



Evaluating currency crises: A Bayesian Markov switching approach

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Abstract

In this paper we examine the nature of a currency crisis. We do so by employing an out-of-sample forecasting exercise to analyse the Mexican crisis in 1994. Forecast evaluation was based on modern econometric techniques concerning the shape of forecaster's loss function. We also extend the empirical framework suggested by Jeanne and Masson [Jeanne, O., Masson, P., 2000. Currency crises and Markov-switching regimes. *Journal of International Economics* 50, 327–350] to test for the hypothesis that the currency crisis was driven by sunspots. To this end we contribute to the existing literature by comparing Markov regime switching model with a time-varying transition probabilities with two alternative models. The first is a Markov regime switching model with constant transition probabilities. The second is a linear benchmark model. Empirical results show that the proxy for the probability of devaluation is an important factor explaining the nature of currency crisis. More concretely, when the expectation market pressure was used as a proxy of probability of devaluation, forecast evaluation supports the view that currency crisis was driven by market expectation unrelated to fundamentals. Alternatively, when interest rate differential is used as a proxy for probability of devaluation, currency crisis was due to predictable deterioration of fundamentals.

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1. Introduction

The currency crises of the EMS in 1992–1993, of Mexico in 1994 and the Asian crises in 1997 have been accompanied by considerable controversy over their causes. There are two main theoretical models, that explain currency crises. The first generation of currency crises models was determined by monetary and fiscal policy that are inconsistent with maintaining the fixed currency peg. The failure of the first generation model to explain the EMS currency crises led to the second generation model. More concretely, although expansionary monetary and fiscal policy may have been an issue in some countries such as Italy and Spain this was not the case in some others such as UK and France.

In the second generation model the central bank acts as an optimizer where the decision to devalue or not seems to be motivated by the desire to avoid adverse macroeconomic consequences of maintaining the peg. The second generation model adds two new elements to the first generation model. The first new element concerns the notion of macroeconomic fundamentals which, in the second generation models, include any variables that might affect the loss function of the central bank. In addition, the second generation model emphasizes the role that market expectations can have on the monetary authority's decision to devalue or not. This leads to the second new element of the second generation model. Specifically, the model provides the theoretical framework of self-fulfilling speculation and multiple equilibria.

The logic of self-fulfilling crises is based on the idea that devaluation expectation increases the cost of retaining a peg and therefore the desire of the policy-maker to devalue. One way to defend a currency peg is by raising the ex ante nominal interest rate, which affects economic growth negatively. Under such circumstances, the policy maker might prefer to devalue rather than to maintain high interest rates. Therefore, the decision to devalue or not is affected by market expectations regarding changes in monetary policy.

The disconnection of fundamentals from market expectations is the main property that differentiates the first generation model from the second generation model. [Jeanne \(1997, 2000\)](#) in the so-called escape clause model provided the theoretical framework which reconciles both models. More concretely, the escape-clause model of currency crises views the fixed exchange rate regime as a conditional commitment.

[Jeanne \(2000, p. 6\)](#), argues that “the main message of the escape-clause model is that currency crises should be analysed in the context of a conflict among contradicting policy objectives. In the limit any type of currency crises can be analysed in the escape-clause perspective”. This can be shown by endogenizing monetary and fiscal policy in the first generation model. Although the first generation model shows that currency crises are the consequence of the monetary and fiscal policies followed by government, it has not addressed the question of why these policies were pursued. [Jeanne \(2000\)](#) shows that there is a level of interest rate that authorities in the first generation model could adopt and defend the fixed exchange rate. If raising interest rates were not costly then currency crises would not occur. Therefore, once the role of interest rates is introduced into the first generation model, the logic of the first generation model is the same as the logic of the second generation model.¹

¹ The third generation model used to explain Asian crises can also be reconciled with the second generation model once raising interest rate to defending the currency are taken into account. The cost of increasing the interest rate is that it further weakens the banking system.

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