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Hedging and financial fragility in fixed exchange rate regimes

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Abstract

Currency crises that coincide with banking crises tend to share at least three elements. First, banks have a currency mismatch between their assets and liabilities. Second, banks do not completely hedge the associated exchange rate risk. Third, there are implicit government guarantees to banks and their foreign creditors. This paper argues that the first two features arise from banks' optimal response to government guarantees. We show that guarantees completely eliminate banks' incentives to hedge the risk of a devaluation. Our model also articulates one reason why governments might be tempted to provide guarantees to bank creditors. Guarantees lower the domestic interest rate and lead to a boom in economic activity. But this boom comes at the cost of a more fragile banking system. In the event of a devaluation, banks renege on foreign debts and declare bankruptcy. © 2001 Elsevier Science B.V. All rights reserved.

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1. Introduction

In the post Bretton Woods era, currency crises have often coincided with banking crises. Prominent examples include Southeast Asia in 1997, Chile in

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1982, Mexico in 1994, and Sweden and Finland in 1992.[1] Three key features of such 'twin' crises are (i) banks have a currency mismatch between their assets and liabilities, (ii) banks do not completely hedge the associated exchange rate risk, and (iii) the government makes implicit guarantees to banks and their foreign creditors.[2] This paper argues that the first two features arise from banks' optimal response to government guarantees.

The fact that banks are exposed to unhedged currency risks lies at the core of competing theories of currency crises. In some cases, it is simply a maintained assumption of the analysis. See for example, Aghion et al. (2000), Chang and Velasco (1999), and Krugman (1999). In other cases it is assumed that, to a first approximation, banks in emerging markets must borrow in units of foreign currency and simply cannot hedge the resulting exchange rate risk (see Eichengreen and Hausmann, 2000).

This paper argues that banks choose to expose themselves to exchange rate risk. In a world with government guarantees, it is optimal for banks to have an unhedged currency mismatch between their assets and liabilities. When a devaluation occurs, banks simply renege on foreign debt and go bankrupt. To minimize the value of the assets that they surrender in bankruptcy, banks may actually find it optimal to magnify their exchange rate exposure by selling dollars forward and lose money in the forward market when there is a devaluation.

Given the central role that government guarantees play in our model, it is useful to provide intuition for how they affect the optimal hedging strategies of banks. The government guarantees that foreign creditors will be repaid in full if there is a devaluation and banks default on their debt. Suppose a bank contemplates hedging foreign exchange rate risk via forward contracts. The hedging profits that are realized when a devaluation occurs and the bank declares bankruptcy are seized by the government. So the bank assigns zero value to them. But these contracts generate losses when there is no devaluation and the bank does not go bankrupt. It follows that banks have no incentive to enter forward contracts that generate positive payoffs when there is a devaluation.

Banks will therefore not be perfectly hedged, and will go bankrupt when a devaluation occurs. To the extent that they have any assets in that state of the world, these will be seized by the government. Hence banks ought to minimize

[1] Kaminsky and Reinhart (1999) study empirically the link between banking and currency crises. See Diaz-Alejandro (1985) and Nyberg and Vihriälä (1993) for analyses of the 1982 Chilean and 1992 Finnish crises, respectively. Garber and Lall (1998) and Krueger and Tornell (1999) discuss the 1994 Mexican crisis.

[2] Mishkin (1996) and Obstfeld (1998) argue that a government's promise to maintain a fixed exchange rate is often seen as providing an implicit guarantee to banks' creditors against the effects of a possible devaluation. Corsetti et al. (1999) and Dooley (2000) also emphasize the role of government guarantees to the banking sector in 'twin crises' episodes.