



A model of the joint distribution of banking and currency crises

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Abstract

We develop a simple framework for studying the joint distribution of banking and currency crises. We make two points. First, banking and currency crises are related, but they are not the same thing. Viewing crises in isolation or as joint events biases estimates of the likelihood of crises. Second, the proliferation of government promises, such as adding a promise to bail out bank depositors to the promise of fixing the exchange rate, reduces the likelihood of keeping any individual promise when the resources devoted to keeping the promises are fixed.

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JEL classification: F3; F4

Keywords: Banking crises; Currency crises; Twin crises

1. Introduction

We develop a simple framework for studying the joint distribution of banking and currency crises. Previous work has examined these crises either in isolation or in perfect correlation. Our motivations for extending this work are both substantive and pedagogical. On the substantive side, we observe that both fixed exchange rates and banks collapsed during the Mexican and Asian financial crises, but in other historical periods fixed exchange rates collapsed without bank

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collapses or banks failed without a simultaneous collapse of the currency. The crises may be related, but they are not the same thing. We show that studying currency and bank collapses either in isolation or in perfect correlation with each other produces biased estimates of the likelihood of crises. On the pedagogical side, our framework allows us to illustrate the joint distribution of currency and banking crises in a simple picture that is the analog of one presented by Flood and Garber (1984) and used by them to study the distribution of currency crises.

Our framework builds on the early balance-of-payments crisis models of Krugman (1979) and Flood and Garber (1984) (KFG).¹ Those models showed that government commitments to both exchange-rate fixing and to monetizing a primary fiscal deficit inevitably produce a currency crisis. Here we discard the notion that a currency crisis is inevitable. Instead, we add to the government's fixed exchange-rate promise a second price-fixing promise involving bank deposits and we concentrate on the interaction of those promises. Our intention in this paper is to study the correlation of currency and bank collapses in a linear model that extends Flood and Garber (1984) by adding risk neutral, heavily regulated banks backed by government insurance and bankruptcy laws.²

In our model, banks can accept deposits from domestic and foreign agents and invest those deposits in domestic and foreign assets. Banks may end up with a net asset or net liability position in foreign currency. Returns on domestic assets are uncertain because a shock occurs to domestic fundamentals. Returns on foreign assets—or payments on foreign liabilities—are uncertain because of exchange-rate changes. A shock to domestic fundamentals can trigger a banking collapse if it makes the return on bank investments negative, and the shock can cause a currency collapse if it makes it profitable for speculators to attack the fixed exchange rate. Banking and currency collapses can but need not occur together.

Our modeling is shaped by three important features of the Asian crisis. First, commercial banks dominated the financial systems in the Asian crisis countries. In Indonesia, commercial banks accounted for 84 percent of total assets in the financial sector at the end of 1996. In Korea, the figure was 52 percent, in Thailand, 64 percent and in the Philippines, 82 percent (Lindgren et al., 1999).

Second, when there were bank failures in the Asian crisis, depositors and creditors of financial institutions were paid off at full book value. Governments introduced blanket guarantees for depositors and creditors of financial institutions

¹ These models build on the gold price-fixing model of Salant and Henderson (1978). We retain the spirit of these models by requiring foreign-currency reserves to be constant after a crisis.

² We treat the degree of government insurance as a policy. Then the banking-deposit equilibrium is essentially equivalent to the fixed-exchange-rate equilibrium. Indeed, the bank is treated simply as a semi-private authority that tries to fix the price of its deposits at unity in terms of domestic currency.

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