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Economic activity, foreign exchange rate, and the interest rate during the Asian crisis☆

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Abstract

In a simple linear rational expectations model in which monetary authorities act to stabilize the exchange rate and also to mitigate adverse effects on real activity, a rise in interest rate is followed by exchange rate depreciation. In daily data across VAR and VECM models a rise in interest rate is associated with significant exchange rate depreciation for Thailand, the Philippines, and Korea. Depreciation and increases in the interest rate raise business failures that intensify crisis. Crisis management of the exchange rate must consider damaging effect of restrictive policy on financially constrained banking sector and non-financial firms.

JEL classification: E52; F30; F40

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1. Introduction

In his classic study of financial crises, Kindleberger (1978; p. 11) notes that during crisis periods, "elastic expectations of change" with regard to a number of variables, including depreciation of the exchange rate and bankruptcies, could result in currency depreciation in the short run attendant on authorities raising the discount (interest) rate. Throughout the Asian crisis, several countries received IMF support packages and followed the IMF policy recommendation, that there

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should be a significant rise in interest rates so as to stabilize the exchange rate. Since the initial increases in interest rates in the Asian crisis countries failed to quickly stabilize currencies and economies went into sharp recession, researchers advanced explanations for why high interest rates may have contributed to these outcomes.[1]

We show in a simple linear rational expectations model, in which monetary authorities manage interest rates to stabilize the exchange rate and also to mitigate the adverse effects of high interest rates on real activity, a rise in the interest rate is followed by exchange rate depreciation. The relationship between the interest rate, economic activity, the financial sector, sovereign risk, and the exchange rate is considered with daily data from July 1, 1997 to July 31, 1998, for Thailand, Indonesia, Malaysia, Korea, and the Philippines.[2] We find evidence that a rise in the interest rate is significantly associated with currency depreciation for Thailand, the Philippines, and Korea. Results are thus consistent with the views of Radelet and Sachs (1998), Feldstein (1998), and Furman and Stiglitz (1998) that sharp increases in the interest rate further exacerbate crisis.

These findings differ from many of those reported in the literature, possibly because of differences with regard to frequency of data, variables employed, or technique. With daily data Goldfajn and Baig (1998) report no statistically significant relationship between the exchange rate and the interest rate in a bivariate analysis on the five crisis countries considered by us. In their VAR analysis they take lag length to be fixed at 12 for each country. It is found in the analysis below that optimal lag length varies greatly between countries and somewhat across model specification.[3] With weekly data Dekle, Hsiao, and Wang (2001b) find no support that high interest rates cause rising bankruptcies or exchange rate depreciation in Korea using a four variable model that includes an inflation differential with the US.[4] Cho and West (2001) test a bivariate model with weekly data for 1997–1998 and find that exogenous increases in the interest rate appreciate the currency in Korea and the Philippines, and depreciate the currency in Thailand, although error bands are large. Gould and Kamin (2001) test weekly data for six countries (the countries considered in this paper plus Mexico) and find statistically insignificant effects of interest rates on exchange rates.[5]

[1] Radelet and Sachs (1998) argue that during financial crises the depressing effect on firm profitability of high interest rates might lead foreign investors to avoid rolling over loans. Feldstein (1998) writes that high interest rates force bankruptcies and raise the risk of business failures in Korea at a time when "the rollover of bank loans and the demand for the won depend more on confidence than on Korean won interest rates, when the failures will reduce the prospect of loan repayment". Furman and Stiglitz (1998) discuss several ways in which high interest rates in the short-run could (permanently) weaken the exchange rate, including reduction in the net worth of banks and firms and by increasing bankruptcies. In an overview of the causes of financial crisis in Asia, Corsetti, Pesenti, and Roubini (1999) argue that moral hazard problems, weak banks, and herding behavior by foreign investors served to make the crisis more severe than the underlying fundamentals would warrant.

[2] During a crisis period we consider it advantageous to use daily data since events move so quickly. Vector autoregression models and vector error correction models are estimated as appropriate.

[3] It should be emphasized that the results reported by Goldfajn and Baig (1998) for daily data are only part of a more comprehensive study of data at other frequencies. We find for the bivariate VAR model that optimal lag length is 8, 4, 10, 1, and 10 days, for Thailand, Indonesia, Malaysia, Philippines, and Korea, respectively. Studies by Baig and Goldfajn (1998) and Kaminsky and Schmukler (1999) have also used daily data to analyze the role of major news events during the Asian crisis. Baig and Goldfajn (1998) investigate the effect of news on exchange rates, sovereign risk, and stock markets in Asian countries, controlling for US stock index and yen/dollar rate, and Kaminsky and Schmukler (1999) report on the type of news associated with substantial movements in equity markets.

[4] Dekle, Hsiao, and Wang (2001a) find with weekly data (and inclusion of an inflation differential as a third variable) that higher interest rates are associated with appreciation of the currency in Korea, Malaysia, and Thailand.

[5] The study by Gould and Kamin (2001) uses data for six variables, including inflation differential, credit spread, stock returns, and bank stock. The difference in their results from ours is due primarily to differences in data frequency. For a