

# Financial Fragility and the Exchange Rate Regime<sup>1</sup>

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We study financial fragility, exchange rate crises, and monetary policy in a model of an open economy with Diamond–Dybvig banks. The banking system, the exchange rate regime, and central bank credit policy are seen as parts of a mechanism intended to maximize social welfare; if the mechanism fails, banking crises and speculative attacks on the currency become possible. We compare currency boards, fixed rates, and flexible rates, with and without a lender of last resort. A currency board cannot implement a social optimum; in addition, it allows bank runs to occur. A fixed exchange rate system may implement the social optimum but is more prone to bank runs and exchange rate crises than a currency board. A flexible rate system implements the social optimum and eliminates runs, provided that the exchange rate and credit policies of the central bank are appropriately designed. *Journal of Economic Literature* Classification Numbers: F3, E5, G2. © 2000 Academic Press

## 1. INTRODUCTION

Recent crises in emerging markets suggest that there is a tight link between the vulnerability of financial institutions and the occurrence of currency

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crashes. Both the analysis of particular episodes<sup>2</sup> and formal econometric evidence<sup>3</sup> point to such a link.

The proper choice of exchange rate regime, and the design of complementary monetary and fiscal policies, depend crucially on understanding this connection. It is often claimed, for instance, that fixed exchange rates limit a central bank's ability to act as a lender of last resort to the banking system. But there is strong disagreement on how to deal with this problem; suggestions include securing emergency lines of foreign credit, taxing capital inflows, or letting exchange rates float. This state of affairs has persisted, to a large extent, because there is little theoretical work linking financial fragility and exchange rate crises.

In this paper we present a formal analysis of the subject. Our approach is novel in that it starts from the microfoundations of a country's financial system. More specifically, we study commercial banking, central bank policies, and exchange rate regimes as *mechanisms* intended to implement socially desirable allocations in an economy with incomplete financial markets. We examine when such mechanisms succeed, and also when they fail and result in a bank and/or currency crisis.

We study these issues in a monetary, open economy extension of the benchmark model by Diamond and Dybvig [10]. That model is a natural choice because it focuses squarely on the liquidity of banks, which has figured prominently in observed crises. Banks take liquid deposits and invest them partly in illiquid assets; such a maturity transformation can enhance welfare, but also leaves banks subject to self-fulfilling runs.

Our analysis goes beyond that of Diamond and Dybvig in that we embed their banking story in a general equilibrium macroeconomic model which can operate under a variety of exchange rate and monetary arrangements or *regimes*. The resulting framework is rich enough to analyze currency boards, fixed exchange rates, and flexible exchange rates, with and without a lender of last resort. We also discuss the costs and benefits of precautionary measures, the implications of "dollarization," and the impact of international capital flows. In all cases we investigate the efficiency of equilibria and whether self-fulfilling runs on the bank and/or the currency can occur. The main results are:

1. A currency board, in which the exchange rate is fixed and the central bank issues no domestic credit, is vulnerable to self-fulfilling bank runs but (predictably) not to currency crises. In addition, a currency board cannot yield a socially optimal outcome.

<sup>2</sup> In the context of the Mexican 1994 crisis, see [24]. For the recent Asian crisis, see [8].

<sup>3</sup> The key reference is [18], which concludes that banking crises help predict exchange rate collapses.

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