

The interplay between the foreign exchange traders and the central bank

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The eruption of the recent currency crises poses the question of whether a crisis is the result of inconsistent macroeconomic fundamentals or is caused by a serious malfunctioning of the foreign exchange markets. Should the central bank adopt an explicit exchange rate policy ?

We develop a model of a speculative foreign exchange market and demonstrate the market's inherent instability. Following the work of Cartapanis and Laurent [1], we focus on two countries: home Euro land and foreign USA. Home country has a currency, euro, traded on the foreign exchange market (Forex). Also, there is a central bank (CB) that monitors the exchange rate (ER) and is engaged in preserving the stability of its currency and the relevance of the ER to macroeconomic fundamentals. The bank signals her view about the equilibrium euro/dollar ER to the traders who are either smart or short-termists that completely disregard her opinion. The model is dynamic with heterogeneous traders entering the foreign exchange market one by one. Traders follow pre-defined rules of behaviour and look at some market ratios and then take a speculative decision whether to buy or sell euros by selling to the CB short the dollar or the euro.

First, we show another example of the Wallace's exchange rate indeterminacy result. In periods of great uncertainty and total forex laissez faire (expressed in the model by the absence of CB announcements & interventions) any point on the continuous unit interval may end up as an equilibrium exchange rate. Then we use a numerical simulation of the general case of the model to allow for explicit CB intervention in times of crisis. We follow the sequence of the proportion of buying orders and the shadow ER and compare the laissez faire with an ER target for the central bank. At times of great uncertainty and market turbulence the CB policy can indeed stabilize the ER. Timely and measured action on her part could tame the population of Forex speculators and steer the shadow ER sequence to end up close to the bank's notion of the equilibrium ER.
