

De-pegging risk

We would like to develop and explore a simple model of a country managing its exchange rate by active intervention in the market. To keep exchange rates within a fixed band, a central bank has to buy or sell currency in the market. The reason for this is that the market would usually set a different exchange rate in the absence of intervention, let's call the difference between the two the "disagreement". The greater the disagreement, the more intervention is required. Finally, the central bank may be able to print its own currency, but it has finite reserves of foreign currencies. As a first stab, the rate preferred by the market can be modelled as a Brownian motion, and the rate at which the central bank has to buy and sell as linear in the disagreement. Is it inevitable that the central bank will run out of money and change policy? Exchange rates of managed currencies tend to be adjusted occasionally – what are the trade-offs between the frequency of adjustments and the magnitudes of adjustments? Continuous versions where the central bank adjusts rates continuously but at a lower diffusion constant may be interesting.