

Multiple equilibria and currency crisis: evidence for Korea[☆]

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Abstract

This paper estimates a non-linear model that allows for multiple equilibria using data on Korea during the currency crisis in 1997. Results suggest that Korea may have been vulnerable to self-fulfilling speculation as early as January 1997. An extended phase of multiple equilibria started in October 1997. The fundamentals for Korea remained in this crisis zone until March 1998. Korea briefly entered a multiple equilibria zone again in May and June 1998 before stabilizing in July 1998. Results are supportive of roles for weakness in fundamentals and for self-fulfilling beliefs in explaining currency crises.

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JEL classification: F33; F41

Keywords: East Asia crisis; Korean currency crisis; Multiple equilibria; Self-fulfilling speculation

1. Introduction

The timing and the severity of the recent financial and economic crises in East Asia have intensified debate over the extent to which fundamentals can explain cur-

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[☆] An earlier version of this paper was presented at the Korea Economic Association Meeting in Seoul in August 2000. We thank seminar participants at this meeting and Young Youn Lee, Dong Kyu Park, and Kwang Woo Park for valuable comments.

rency crises or whether self-fulfilling speculation is a contributing factor.¹ Surprise regarding the onset of crises in East Asia was amplified by the severity of the crisis, particularly in Korea, a country long regarded as a model economy with rapid economic growth and macroeconomic stability. In this paper it is argued that, while there was a mixed picture with regard to the economic fundamentals in Korea, a satisfactory explanation for the crisis at the end of 1997 should include a role for self-fulfilling speculation.²

The objective in this paper is to estimate a non-linear model that allows for multiple equilibria for Korea during the crisis period. This self-fulfilling currency crisis model is based on models due to Obstfeld (1997) and Jeanne (1997). It is an attractive model since it emphasizes a role for fundamentals together with self-fulfilling beliefs. In the model, underlying macroeconomic fundamentals determine the range of possible equilibria. The dependent variable is the market's expected probability of abandonment of the Korean won/US dollar exchange rate peg, measured by proxy by the forward exchange rate premium of the won/dollar exchange rate from the Hong Kong non-delivered forward (NDF) market.

Estimation of the model by a non-linear Maximum Likelihood method provides some evidence of Korea having been in a zone of multiple equilibria and there having been self-fulfilling speculation at times during 1997 and 1998. Results suggest that Korea may have been vulnerable to multiple equilibria and self-fulfilling speculation as early as January 1997 during the Hanbo bankruptcy. We find evidence that fundamentals for Korea entered into a crisis zone of multiple equilibria in October 1997 and remained in this zone until March of 1998. Korea briefly entered a multiple equilibria zone again in May and June 1998, before finally stabilizing in July 1998. It should be noted that our methodology of viewing a poor empirical fit based on fundamentals as evidence of self-fulfilling expectations is limited by the possibility that poor performance may be due to other factors, including measurement error.

The outline of the paper is as follows. Section 2 reviews the background to the currency crisis and discusses the issue of the predictability of crises given the fundamentals using a probit model. In Section 3, a model in which both fundamentals and self-fulfilling speculation play a role in currency crisis is presented. Section 4 reports results from bringing this model to data for Korea. Section 5 concludes.

¹ Contributions to the discussion that speculation can to some extent be self-fulfilling include work by Eichengreen and Wyplosz (1995), Obstfeld and Rogoff (1995), Obstfeld (1996, 1998), Cole and Kehoe (1996), Sachs et al. (1996), Jeanne (1997), and Radelet and Sachs (1998). Jeanne and Masson (2000) review models of currency crisis that have recently appeared in the literature that give rise to multiple equilibria and that are consistent with the view that crises are partly self-fulfilling.

² With regard to problems with the Korean economy, important underlying structural factors have been identified as contributing factors to the crisis. These explanations include excess debt financing, crony capitalism, weak regulation of financial intermediaries, and moral hazard difficulties due to asymmetric information (see Chang and Velasco, 1998; Corsetti et al., 1999a, 1999b; Goldstein, 1998; Krugman, 1999; Park and Rhee, 1998; Shin, 1998; Dooley and Shin, 2000; Hahm and Mishkin, 2000). While these are important issues, it must be noted that these factors were not new in Korea at the end of 1997.

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