Although the AR(1) coefficient for the Lira is statistically insignificant its inclusion was preferred on the basis of the BIC and residual tests.

These results are similar to those presented in Baxter (1994) for the level of quarterly real exchange rates.

A possible explanation for this difference lies in the fact that the continental European exchange rates have operated under a (semi-) fixed exchange rate regime for much of this period, such that volatility in their exchange rates will be subject to transitory movements within the currencies that were in the exchange rate mechanism, while sterling is determined by its long-run equilibrium value and therefore less prone to transitory movements.

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