The International Lender of Last Resort:

How Large Is Large Enough?

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Outline

The Asian crises have triggered a debate on how new rules and institutions could increase the resilience of the international monetary system. Among many proposals, it has been suggested that an international lender of last resort would be useful addition. One idea is to set up an international central bank which would issue a global currency (Garten, 1998). Other ideas, at the more realistic end of the spectrum, start from the observation that crisis lending by the international community—and in particular by the IMF— has already evolved toward *de facto* lending in last resort since the Mexican bailout (Fischer, 1999). In particular the recent adoption of Contingent Credit Lines by the IMF may be seen as an attempt at formalizing this trend.

The idea that an international lender of last resort could and should become the linchpin of the global financial architecture has been criticized on different grounds. It has been noted, first, that an international lender of last resort would worsen the moral hazard problem which, some argue, is one of the main causes of fragility of the international financial system (Meltzer, 1998). Another argument is that while a true international lender of last resort might be desirable in theory, it has no chance of being instituted in practice because the institutional changes involved go well beyond what the international community is ready to accept (Eichengreen, 1999). Some further claim that an international lender of last resort cannot function effectively unless it can issue an indefinite amount of its own currency (Capie, 1998), while others argue that the lender of last resort would need an amount of hard currencies which, though finite, is unrealistically large (Eichengreen, 1999; Rogoff, 1999).

The debate suggests that the notion of an international lender of last resort is not well-understood. Questions range from the nature of crises to the arrangements required for the lender of last resort to operate. This paper proposes a formal framework which may help shed light on several of these issues.[1] Special attention is paid to the problems that arise specifically from the international dimension of lending-in-last-resort, in particular those related to currency mismatches in the balance sheets of banks. One theme of this paper is that because of the combination of currency mismatches and adjustable exchange rates, the task of the international lender of last resort cannot be thought of as a simple transposition from the closed economy context. In particular, the rules proposed by Bagehot at the beginning of the Classical gold standard—and often invoked in the current debates—provide incomplete guidance as to the optimal lending-in-last-resort policies in the modern international financial environment.

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[1] Goodhart and Huang (2000) present another model of international lending-in-last-resort, which highlights, as we do, the importance of exchange rates.

We consider an open economy where banks exhibit both a maturity and a currency mismatch between their assets and their liabilities. While bank regulation typically disallows currency mismatches, one of the lessons from the recent crises is that they do occur and can be sizeable. Even when the banks themselves avoid currency mismatches, firms which are their customers may carry such a risk on their own books. If many large firms fail simultaneously, so will their banks, especially as maturity mismatch is a key function of the banking system. The combination of currency and maturity mismatches makes banks vulnerable to self-fulfilling international financial crises. An international lender of last resort (LOLR) can in principle remove bad equilibria. We scrutinize the size of LOLR interventions that are required to that effect. We then discuss the quantitative implications of our model using data from recent crises.

A common approach to the question of the required size of international financial assistance is to look at the liquidity gap in the aggregate balance sheet of countries, i.e., the difference between the country's foreign-currency denominated liabilities that come to maturity over a given time period (say, 6 or 12 months) and the country's liquid foreign-currency-denominated assets, most notably the foreign exchange reserves.[2] We argue in this paper that an approach entirely based on countries' pre-crisis balance sheets is at best partial, and may be seriously misleading. The demand for foreign exchange reserves, in a crisis, is not limited to the liquidity gap in the balance sheet: it may also include a currency speculation component if investors take short positions in the domestic currency. The currency speculation component, in our model, may be much larger than the liquidity gap, and tends to infinity when investors are risk neutral.

This problem arises as the joint result of two factors: *(i)* the currency mismatch in the balance sheet of the private sector, and *(ii)* the exchange rate pressure which arises endogenously in banking crises. In the absence of currency mismatch there would be no need for an *international* LOLR—the domestic monetary authorities could provide all the required liquidity by using their reserves and by creating domestic currency. In the presence of a currency mismatch, however, the Bagehot rule of lending only to solvent but illiquid institutions on good collateral becomes ambiguous. The solvency of banks depends on the level of the exchange rate, which is itself endogenous to the banking crisis. The "bad" equilibrium is not removed if the LOLR lends only to banks that are solvent on the basis of the prevailing exchange rate, since in the bad equilibrium banks are *made* insolvent by the depreciation of the domestic currency—the same banks would be solvent in the good equilibrium with a less depreciated domestic currency.[3] Hence in order to effectively remove

[2] This is the approach taken by Alan Greenspan in a recent speech, in which he argues that emerging economies should keep enough reserves to finance their liquidity gap over the following year (Bussière and Mulder, 1999).

[3] The point is in fact more general and could be made in a closed economy context. The general statement is the following: If the multiplicity of equilibria comes from the fact that

(continued…)

bad equilibria the LOLR must maintain the dollar price of domestic assets close to the level that would prevail in the good equilibrium. This constrains monetary policy and generates a speculative demand for foreign exchange reserves which might exceed the liquidity gap by a considerable margin.

The logic of our argument does not rely on the existence of a fixed currency peg. Whether the domestic currency is fixed or floating, the only way to keep domestic agents solvent is by allowing them to exchange their domestic currency-denominated assets against foreign currency *at a price that is close to the good equilibrium level*. This task becomes impossible if speculative pressure against the domestic currency creates a lose-lose situation with the domestic country facing the choice between currency depreciation and high interest rates. A floating exchange rate regime allows the domestic monetary authorities to set lower interest rates, but the associated exchange rate depreciation is no less destabilizing for the domestic financial sector—when there is a currency mismatch—than high interest rates.

The crucial issue, we argue, is not the exchange rate regime but the articulation between international lending-in-last-resort and domestic financial supervision and safety nets. If the domestic monetary authorities use the reserves lent by the international lender of last resort for foreign exchange interventions, *even unsterilized ones*, most of the reserves are likely to end up siphoned out of the country by currency speculation –instead of going to the domestic agents who most need them, those who are faced with a run on their foreign currency liabilities. There are possible solutions to this problem, but they suppose that the international LOLR gets directly involved *ex ante* in the supervisory and safety net policies of countries. For example—as we show below—the financing needs of the international LOLR can be greatly reduced if domestic authorities can commit to use LOLR resources for the exclusive purpose of serving a deposit insurance on foreign currency deposits in domestic banks. Alternatively, the international LOLR could bypass the domestic authorities and lend directly to the domestic private institutions on a case-by-case basis through a discount window. These solutions would require, in the terminology of Goodfriend and King (1988), that international lending-in-last-resort be viewed as an input into domestic banking policies, as opposed to domestic monetary policies. Such an evolution is possible in principle, but it would imply an involvement of the international LOLR in domestic banking sectors much deeper than what can realistically be supported by existing institutions and arrangements.

The paper is structured as follows. Section 2 presents the assumptions of the model and characterizes the structure of equilibria. Section 3 analyses the role of an international LOLR.

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the price of bank assets is endogenous to the occurrence of the crisis, then restricting the access to lending-in-last-resort to the banks that are solvent *in equilibrium* does not remove the bad equilibrium. The exchange rate opens up a simple channel by which the price of assets goes down in crises. In a closed economy context the same effect could result from a decrease in dividends or an increase in default probability on loans.

In section 4 we illustrate the implications of the model by looking at the order of magnitude of the main variables in a sample of recent crises. Section 5 concludes.

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