A KALMAN-FILTERING ANALYSIS OF EXCHANGE RATE BUBBLES

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Abstract

In the past literatures, “bubbles” is defined as the deviation of an asset’s price from the value of its market fundamentals. Based on the bubble’s model of Flood and Hodrick (1990) and the monetary model of Meese (1986), this paper sets up a exchange rate determination equation including a bubble size term, then we adopt a state space model and make a MLE recursive estimation in use of Kalman-Filter. We use the samples of the exchange rates of RMB/U.S. dollars from 2005/07 when China adopted the revolution policy of exchange rate system to 2010/11, and the exchange rates of Japanese Yen/U.S. Dollars from 1990/01 to 2010/11 to examine if there are exchange rate bubbles. The estimation outcome show that there are exchange rate bubbles and the bubbles’ parameters are significant. By analyzing the trend of the bubbles and the gradients of the bubbles’ parameters, the estimation result corresponds to the behavior of exchange rate during the sample, and the deviation of exchange rate from its market fundamentals can be explained reasonably.

Key Words: Exchange Rate Bubbles, State Space Model, Kalman-Filter

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