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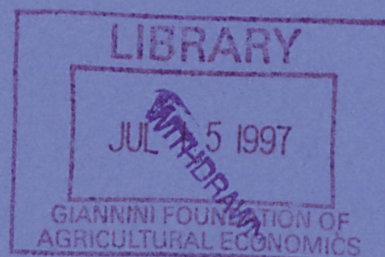
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University of California Berkeley



CENTER FOR INTERNATIONAL AND DEVELOPMENT
ECONOMICS RESEARCH
Working Paper No. C97-092

Exchange Rate Stability and Financial Stability

Barry Eichengreen

Department of Economics, University of California, Berkeley

June 1997

Department of Economics



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Abstract

In this paper I consider the connections between the exchange rate and the financial system, focusing on the implications of international monetary arrangements for the stability of the banking system. I ask questions like the following. Under what conditions can a currency peg jeopardize the stability of the banking system? Can adopting a peg set in motion processes that weaken the banks, themselves the linchpin of the financial system? Once the banking system weakens, how serious an obstacle is the currency peg to lender-of-last-resort intervention?

While this review of the historical record shows that there is no simple mapping between exchange rate stability and financial stability, it confirms that the textbook insight about the origin of disturbances and the advantages of fixed and floating rates remains the obvious place to start. When disturbances are imported, a flexible rate provides useful insulation; when they are domestic, exchange rate stability allows them to be shared with the rest of the world and disciplines domestic policymakers. This simple logic applies directly to the stability of the banking system. When disturbances to the banking system originate abroad, exchange rate flexibility can help to insulate the banks from shocks to their funding and investments. It gives the authorities the opportunity to act as lenders of last resort. The Great Depression provides perhaps the clearest illustration: in the 1930s most countries experienced the contraction of credit and collapse of activity as an imported shock, and those which allowed their exchange rates to adjust, decoupling domestic monetary and financial conditions from those abroad, were best able to avert banking panics, and to engage in lender-of-last-resort operations. Conversely, when macroeconomic and financial shocks jeopardizing the stability of the banking system are home grown, pegging the exchange rate allows idiosyncratic disturbances to spill out into the rest of the world and imposes discipline on domestic policymakers. Argentina in the 1990s illustrates the point: by adopting a rigid currency peg it has prevented domestic policymakers from succumbing to the monetary and fiscal excesses that long destabilized its banking system.

Exchange Rate Stability and Financial Stability

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Most of the literature on the choice of exchange rate regime pays little mind to implications for financial stability. Contributions typically focus on factors emphasized by the theory of optimum currency areas: economic size and openness to trade, the flexibility of labor markets, and the incidence of macroeconomic shocks (Mundell, 1961). McKinnon (1963) hints at the importance of financial factors, suggesting that countries with deep financial markets will prefer to float. Heller (1976) argues the opposite, that countries with integrated and developed financial markets will prefer to peg. But neither these nor other authors systematically analyze the significance of financial structure for the optimality of exchange-rate arrangements or the implications of the exchange rate regime for the stability of the financial system.

In this paper I consider the connections between the exchange rate and the financial system, focusing on the implications of international monetary arrangements for the stability of the banking system. I ask questions like the following. Under what conditions can a currency peg jeopardize the stability of the banking system? Can adopting a peg set in motion processes that weaken the banks, themselves the linchpin of the financial system? Once the banking system weakens, how serious an obstacle is the currency peg to lender-of-last-resort intervention?

The timeliness of these questions is clear. Since the 1970s banking crises have been endemic in both developing and advanced industrial economies. Casual observation suggests a connection between exchange rate policy and

banking problems. The Argentine banking crisis of 1980 and the Chilean crisis of 1981, two early examples, occurred in countries pursuing exchange-rate-based stabilizations (Sundararajan and Balino 1991). Finland, Norway and Sweden experienced banking crises in the 'eighties and 'nineties while operating ecu or basket pegs (Goldstein and Folkerts-Landau 1993). The banking systems of the CFA franc zone deteriorated in the 1990s, culminating in 1994 in the first devaluation of the franc-zone currencies in nearly 50 years. Mexico and Argentina, which experienced banking crises in 1994-5, both entered the period committed to policies of exchange-rate pegging (though Mexico was soon compelled to abandon its crawling peg).

While cases such as these appear to establish a presumption that countries pegging their exchange rates are especially prone to banking crises, counterexamples exist. The savings-and-loan crisis in the United States and the Japanese banking crisis of the 1990s, for example, both occurred under floating rates, for example. These cases flag the fact that the relationship between exchange rate and banking stability is likely to be complex.

Here I employ historical evidence to shed light on the relationship between banking crises and exchange rate arrangements. This makes it possible to do more than simply compare banking crises under pegged and floating rates; in addition, we can compare countries with tightly and loosely regulated financial systems, with and without controls on international capital flows, and with histories of high and low inflation. We can compare countries with and without central banks and deposit insurance. We can compare countries which have recently pegged their currencies as part of exchange-rate-based stabilizations against countries with long-lived currency pegs, and countries in which the behavior of wages, prices and interest rates

suggests that the markets vest different degrees of credibility in the government's commitment to stabilizing the nominal rate.

This history leads one to question any monocausal explanation for banking crises, including one which would emphasize the maintenance of a currency peg. To some extent this follows from the standard textbook wisdom: flexible exchange rates are preferable from the point of view of macroeconomic and financial stability when disturbances to the banking system are primarily of foreign origin, while the argument for pegged rates is strongest when the source of disturbances is primarily domestic. Thus, when threats to the stability of the banking system primarily take the form of fluctuations in world interest rates that make it more difficult for banks to fund themselves offshore, there will be a case for exchange rate flexibility to discourage the banks from relying excessively on external sources of finance. Conversely, when the main threats to the stability of the banking system emanate from monetary and fiscal policies at home, there will be an argument for attempting to peg the exchange rate in order to discipline domestic policymakers and vent domestic shocks via the external sector. But where currency pegs are fragile and incompletely credible, this last policy can be counterproductive. An exchange-rate-based stabilization that is viewed as temporary and unsustainable, for example, may encourage a domestic consumption boom in which foreign borrowing is funneled through the banks, ultimately weakening the financial position of the latter. And where politics or statute prevents modifying the currency peg and the relationship between international reserves and the domestic monetary base, governments may be especially incapable of heading off banking crises. Finally, the association between exchange rate pegging and banking crises is strongest where domestic and international

financial transactions have been liberalized recently, where competitive pressure on the banks has intensified suddenly, and where implicit or explicit government guarantees exist.

The paper develops these themes in four sections. Section 1 introduces the issues. Section 2 discusses banking crises under the 19th century gold standard, a prime hunting ground for anyone investigating the connections between exchange rate and financial stability. Section 3 contrasts the interwar period, the heyday of financial instability and an obvious contrast with the classical gold standard. Section 4 then provides a selective survey of recent experience with banking crises and exchange rate policies. The conclusion, Section 5, summarizes the implications.

I. Analytical Issues

Any discussion of the connections between exchange rates and banking crises must start by defining variables.

A. Definitions

I distinguish two aspects of exchange arrangements: the flexibility of the domestic-currency price of foreign exchange, and the convertibility of the currency. Exchange rate flexibility can range from pegged to freely floating.¹ And whether the exchange rate is pegged or allowed to vary, the domestic currency can be freely convertible into foreign exchange by market participants, or convertibility can be limited by statute.² Internal convertibility may be limited or free; that is, the right to convert bank

¹ As in Eichengreen (1994), I use the term "pegged" rather than "fixed" on the grounds that supposedly fixed exchange rates can always be "unfixed."

² Universally or for specified transactions.

liabilities into gold or foreign exchange at par (or, for that matter, at any price) may or may not be restricted.

I follow Bordo (1985, 1986) and Caprio and Klingebiel (1997) by defining a banking crisis as a situation where actual or incipient bank runs or failures lead banks to suspend the internal convertibility of their liabilities or force the government to intervene to avert this by replacing a significant share of bank capital.

B. The Exchange Rate and the Causes of Banking Crises

Gavin and Hausmann (1996) enumerate a catalog of macroeconomic factors that can contribute to banking crises. They distinguish macroeconomic shocks to bank assets from macroeconomic shocks to bank liabilities. Shocks to asset quality include recession (which can cause insolvency among borrowers, adversely affecting their ability to repay), adverse terms of trade movements (which will similarly undermine creditor solvency), erratic fiscal policies (which will affect borrowers' ability to repay by raising interest rates), and bubbles in financial markets (like those for real estate). Factors affecting bank funding include expected depreciation (which will reduce the demand for domestic-currency deposits) and world interest rates (which affect the ability of banks to borrow abroad).

Basic open-economy macroeconomics suggests that floating exchange rates will be advantageous when disturbances are foreign, since exchange rate changes insulate the economy (and policy) from external shocks. Pegged rates are preferred when shocks are domestic, since they allow some of the effects to spill out into the rest of the world and since they discipline erratic policymakers. This textbook logic is directly applicable to the case at hand. If shocks to the banking system are imported, exchange-rate flexibility can

help to insulate the economy and the banks. If wages and prices are slow to adjust, the exchange rate can be used to moderate the impact on domestic relative prices of terms-of-trade fluctuations. If the disturbance to bank funding is world interest rates, exchange rate flexibility introduces an element of risk that limits the magnitude of the capital inflows that occur when world interest rates decline.

If shocks to the banking system are domestic, on the other hand, there may be a case for pegged rates. A propensity toward erratic monetary and fiscal policies will be discouraged when the government is committed to a currency peg (and capital markets are open). There is less scope for monetary and fiscal policies to disturb interest rates when the exchange rate is credibly pegged and capital controls are absent.³ This is the logic for currency boards and other strategies of binding policymakers' hands by tying the exchange rate to the mast.

This discussion assumes that the currency peg is credible. But in countries where the exchange rate is used as a nominal anchor in disinflation programs, this is not necessarily the case. In such cases the transition to price stability can be accompanied by large capital inflows. Residents borrow abroad to finance consumption and imports of durable goods for fear that the stabilization of prices is only temporary. Households borrow from the banks, which fund loans by borrowing offshore. Foreign investors are willing to lend insofar as interest rates remain high (in part reflecting the incomplete credibility of the program). The currency peg limits exchange risk for foreign banks and other lenders confident of their ability to repatriate their

³ By implication of the interest parity condition.

funds before the stabilization breaks down. Thus, foreign funds flow into the domestic banking system in the early stages of stabilization, leading to a lending boom and a deterioration in asset quality. The lending-based consumption boom means a current-account deficit and dependence for balance-of-payments equilibrium on the continued inflow of foreign funds. If that capital inflow dries up for any reason (including doubts about the permanence of the stabilization), an exchange rate crisis will ensue in which investors withdraw their money from the banks to avoid capital losses on domestic-currency-denominated assets. The exchange rate crisis can lead to a banking crisis which magnifies the impact of the former on the domestic economy (Goldfajn and Valdes 1995). By implication, the idea that pegged exchange rates are desirable where macroeconomic disturbances are domestic in origin needs to be qualified where the response to those internal dislocations is exchange-rate-based stabilization.⁴

The next section, in discussing the response to financial crises, considers the lender of last resort. It is worth anticipating that discussion insofar as last-resort lending can itself affect the incidence of crises. One argument to this effect, due to Diamond and Dybvig (1984), is that the existence of a lender of last resort eliminates the scope for self-fulfilling bank panics. These authors emphasize that even banks solvent in the absence of a run can fail when a run occurs because bank liabilities are more liquid than bank assets. Bank deposits are demandable, but loans can be

⁴ An elegant theoretical treatment of the point is Edwards and Vegh (1997). After first establishing that a temporary stabilization is likely to ignite a domestic consumption boom financed in part by large capital inflows, they then show that in a model in which the creation of bank credit and deposits is costly and has real effects, exchange-rate-based stabilization cycles also lead to cycles in output and employment.

liquified only with time or at a loss. When some depositors queue up at the till, others have an incentive to do likewise to avoid being denied redemption of their claims; if information is asymmetric, a bank run can be self-fulfilling. And if banks are linked by the interbank market and the payments and clearing system, bank runs can spread contagiously and degenerate into panics. But if depositors are confident that the central bank or government will provide the liquidity the bank needs to meet the demands of its creditors, depositors will have no incentive to withdraw their funds. The prevalence of self-fulfilling runs and panics may thus depend on the presence or absence of a lender of last resort. Hence, a rigid currency peg which limits the scope for last-resort lending (under circumstances discussed in subsection C below) may increase the incidence of banking panics.

The counter-argument is that last-resort lending is a source of moral hazard that itself increases the prevalence of banking problems. Insured depositors having little incentive to scrutinize bank balance sheets, depositor discipline is weakened. Banks will bias their portfolios toward risky investments, since the distribution of returns will be truncated downward (the government providing liquidity and recapitalizing the bank when its loans do not pay off). Moral hazard can be limited by bailing out depositors but not banks (by being sure that bank management suffers consequences), by making last-resort loans costly (obeying Bagehot's rule), and by extending last-resort loans only to banks that submit to regulatory surveillance. Only then will the presence of a lender of last resort prevent banking panics without at the same time encouraging less dramatic but equally costly financial problems.

C. The Exchange Rate and the Response to Banking Crises

Under a mechanical currency peg, the central bank has no capacity to undertake lender-of-last-resort operations. The textbook currency board law, for example, requires that each unit of domestic currency issued by the central bank or currency board be backed by a unit's worth of foreign exchange. While Bagehot's rule instructs the central bank to support the banking system by lending freely at a penalty rate, the textbook currency board is prohibited by statute or constitution from issuing the domestic currency unless it possesses foreign exchange. If it does not possess excess reserves, it may be precluded from providing liquidity to the banks.

A similar constraint can bind countries with less rigid currency pegs. There may be one supply of central bank credit to the economy consistent with exchange rate stability but another larger supply needed to prevent the collapse of distressed financial institutions. Injecting domestic credit into the financial system may therefore undermine confidence in the currency peg and provoke a balance-of-payments crisis, deterring a central bank which values the peg from aiding the banks even when it is not legally prevented from doing so.⁵

More realistically, however, the monetary authority may have some room for maneuver even under a currency board. Reserves in excess of the statutory

⁵ A model of this relationship is Miller (1996), who considers bank failures and currency crises under the gold standard. In her model, a deterioration in bank asset quality leads households to shift from deposits to currency. The increase in currency demand prompts an inflow of capital and reserves, with which the monetary authority backs additional note emissions. Because that additional liquidity merely satisfies household demand, it does not offset the decline in deposits, a source of distress among financial institutions. If the monetary authority provides still more liquidity with the objective of aiding the banks, reserves will flow out, and intervention on behalf of the banking system may jeopardize the currency peg.

minimum may enable it to increase the supply of domestic credit without violating its currency board statute. A central bank with only the desire, not the statutory requirement, of pegging the exchange rate may be able to do the same. But while it may be able to increase the supply of domestic credit without exhausting its reserves, it may not be able to simultaneously peg the exchange rate.⁶

In general, only if instruments like sterilized intervention are effective for stabilizing the exchange rate in the face of changes in the money supply is there scope for last-resort lending under pegged rates. The central bank can offset the exchange-rate effects of the additional domestic credit by selling foreign-currency-denominated bonds from its portfolio for their domestic-currency equivalent (where the foreign-currency-denominated bonds are the excess reserves) so long as sterilized intervention works. Unfortunately, the evidence on sterilized intervention is mixed, many observers questioning its effectiveness. If it is ineffectual, there will be no way for the central bank to avoid having to choose between exchange rate stability and financial stability.⁷

If the central bank is precluded from lending, the government may still

⁶ The following simple model illustrates the point. Imagine a banking panic that leads investors to withdraw x dollars from the banking system and to hold instead an additional x dollars of domestic currency. x dollars of foreign capital flows in, is added to the central bank's stock of reserves, and backs the emission of x additional dollars of currency. The money supply (currency plus deposits) is unchanged. If output and velocity are unchanged, domestic prices are unchanged (by the quantity equation: $MV = PY$). If the exchange rate is given by purchasing power parity, then the exchange rate is unchanged. But if the central bank now issues additional domestic currency (above and beyond x) in order to recapitalize the banking system, M will begin to rise, along with the price level and the exchange rate.

⁷ For a survey of the literature see Dominguez and Frankel (1993).

intervene in its stead. It may have balances with the central bank that it can transfer to the commercial banks. This can be thought of as an increase in the demand for deposits and demand for money (on the part of the government), which will help to restore bank liabilities to pre-crisis levels. Thus, under the early-20th century gold standard, the U.S. government transferred deposits from U.S. treasury accounts to the commercial banks in periods of financial stringency (see Section II below). The Argentine Government helped to recapitalize the banking system in the wake of the 1994-5 tequila crisis (see Section IV).

These options are open not just to governments and central banks with resources in reserve but also to those which can borrow abroad. A government or central bank obtaining a foreign loan can replenish the capital of the banking system without changing the balance-sheet position of the consolidated public sector (other than increasing its external obligations). Examples of the use of foreign loans to finance last-resort lending under a pegged exchange rate include loans to the Bank of England by the Bank of France and the Russian Government in 1890 (Section II) and the loan to the Argentine Government by the International Monetary Fund in 1995 (Section IV).

Finally, there is the possibility of invoking the exchange-rate "escape clause" to reconcile the exchange rate commitment with last-resort lending. If the disturbance provoking the crisis is verifiable by third parties and not of the authorities' own making, then the latter may be able to suspend their defense of the currency peg without damaging the credibility of their commitment to its long-term maintenance.⁸ Investors will know that the

⁸ See Canzoneri (1985) and Obstfeld (1993).

authorities are suspending defense of the exchange rate only until they sort out the banking system's problems. Although the exchange rate may depreciate temporarily, capital will flow in from abroad in anticipation of the restoration of the previous parity when the additional domestic credit is eventually withdrawn from the financial system. These stabilizing capital flows will limit the currency depreciation associated with the temporary provision of additional domestic credit.

Thus, the escape-clause provision can help to reconcile an exchange rate commitment with last-resort lending. But that escape clause can be invoked without damaging the credibility of the exchange rate commitment only under the limited circumstances detailed in the preceding paragraph. Recourse to the escape clause will not be available to governments and central banks in all times and places.

II. The Gold Standard

If pegged exchange rates are conducive to banking crises, then one would expect to see a proliferation of the latter in the gold standard years. In fact, crises were not uncommon, although their frequency varied across countries. This points to the importance of institutional arrangements as a determinant of the success with which the imperatives of exchange rate stability and financial stability were reconciled.

A. Institutional Arrangements

Exchange rates were widely though not uniformly pegged to gold and hence to one another under the classical gold standard.⁹ 34 of the 39 countries

⁹ For present purposes, 1890 to 1913. Prior to 1890 adherence to the gold standard was more spotty (Eichengreen and Flandreau, 1996a, Table 1).

studied by Eichengreen and Flandreau (1996a) were on some form of gold standard in 1908.¹⁰ In all but three of those 34 countries, banks issuing paper money were obligated to redeem their notes for specie. Where the currency was inconvertible -- in Austria, Italy, and pre-1910 Greece -- additional issues could produce a premium on specie; that is, the price of notes in terms of currency could vary, introducing an element of exchange rate flexibility. But the exchange rate was pegged within narrow bands vis-a-vis other gold standard countries.¹¹

Gold standard pegs, like all pegged rate systems, still offered a limited degree of exchange rate flexibility. Fluctuation bands under the gold standard were made up of two components.¹² One reflected transactions costs, the other "the gold devices." In England these devices included the Bank of England's right to pay out old Sovereigns (whose foreign exchange value was less than that of newly-minted, full-bodied coins). The central banks of formerly bimetallic countries like France, Belgium and Italy had the further option of redeeming their notes in depreciated silver. This allowed them to maintain wider fluctuation bands, although some central banks made only

¹⁰ The term "standard" refers to the asset -- in this case, gold -- that was legal tender in unlimited amounts and could be freely coined.

¹¹ The remaining five countries in the Eichengreen-Flandreau sample (Guatemala, Honduras, Salvador, China and Persia) were on silver standards (Persia was officially bimetallic but no gold circulated). While their exchange rates could vary against the gold-based currencies, those exchange rates depended mainly on aggregate supplies and demands in global markets for precious metals, not on economic policies or conditions in any one country. For present purposes these countries too can be thought of as operating exchange rate pegs.

¹² As described at more length by Eichengreen and Flandreau (1996b).

limited use of this freedom.¹³

Institutional arrangements also differed along a number of further dimensions.¹⁴ While in some countries domestic financial conditions were tightly linked to the gold and foreign exchange reserves of the banks under rules specified by the gold standard statutes, in others this link was loosened by the practice of holding excess reserves, by provisions that allowed the reserve ratio to slip below the legal minimum under specified conditions, and by the practice of suspending the convertibility of domestic currency into gold in the event of exceptional circumstances.¹⁵ Some countries had central banks in which those reserves were concentrated, others (including Canada, Australia, New Zealand) not. Some central banks were aware of their lender-of-last-resort responsibilities, while others were ignorant of them or denied their existence.

Various authors have tabulated the incidence of banking crises under the gold standard. For the United States, Schwartz (1988) identifies bank panics in 14 of the 141 years between 1790 and 1930. Bordo's (1985, 1986) chronology covers six countries (the United States, Britain, France, Germany, Sweden and Canada) for six decades (1870 to 1933): he identifies 16 banking crises (characterized by bank runs or failures) and four panics (in which runs and failures led to the suspension of payments). In the classical gold standard

¹³ In France, for example, it was thought that the central bank should not more than double the size of the fluctuation band, while Italy used its room for maneuver more liberally.

¹⁴ The definitive account of these arrangements is Bloomfield (1959).

¹⁵ Thus, in Belgium reserves could slip below the legal minimum upon the authorization of the finance minister, while in Austria-Hungary, Germany, Italy, Japan and Norway they could do so if the central bank paid a tax.

period, the major crises were 1873, 1884, 1890, 1893 and 1907 in the United States, 1882 and 1889 in France, 1901 in Germany, and 1914 in both the U.S. and Canada.

B. The United States

The dominance of the United States in popular lists of 19th century banking crises points to the structure of the country's monetary and financial system as a determinant of crisis incidence. The literature on financial crises in the United States can be traced back to the studies conducted for the National Banking Commission (e.g. Sprague 1910). In accounting for the prevalence of banking and financial problems this literature points to the fragmented structure of the banking system, such as prohibitions on interstate branching, which limited banks' ability to diversify their portfolios and risks.¹⁶ It highlights to the magnitude of cyclical and seasonal fluctuations in the demand for money and credit, which led to sharp fluctuations in bank assets and liabilities.¹⁷ It emphasizes to the absence of a central bank which limited the ability of the federal government to manage credit conditions.¹⁸

Given the strength of agrarian and silver-mining interests, the country's commitment to defending its fixed dollar parity was less than

¹⁶ Thus, it is revealing that the Canadian monetary system shared many features with that of the United States -- including no central bank and an inelastically supplied currency -- and yet experienced a minimum of serious financial crises before 1914 (Rich 1989), a contrast that is plausibly attributable to its more widely branched and concentrated banking system.

¹⁷ On the role of seasonal factors, see Eichengreen (1984) and Miron (1986). On the role of cyclical instability in precipitating financial crises, see Gorton (1988).

¹⁸ Although some central banking operations were in fact undertaken by the Treasury; see below.

complete. Inflationist interests lobbied for the free coinage of silver, making the gold standard a campaign issue in the 1892 and 1896 presidential elections. Suspending convertibility temporarily threatened to reinforce investors' doubts about the depth of the exchange rate commitment and destabilize expectations; hence, the escape clause provision of the gold standard was not available until the Gold Standard Act of 1900 removed remaining doubts about the country's commitment to the regime.

With no central bank operate a discount window or or engage in open market operations, using monetary policy to head off panics would have been awkward in any case. Contemporaries like Kemmerer (1910) complained of the "inelasticity" of the currency -- that supply did not accommodate fluctuations in demand, causing interest rates to spike up in the spring and the fall, when planting and crop moving augmented money demand. Banking panics were concentrated in those same seasons, when the banks were least liquid (reflecting the increase in credit demand on the part of their customers). The inelasticity of the currency provided one motivation for the founding of the Federal Reserve System in 1913.

The U.S. Treasury had some capacity to ameliorate these strains. It could borrow abroad to augment the resources that could be marshalled in defense of the dollar and the banking system. In 1895 Treasury Secretary J.G. Carlisle negotiated a contract with a syndicate of international bankers, led by the Morgan and Rothschild houses in London, to borrow some \$60 million of gold from foreign countries. The Belmont-Morgan Syndicate, as it was known, also agreed to protect the Treasury against gold withdrawals and continued doing so for nearly a year and a half (Garber and Grilli, 1986; Eichengreen 1992).

In addition, in the first decade of the 20th century, Treasury Secretary Shaw restored the earlier practice of running down the Treasury's cash balance when the money market tightened. Each autumn he transferred government deposits from subtreasuries to national banks designated as depositories for public funds and augmented the public's currency holdings by purchasing government bonds or prepaying interest due. Most experts believe, however, that Treasury operations made only a modest contribution to relieving financial strains (see e.g. Timberlake 1963, 1978).

More important were the banks' self-help measures. The major urban banks had established clearing houses for netting claims on one another; these developed into venues for exchanging information and dealing with financial difficulties that might prevent particular banks from making good on their debts. In the event of a serious crisis, the members of the clearing house might suspend the convertibility of their deposits into gold and currency. The suspension of the convertibility of deposits into currency relieved distressed banks of the need to obtain liquidity from other banks to meet the demands of their depositors, which in turn prevented the crisis from spreading through the financial system. During the period of suspension, banks might make payments with specially-issued clearing house certificates (which traded at a discount relative to currency and gold).¹⁹ These certificates were issued in every major financial crisis from 1857 through 1914. A bank obtained certificates from the clearing house upon submitting acceptable (if

¹⁹ Meanwhile, the banks, in the words of Friedman and Schwartz (1963, p.328), "continued to make loans, transfer deposits by check, and conduct all their usual business except the unlimited conversion of deposits on demand." Armaos (1992) analyzes suspensions of convertibility from a theoretical perspective and shows conditions under which they can be an efficient response to a bank run.

illiquid) collateral, and the other members stood ready to accept them in payment of intra-clearing-house debts. Thus, under clearing house cooperation, strong banks effectively provided liquidity to their weaker counterparts.²⁰

Moreover, because the suspension of internal convertibility was regarded as temporary, it attracted international capital flows. Foreign investors would buy domestic bank deposits at a discount relative to currency in anticipation of reaping capital gains once internal convertibility was restored (Miller, 1996). This helped reconcile the imperatives of banking and exchange rate stability.

The U.S. under the gold standard thus provides an example of an inflexible currency peg which provided the authorities little scope for last-resort lending. Seasonal and cyclical shifts in the demand for money repeatedly strained the banking system. The absence of a central bank constrained the management of money and credit. Limited credibility precluded recourse to temporary suspensions of the dollar parity. While Treasury operations, foreign loans and clearing house cooperation prevented financial difficulties from leading to the complete breakdown of the banking system, as in the 1930s, they did not preclude repeated crises.

C. Great Britain

The Bank of England and British Government, having effectively been on

²⁰ In the words of Cannon (1910), p.12, "In times of panic it is not infrequently the case that a bank in good standing becomes temporarily embarrassed. Unfortunate report may cause a run upon it, and, being unable to call in a sufficient amount of its outstanding loans to meet the demands of frightened depositors, it must either secure a loan or fail. In such an emergency the other members of the clearing house are usually willing to render assistance until the strain is relaxed."

the gold standard since 1717, enjoyed a level of credibility matched in few other countries. They therefore found it straightforward to invoke the escape clause provision of the gold standard in times of crisis. In 1847, 1857 and 1866 they suspended the statute linking the Bank of England's note issue to the gold reserve held by the Issue Department.²¹ Clearing banks which saw asset quality deteriorate could discount at the Bank of England, which financed these operations using excess gold reserves in the Banking Department. If the Banking Department ran dry, a Treasury letter relieved the Bank of England of the need to back each additional currency note with gold, enabling it to continue discounting. Because there was no question that the relevant provision of the 1844 Bank Act would be restored as soon as the crisis passed, international capital flows moved in stabilizing directions, and the exchange rate hardly weakened.²²

Recourse to a Treasury letter would be taken only under exceptional circumstances. At other times the Bank of England could head off incipient problems by altering its discount rate. Raising the discount rate attracted gold from abroad, augmenting the excess reserves of the Banking Department. Lowering the rate encouraged the clearing banks to rediscount and raise their

²¹ As emphasized by Bordo and Kydland (1995). Horsefield (1953) notes that the Bank itself had suggested that an explicit escape clause be built into the 1844 Bank Act, but Peel omitted it from the final legislation. The first occasion on which this was done, the financial crisis of October 1847, is studied in depth by Dornbusch and Frenkel (1984).

²² As Hughes (1984) put it, "Once the London financial world realized that a Treasury letter could always be counted on to be forthcoming, the Bank's crisis-proven management technique conceivably added long-term stability to expectations and thus to the gold standard itself." He continues "Conceivably." Hughes suggests that this crisis-management technique remained untested for the remainder of the gold standard period because growth slowed and therefore financial fluctuations moderated relative to earlier years.

liquidity. In times of crisis the Bank discounted freely at a penalty rate, combining the two procedures. Thus, while financial crises were anything but absent from Britain in the gold standard years, the presence of a central bank that could adjust its discount rate to moderate seasonal and cyclical strains meant that such crises were relatively few and far between.²³

The Bank of England did not always respond in the manner of a modern central bank. It was criticized in the 1866 crisis for refusing to meet the demand for discounts and for failing to grant advances against government securities.²⁴ Still a profit-oriented, officially private entity, it sometimes succumbed to the temptation to sell securities in periods of stringency to raise cash for itself.

The "up side" of the Bank of England's ambiguous status was that it could cooperate with other private banks in arranging lifeboat operations. Thus, in 1890 not only did the Bank borrow abroad to replenish its reserves, enabling it to freely discount Baring's bills, but it cooperated with Rothschilds and other merchant banks to support the price of Baring's securities. The members of the syndicate promised to make good any loss sustained by the Bank in the course of liquidating Baring's position (establishing a guarantee fund) in return for the power to effectively assume control of Barings' affairs. Thus, the fact that it was at the same time a

²³ Especially in the final third of the 19th century, and especially in comparison with the United States.

²⁴ Bagehot (1873, repr. 1902, pp.64) observed that in 1866 there was "an instant when it was believed that the Bank would not advance on Consols, or at least hesitated to advance on them. The moment this was reported in the City and telegraphed to the country, it made the panic indefinitely worse." Schwartz (1986) calls 1866 the last real financial crisis in Britain. Still, the Bank did lend freely enough to prevent the failure of Overend and Gurney from bringing down the entire nation's banking system.

central and private bank allowed the British financial system to be supported both by countercyclical central bank operations, as in other Continental European countries, and by intra-bank cooperation, as in the United States.

The Bank of England's ability to shape financial conditions was however limited by the fact that it commanded a shrinking share of transactions on the London market over the course of the 19th century. The Bank's reserve was a mere 3 per cent of the British money supply from the 1860s and fell to less than two per cent at times of crisis. In the wake of the 1866 crisis the Bank therefore sought to augment its reserve; it made similar efforts in the aftermath of the 1890 crisis. While additional reserves meant additional room for maneuver, the reserve constraint might still bind, prompting the Bank to solicit foreign assistance. Faced with the Baring Crisis, Rothschilds negotiated on the Bank's behalf a L3 million gold loan from the Bank of France against Treasury bills and William Lidderdale of the Bank of England obtained half that sum from Russia to ensure that the gold reserve ratio would not be violated (Pressnell 1968). In 1906 and 1907, faced with growing financial stringency, the Bank again obtained foreign assistance from the Bank of France and, this time, from the German Reichsbank. In 1909 and 1910 the Bank of France again discounted English bills, making gold available to London.

Thus, the British case is one where the exchange-rate commitment and management of the domestic financial system were relatively well reconciled. The credibility of the country's commitment to the gold standard facilitated use of Treasury letters and bills of indemnity, relieving the Bank of the consequences of violating provisions of the 1844 Act and allowing the exchange-rate escape clause to be readily invoked and domestic financial problems to be addressed. The existence of a central bank that accumulated

excess reserves and actively managed domestic credit conditions minimized crises in the final third of the 19th century. Repeated recourse to foreign assistance allowed the central bank adjust policies in ways that might otherwise have been impossible owing to the inelasticity of reserves.

III. The Interwar Gold Standard

During World War I these institutional arrangements were placed in abeyance. The gold standard restored in the 1920s was a very different creature.

A. Institutional Arrangements

Friedman and Schwartz (1963, p.346) note that "[t]he more extensive use of deposits [was] widely regarded during the twenties as a sign of the great progress and refinement of the American financial structure..." Where in 1907 the American public had held no more than \$6 of deposits for every \$1 in currency, in March 1931 the deposit/currency ratio had risen to more than 10 to 1. The same trend was evident in other countries. This increased the excess reserves that governments and central banks had to hold in order to accommodate a panic-induced shift from deposits to currency. Unfortunately, there was no commensurate rise in the reserve backing of the currency (and, by implication, the authorities' capacity to issue additional gold-backed currency if investors shifted out of deposits).²⁵ To the contrary, the excess of gold reserves over the statutory minimum fell from \$5.0 billion to \$3.6

²⁵ In fact the ratio of reserves (including both gold and foreign exchange) to the currency and other sight liabilities of central banks was little changed from 1913.

billion between 1913 and 1927.²⁶ While the scope for a shift from deposits to currency was now greater, central banks' capacity to accommodate it was less.

The standard remedy, according to those concerned to establish an elastic currency, was to establish central banks where they did not exist. The United States had founded one, the Federal Reserve System, in 1913. To prevent this new institution from creating credit too liberally, its statutes required the Federal Reserve to back monetary liabilities not collateralized with gold (or silver dollars, silver certificates and greenbacks) with "eligible" paper, namely commercial, agricultural and industrial securities and bankers acceptances. These and not government bonds were the only securities that could be discounted or purchased in open market operations when the Fed lacked "free gold" above that required by statute. How tightly the free-gold constraint bound prior to its abolition 1932 (under the provisions of the first Glass-Steagall Act) is a disputed issue. The fact that legislators saw it as important to eliminate this provision in the depths of the slump suggests that eligible securities might grow scarce when economic activity turned down, making it difficult for the Fed to discount such securities in order to support the financial system.

The lack of an adequate investment portfolio initially prevented the Federal Reserve from employing open market operations, while an overhang of short-term government debt discouraged it from actively manipulating the discount rate until the debt had been funded in 1920. But by the mid-'twenties the Fed had emerged as a leading player in international financial markets. Whether this dominant player had a clear conception of its lender-

²⁶ On the assumption that central banks held as much foreign exchange as they were legally permitted. League of Nations (1930), p.98.

of-last-resort responsibilities is another question. Confusion about priorities may have been a consequence of institutional inexperience.²⁷ But it is also true that different factions within the Federal Reserve System had different views of the causes and consequences of bank failures and of the desirability of last-resort lending; some viewed commercial and financial failures as a healthy corrective which purged financial excesses from the economy and were therefore disinclined to engage in lender-of-last-resort operations.²⁸

An indirect effect of the creation of a U.S. central bank was the decline of self-help by American financial institutions. The restriction of payments, emission of clearing house certificates, and assistance for weak banks by their stronger clearing house partners that had been commonplace under the prewar gold standard were not repeated between the wars. Friedman and Schwartz (1963, pp.311-2) attribute the decline of lifeboat operations to the advent of the Fed. Establishing a central bank created a presumption that concerted action by commercial banks was no longer necessary. The Fed's existence weakened the incentive of stronger banks to aid their weaker counterparts, since they could hope to replenish their liquidity through alternative channels - namely, at the Fed's discount window - and hence were not in the same boat as the weaker banks.

Similar trends were evident elsewhere, for example in Western Europe. The expectation that central banks would intervene to stabilize the clearing

²⁷ A point to which I return in my discussion of the European Central Bank in Section IV below.

²⁸ As I have argued elsewhere, the Fed's failure to respond to bank failures cannot be fully understood without reference to this "liquidationist view."

system meant that strong banks no longer saw it necessary to support their weaker counterparts in order to protect themselves. In some cases the authorities sought to engineer shotgun marriages between banks as a substitute for lifeboat operations: the merger of the Austrian Kreditanstalt with the Bodenkreditanstalt is one example; the Austrian government imposed this merger on the reluctant chairman of the Kreditanstalt to protect the National Bank from losses on the rediscounts it had previously extended the now insolvent smaller bank.²⁹

Governments elsewhere — in Latin America and Eastern Europe — established central banks along similar lines, often following the model of the United States.³⁰ Although one justification for founding the Fed had been to establish an elastic currency, often these central banks operated under rigid gold-standard statutes which linked their note issues mechanically to their international reserves. This reflected the desire to create a central bank as a device for insulating monetary policy from political pressures (Simmons, 1994). The experience with floating exchange rates in the early 'twenties reinforced the belief that the alternative to autonomous central banking was monetary chaos, exchange-rate volatility and, ultimately,

²⁹ Other examples include the Royal Bank of Scotland's take-over of Williams Deacons in 1929-30, with Bank of England assistance (see Sayers 1976, pp.235-259). The German Government was involved in the Dresdner Bank's absorption of the Danat Bank and the merger of the Commerz- und Privat-Bank A.G. with the Barmer Bank-Verein Hinsberg, guaranteeing the Danat Bank's foreign obligations and injecting funds into the Commerz- und Privat-Bank. Friedman and Schwartz (1963) discuss the Canadian authorities' resort to preventive bank merger in 1930. And the Italian authorities relied heavily on forced merger and reorganization in dealing with that country's 1931-32 banking crisis.

³⁰ And with the advice of American apostles of central banking like the Princeton professor Edwin Kemmerer (the same Kemmerer whose 1910 book is cited above).

hyperinflation. Even countries like France, whose central banks were long established, reformed their monetary statutes to limit the ability of those entities to undertake discretionary open market operations. Thus, the restored gold standard was characterized by an element of rigidity not shared by its prewar predecessor.³¹

Nor was the gold standard escape clause invoked as readily as before World War I. The credibility of the authorities' commitment to the maintenance of convertibility was now tempered by a host of political and economic developments that shattered the constellation of political power upon which the prewar policy regime had been based.³² Adopting the corporatist strategy for securing labor peace, wartime governments encouraged the spread of unionism. Issues that had previously remained outside the political sphere, such as the determination of wages and employment, became politicized. Extension of the franchise and the growth of political parties dominated by the working classes intensified the pressure to adapt policy toward employment targets. When employment and balance-of-payments goals clashed, it was no longer clear which would dominate. Doubt was cast over the credibility of the commitment to gold. No longer did capital necessarily flow in stabilizing directions; now it might do the opposite, intensifying the pressure on countries experiencing a loss of reserves.³³

³¹ Grossman (1984) notes that the Reichsbank, the Netherlands Bank and other continental central banks were also limited in their ability to conduct open market operations.

³² This is a subject about which I have written more than once before. The version of the argument I present here is from Eichengreen (1995).

³³ Those responsible for fiscal policy enjoyed even less insulation from political pressures than their counterparts in central banks, the war having shattered earlier understandings regarding the distribution of the fiscal

This rendered governments and central banks reluctant to invoke the exchange-rate escape clause. With the credibility of their commitment to the maintenance of convertibility in doubt, a temporary suspension of convertibility could permanently damage their reputation for defending the exchange rate peg. By allowing the rate to depreciate they might be thought to be manipulating it under cover of their contingent rule, announcing the existence of exceptional circumstances when these did not exist or producing those circumstances themselves. Reassurances that the suspension was temporary might be dismissed, and capital would no longer flow in to cushion the currency's fall. Governments and central banks consequently hesitated to invoke the escape-clause provision of the gold standard for fear of damaging their reputations.³⁴

The difficulty of resorting to temporary suspensions placed a premium on foreign assistance to replenish reserves. Unfortunately, the requisite level of cooperation was not forthcoming. Three obstacles blocked the way: domestic political constraints, international political disputes, and incompatible conceptual frameworks. Special interest groups with the most to lose were able to stave off adjustments in economic policy that would have facilitated

burden. The level and composition of taxes had been radically altered, while incomes had been redistributed wholesale. Economic interest groups now fought a fiscal war of attrition, resisting any and all increases in taxes and all reductions in transfer payments. Even in countries where central bankers had retained considerable independence from political pressures, fiscal policy became politicized. And without a fiscal consensus, there was no guarantee that taxes would be raised or government spending cut when required to defend the gold standard.

³⁴ Temporary suspensions of the sort observed in the 19th century thus did not take place under the interwar system. The closest approximation was Roosevelt's abandonment of gold convertibility in 1933, which was restored in January 1934, but not at the pre-suspension parity.

international cooperation. Disputes over war debts and reparations contaminated efforts to redesign and cooperatively manage the gold standard system. Incompatible conceptual frameworks prevented policymakers from reaching a common understanding of their economic problem, let alone agreeing on a solution.

B. The Exchange Rate and the Interwar Financial Crisis

The global expansion of the second half of the 1920s was driven by capital flows from the principal financial centers, led by New York, to countries in earlier stages of economic development and to those where postwar reconstruction and adjustment were still underway. Latin America and East-Central Europe, two leading destinations of U.S. funds, were representative of these two groups of countries. Although much of the literature on foreign lending in the 1920s (viz. Lewis 1938) focuses on bond and stock markets, considerable quantities of foreign capital in fact flowed through the banks. Banks in East-Central Europe and Latin America borrowed offshore, soliciting foreign deposits and floating bonds under their own names. In the depths of the interwar depression German banks (other than the Reichsbank) had nearly \$1 billion of short-term liabilities to foreigners, nearly half of all German short-term debt. The banks accounted for a third of all short-term debts in Hungary, a quarter in Bulgaria, half in Romania, and four fifths in Poland.³⁵ Given the fractional-reserve structure of these banking systems, the foreign funds that flowed through these institutions had a magnified impact on economic activity.

All the while, the gold standard's pegged exchange rates worked as a

³⁵ League of Nations (1933), p.269.

powerful magnet for foreign funds. As before the war, the gold standard was regarded as a "good housekeeping seal of approval" for countries seeking to borrow abroad (Bordo and Rockoff 1996). It signaled that they had returned to sound and stable policies. It suggested that exchange risk was minimal. In some cases, like Germany in the aftermath of the war, foreign funds anticipated the return to gold (Holtfrerich 1986), but in most cases they waited on stabilization and the resumption of gold convertibility

This dependence on foreign funds proved problematic when U.S. lending fell off in the summer of 1928 and global economic activity. Not only did the banks experience a funding shock (foreign markets displaying a sudden reluctance to lend), but they were simultaneously exposed to a shock to asset quality (as farm loans fell into delinquency and industrial concerns began failing). Thus, the banking crises of the 1930s had important macroeconomic roots. Declining agricultural commodity prices led to farm mortgage delinquencies and weakened the condition of rural banks. The rise in U.S. interest rates made it increasingly difficult for banks outside the United States to borrow offshore and fund their loans. And the collapse of prices and production in the Depression led to a dramatic deterioration in asset quality and performance.

Banking crises were widespread: according to Grossman (1994), they occurred in Austria, Belgium, Estonia, France, Germany, Hungary, Italy, Latvia, Norway, Poland, Romania, Switzerland, Yugoslavia and the United States.³⁶ Yet they were not universal: Bulgaria, Canada, Czechoslovakia, Denmark, Finland, Greece, Lithuania, Portugal, Spain, Sweden and the UK proved

³⁶ An alternative list, which is broadly overlapping, is provided by Bernanke and James (1991).

immune. There is no shortage of explanations for the contrast: Grossman cites bank branching, size and concentration, the condition of the macroeconomy, and the prevalence of lender-of-last-resort intervention. But the single most important variable in his econometric tests of crisis incidence is the exchange rate. Countries which depreciated their currencies starting in 1931 had a significantly lower probability of experiencing banking crises than those which remained on gold. It is noteworthy that all of the countries listed in the second sentence of this paragraph as escaping banking crises abandoned the gold standard at a relatively early date.

Grossman suggests several reasons why the maintenance of a currency peg adversely affected the stability of the banking system. Most countries imported the destabilizing macroeconomic impulse from abroad; countries with pegged exchange rates enjoyed less insulation from this shock.³⁷ Such countries had less leeway for responding with expansionary monetary and fiscal policies. And their central banks had less capacity to engage in last-resort lending.

As explained above, the combination of imperfect credibility, which discouraged resort to the exchange-rate escape clause, and obstacles to international cooperation rendered the scope for central bank action especially limited. The German case illustrates the point.³⁸ The German Bank Law authorized the General Council of the Reichsbank to reduce the cover ratio to less than the 40 per cent minimum required by statute under exceptional circumstances, but this measure was not invoked for fear of jeopardizing

³⁷ As in the standard textbook model. This point is perhaps most persuasively documented by Choudri and Kochin (1980).

³⁸ I draw this discussion from Eichengreen (1994b).

confidence in Germany's commitment to gold. The government's budgetary problem was conspicuous, and the association of budget deficits with inflation had been burned into investors' consciousness by the hyperinflation ten years before. The Social Democrats opposed all cuts in unemployment benefits; the military objected to cuts in defense spending; agriculture demanded subsidies to offset the collapse of farm prices; and the Reich Association of German Industry pressed for cuts in corporate taxes.

Under such circumstances, anything less than strict adherence to the gold standard encouraged the fear that deficits would reignite inflation. The markets had no confidence that an abridgement of Germany's gold standard would be temporary. The psychological effect of breaching the 40 per cent cover requirement, Hans Luther, Reichsbank President warned, might be "absolutely fearful." Hans Schaeffer, Reich State Secretary, warned that breaching the 40 per cent limit could "precipitate a massive flight from the mark." German officials found it difficult to argue that the disturbance to the financial system was not of their own making (as would have been necessary to avoid damaging their credibility). Among Bruning's priorities was a reparation settlement: the weaker Germany's payments position, the stronger the case for concessions by the Allies. Bruning was therefore accused of pursuing policies that aggravated Germany's payments problem.

For all these reasons, the Reichsbank's ability to act as lender of last resort was severely constrained. The 1931 financial crisis did not take long to reveal this critical fact. When the failure of the Austrian Credit-Anstalt spilled over to the German banking system, the German central bank responded initially by injecting liquidity. But the faster funds were poured into the banking system, the faster they leaked back out. Providing liquidity signaled

that the authorities attached as much weight to propping up the banking system as to the gold standard. Realizing that convertibility might be compromised and that with devaluation they would incur capital losses on domestic assets, investors rushed to get their money out of the country. Reserves were depleted, forcing the authorities to withdraw liquidity from the banking system in order to defend the exchange rate. By the end of the third week of June, the Reichsbank was forced to ration credit. No sooner did it do so than a full-fledged banking panic ensued.

A couple of weeks passed before the government finally closed the banks, during which it sought to obtain foreign support. Luther solicited a \$100 million loan from the Bank of England, the Federal Reserve and the Bank for International Settlements. While this money was made available in a matter of days, no further credits were granted. Montagu Norman of the Bank of England insisted that this was impossible so long as there remained uncertainty about Germany's willingness to pay reparations. Clement Moret of the Bank of France demanded as a condition for assistance that the German government renounce Bruning's demand to reopen reparations negotiations. George Harrison of the Federal Reserve Bank of New York made his support for further credits contingent on an extensive list of financial and economic conditions. Here, then, was a clear case where the deterioration of the international political climate prevented central bank cooperation and heightened the conflict between exchange rate stability and financial stability.

While other national cases were less dramatic, the same underlying forces were at work. The gold standard heightened the banking system's exposure to the foreign shock. It constrained lender-of-last-resort intervention and rendered it counterproductive insofar as the provision of

liquidity excited devaluation expectations. Countries prepared to abandon the currency peg were better able to stabilize economic activity and support their banking systems.³⁹ It is noteworthy that no major banking crises occurred after countries left the gold standard.⁴⁰

IV. The 1980s and 1990s

The end of World War II inaugurated four decades of tranquility in the global banking system.⁴¹ White (1992) identifies several factors contributing to this stability.⁴² For one, economies were growing buoyantly prior to the first the OPEC oil-price shock. The fact that a relatively stable world price level was maintained through the 1960s, as a corollary of the operation of the

³⁹ Hori (1996) estimates monetary policy reaction functions for a panel of 24 countries, using annual data from 1929 to 1937. Dividing his sample into observations for countries on and off the gold standard, he detects no tendency for countries on the gold standard to reduce their discount rates in response to a banking crisis, but a significant tendency in this direction for countries off gold.

⁴⁰ Only the United States might be thought be different. There the macroeconomic disturbance was home grown rather than imported. And authors like Friedman and Schwartz deny that the exchange-rate constraint significantly constrained lender-of-last-resort intervention. The argument that it did emphasizes the free gold constraint prior to the Glass-Steagall Act (Wicker 1966; Eichengreen 1992), fears of declining reserves in the summer of 1932 (Epstein and Ferguson 1984), and doubts about Roosevelt's commitment to defending the dollar parity in the winter of 1932-3 (Wigmore 1987). Hori (1996) documents a significant break in the Fed's monetary-policy reaction function in March 1933 when the country left gold. Before that there was no tendency for the Fed to reduce the discount rate in response to an increase in the deposits at suspended banks; thereafter it does so in a statistically significant way. This evidence suggests that the U.S. was not all that different from other countries in which exchange-rate stability and financial stability were at odds.

⁴¹ Tranquility relative to the periods before and after.

⁴² While his analysis focuses on the United States, his conclusions are applicable more broadly.

Bretton Woods System, enhanced the transparency of loan and collateral evaluation (Schwartz 1988). With prices and interest rates relatively stable, the book and market values of bank assets and liabilities never moved far out of line. Competition from nonbank intermediaries developed only slowly, reflecting the relative stability of financial services technologies. Finally, banks were protected from excessive competition by a heavy layer of economic regulation. Thus, banking stability was sustained by a combination of favorable microeconomic and macroeconomic circumstances.

A. Recent Experience

All this changed in the 1970s. Price instability increased the difficulty of assessing credit quality, while the two OPEC oil shocks undermined borrowers' ability to repay. Rising interest rates accentuated adverse selection, as relatively safe borrowers dropped out of the market. Petro-dollar recycling encouraged money-center banks to seek out higher-yielding investments abroad. Much of this money was channelled through developing-country banks who acted as agents for their national governments or as independent borrowers. The same ample supply of funds weakened the incentive for the money-center banks to carefully scrutinize the quality of the customers approaching them for loans.

The Volcker disinflation brought a halt to this lending boom. Interest rates rose, and U.S. economic growth slowed. The large and growing budget deficits of the first Reagan Administration then placed additional upward pressure on interest rates. It is no coincidence that the Savings & Loan crisis followed on the heels of these events. 80 per cent of the industry's assets were fixed rate mortgages, the return on which no longer matched the

cost of attracting funds.⁴³ The decline in agricultural land prices (by as much as 30 per cent) in the succeeding five years, itself a function of tighter credit conditions, then compounded the difficulties of S&L's in the American West.⁴⁴ Although restrictions on the geographical diversification of S&L investments had been phased out in the 1960s, tradition and limited management competence left S&L investment portfolios regionally concentrated, allowing regional economic cycles to disproportionately affect bank balance sheets.

But while these financial difficulties were associated with macroeconomic factors, they were not associated with pegged exchange rates. The exchange rate was not a precipitating factor in the S&L crisis, nor was it a constraint on lender-of-last resort intervention. The dollar fluctuated in the 1980s (in the first half of the decade, in the virtual absence of intervention by the U.S. authorities).⁴⁵ Nor did concern for the exchange rate prevent the government and the Fed from launching the most expensive bank bailout in history in the second half of the 1980s. Owing largely to this response, the macroeconomic disturbances of the late 'seventies and early 'eighties did not culminate in a full-scale financial meltdown like that of the Great Depression.

The developing countries were on the other end of the lending boom of

⁴³ BIS (1989), p.94. Commercial bank failures also soared in the 1980s, suggesting that this was not just a mortgage-related phenomenon.

⁴⁴ The fall in oil prices in 1985 made for further difficulties for S&Ls in the Southwest in particular.

⁴⁵ Indeed, some authors have argued that an exchange-rate constraint, had one existed, would have forced the United States to reign in its budget deficit and stem the rise in interest rates and the dollar, thereby relieving the problems of the banks. See e.g. Bergsten and Henning (1996).

the 1970s. The debt crisis in which that boom culminated is too well known to be recounted here. What are relevant for present purposes are the role of the exchange rate and the consequences for the banks. The typical sequence of events was financial liberalization followed by exchange-rate-based stabilization, and large-scale foreign borrowing. In many cases the maintenance of pegged rates predictably amplified the ebb and flow of foreign funds. Argentina, for example, used a crawling peg as a stabilization tool from late 1978 through early 1981. With exchange risk minimized in the short run, residents were able to borrow offshore: there was a boom in real estate markets, apartment prices in Buenos Aires rising by 50 per cent between 1977 and 1980. But the exchange-rate peg together with inertial inflation resulted in overvaluation; the competitive difficulties of Argentine exporters set the stage for recession. When the Argentine economy turned down in early 1980, a banking crisis erupted almost immediately. As capital inflows fell off, real lending rates turned strongly positive, leaving borrowers financially strapped and the banks saddled with an overhang of nonperforming loans. By the end of 1982, 43 financial institutions, including the country's largest commercial bank, had been liquidated.

Chile in 1981 is another case where capital-account liberalization and exchange-rate-based stabilization unleashed a surge of capital inflows. In the second half of the 'seventies the banks were freed to borrow abroad in dollars (but not to assume exchange risk). Pegging the exchange rate encouraged the money-center banks to lend. Capital inflows fueled a consumption boom (partially in the form of consumer durables purchased by households skeptical of the durability of liberalization and stabilization), until the banking crisis in neighboring Argentina put sudden upward pressure

on interest rates. The position of borrowers had already been undermined by a long period of overvaluation. As those borrowers experienced financial distress, the position of the banks was undermined. Eleven Chilean financial institutions accounting for 15 per cent of total loans had to be liquidated in 1981-82. Clearly, macroeconomic factors (and exchange rate policy in particular) aggravated the difficulties of the Chilean banking system, although Edwards (1995) convincingly argues that lax regulation and supervision played a role by allowing the banks to succumb to adverse incentives.⁴⁶

While banking problems in Argentina and Chile preceded the developing-country debt crisis, the opposite was true in Colombia, Mexico, Peru and Uruguay. There, banking crises were precipitated by the curtailment of foreign financing in 1982. In each case the capital account had been liberalized and the exchange rate stabilized, encouraging foreign funds to flow in. The sudden rise in the cost of borrowing and decline in credit availability consequent on the debt crisis provoked loan defaults and bank insolvency. In most cases, the government responded to its deteriorating financial position by pressuring the central bank to print money. The resulting inflation further depressed the ratio of deposits to national income, which in turn undermined the banks' ability to fund loans and

⁴⁶ Especially in the Southern-Cone countries, inadequate information-disclosure requirements generated situations of adverse selection in which good and bad risks were not distinguished. As interest rates rose, riskier borrowers were the only ones still willing to borrow, and the quality of bank loan portfolios deteriorated. Macroeconomic instability exacerbated this situation by increasing the variance of project yields and making it particularly difficult for banks to rate risks (McKinnon 1991).

withstand runs.⁴⁷

The sequence typical of Latin America -- capital-account-cum-financial liberalization, followed by exchange rate pegging, macroeconomic disturbance, and banking crisis -- was also evident in muted form in Northern Europe. For the Nordic countries the 'eighties were a decade of deregulation and relaxation of restrictions on cross-border financial transactions.⁴⁸ The banks, encouraged by stimulative monetary and fiscal policies, responded by lending freely, fueling a consumption boom and soaring real estate and equity prices.⁴⁹ When central banks and governments finally retrenched to counter the inflationary consequences, bank borrowers and the banks themselves ran into the wall. The Norwegian crisis, which started in 1986-7, was precipitated by a sharp decline in the price of oil (akin to that experienced by the U.S. Southwest on the eve of the S&L crisis), which raised the rate of corporate bankruptcy by nearly half between 1986 and 1989. A recession followed the drop in oil prices and led to sharp falls in commercial property prices (in 1987) and housing prices (in 1988). The Finnish crisis of 1990-1 was similarly precipitated by

⁴⁷ Inflation caused a fall in deposits by depressing the demand for money. In many of these countries the authorities capped the interest rates at which the banks could lend as a way of guaranteeing the provision of cheap credit to the government; interest rate caps together with inflation were a deadly combination for deposits (Rojas-Suarez and Weisbrod 1996). BIS (1996) notes that a number of chronically high inflation Latin American countries continue to have ratios of bank credit to GDP well below those of other countries at similar stages of economic development, reflecting the instability of their macroeconomic environments.

⁴⁸ Measures motivated by the desire to retain the option of entering the European Union and the need to place growing amounts of public debt.

⁴⁹ In Sweden, for example, these reduced unemployment to the lowest levels in a decade and raised inflation significantly relative to levels in the country's principal trading partners. Jonung and Stymne (forthcoming), p.37.

monetary tightening (in 1989) and by the collapse of trade with the Soviet Union.⁵⁰ Sweden's crisis, which showed up in that country's finance companies in 1990-91, was affected by many of the same factors as in neighboring Finland and in addition by a tax reform introduced in the late 1980s which limited the tax deductibility of interest payments and put a damper on the housing market.⁵¹

Having entered the 1980s poorly capitalized, Nordic banks had little cushion against loan losses; encouraged by lax supervision, they responded to problems with their portfolios by doubling up their bets.⁵² In doing so they dug themselves a deeper hole. Thus, in the Nordic countries, as in Japan, the banks' substantial stakes in the equity and real estate markets were a source of serious problems when asset prices collapsed.

Exchange-rate pegging was the final ingredient in this combustible mix. Norway, Finland and Sweden all pegged their currencies from 1983. Each operated a trade- (and, in the case of Norway, payments-) weighted peg until the early 'nineties, when they shifted to ecu pegs. Capital inflows were discouraged by limited exchange risk, and all three countries imported the higher level of European interest rates consequent upon German unification.⁵³ In Finland banking and macroeconomic problems forced the government to devalue

⁵⁰ As well as by declining paper and pulp prices.

⁵¹ A good introduction to the Nordic banking crises is Moeller and Nielson (1995).

⁵² Consistent with this interpretation, Danish banks, which had the strongest capitalization, survived the crisis of the 'eighties most easily despite having the largest losses and provisions as a percentage of lending.

⁵³ Jonung and Stymne (forthcoming) show that real interest rates in these countries climbed sharply after 1990.

in 1991 and then abandon the peg in 1992. The devaluation of the markka undermined the financial position of Finnish corporations which had taken out foreign currency loans but had few foreign currency earnings, thereby aggravating the problems of the banks. In Sweden, there were widespread doubts about the durability of the exchange rate peg; as early as 1990 devaluation expectations led to a decline in deposits amounting to five per cent of GDP (Gavin and Hausmann 1996). The desperate attempt to defend the exchange rate peg in the autumn of 1992, which forced the central bank to raise lending rates to as much as 500 per cent, then greatly increased the cost of funding loans relative to the return on assets (Wihlborg et al. 1994). In neither Finland nor Sweden were major banks allowed to fail; in both cases the government abandoned the currency peg, freeing it to run budget deficits and recapitalize the banks. Still, it can be argued that following a more flexible exchange rate policy previously would have averted some of the subsequent problems. Had the markka been allowed to float more freely, Finnish corporations without foreign-currency earnings would not have taken out unhedged foreign-currency loans to the same extent. Had the Swedish krona not been pegged so rigidly, it would have been unnecessary to subject the country's banks to 500 per cent interest rates. Given the circumstances of the early 'nineties - German unification, a weak dollar, and uncertainty about the prospects for European monetary unification - a unilateral currency peg meant an unstable macroeconomic environment and, potentially, problems for the banks.

A summary evaluation would thus be that the Nordic banking crisis was compounded but not caused by exchange-rate policy. Their seeds were lax supervision and overly accommodating monetary and fiscal policies, and the

crisis was precipitated by macroeconomic shocks emanating from Germany and the Soviet Union. While the Swedish and Finnish authorities ultimately abandoned their currency pegs in order to prop up their banking systems, their attempts to defend those currency pegs previously worked to magnify the effects of those external shocks.⁵⁴

The latest round of banking problems has been in emerging markets.⁵⁵ In Mexico, the confidence crisis associated with the December 1994 devaluation of the peso ratcheted up interest rates to the high double digits; firms relying on short-term bank credit and with dollar-denominated loans outstanding experienced severe distress, undermining the position of the banks. Bank balance sheets were already weak, reflecting the familiar combination of deregulation and lax supervision (Desmet and Mann 1996); the need to recapitalize the banking system was a major factor in the Mexican government's decision not to repeg the exchange rate in early 1995. The larger banks (Banamex and Bancomer prominent among them) were better able to cope with the shock by virtue of their relatively ample reserves. To contain the spread of problems, the Mexican government purchased subordinated debt from the banks in order to raise their capitalization; in addition it provided dollar loans to

⁵⁴ Another interesting parallel is with earlier efforts, discussed in previous sections of this paper, to rely on self-regulation. Traditionally, the Nordic banking industry has dealt with the problem of weak banks by arranging marriages with stronger partners. Self-regulation and mutual support may have worked less well in the 1980s than in earlier decades both because deregulation disrupted the cozy atmosphere in which the banks had previously operated but also because strong banks had no incentive to support their weaker counterparts once they came to believe that the government regarded them all as too big to fail (in parallel with Friedman and Schwartz's argument about the U.S. in the 1930s).

⁵⁵ One should probably include under this heading banking crises in the transition economies, although bad loans made by state-owned banks to state-owned enterprises make these a somewhat special case (Anderson et al. 1996).

banks with dollar-denominated liabilities on relatively liberal terms. Finally, it liberalized the rules governing the acquisition of Mexican banks by foreign financial institutions and encouraged large banks to absorb their smaller, weaker counterparts (although the large banks have been understandably reluctant to ascend the alter). This has forced the Zedillo Government to agree to buy bonds issued by troubled banks in an effort to recapitalize them without resorting to direct intervention.⁵⁶

A cautious conclusion would be that macroeconomic policy – notably the overvaluation associated with the deadly combination of inflation and exchange-rate pegging – contributed to both Mexico's banking problems (by undermining the competitiveness of firms in the traded-goods sector and adding to nonperforming loans) and its balance-of-payments problems (again through deteriorating competitiveness but also by rendering the central bank reluctant to defend the currency by raising interest rates if that meant further worsening the condition of the banks). But the now-familiar combination of financial deregulation and lax supervision set the stage: the financial condition of many banks was already weak as early as 1992, prior to the recent episode of real appreciation.

Argentina's banks found themselves in the same position when they felt the reverberations of the Mexican crisis; in addition, banks in Buenos Aires held large stocks of Brady bonds, whose prices collapsed with Mexico's difficulties. Sensing that the possibility that the exchange rate might have to be devalued, deposit withdrawals, amounting to some \$2 billion in two weeks, began in early 1995. Overnight rates reached 30 per cent in Buenos

⁵⁶ If those bonds are not redeemed upon maturity they will be converted into shares.

Aires in mid-January.⁵⁷ By the end of March, deposits in Argentine banks had fallen by \$7.5 billion (or 17 per cent), the most serious losses being suffered by smaller provincial and cooperative banks.

The convertibility law requiring the central bank to peg the exchange rate severely limited its ability to undertake lender-of-last-resort operations. The monetary authorities could still reduce the banks' reserve requirements (from 33 to 30 per cent) to make liquidity available for meeting depositor demands, and used their excess reserves to extend some \$2 billion extraordinary liquidity assistance above the limits of bank capital (Caprio 1997). They issued a circular temporarily authorizing banks with excess reserves to loan these to their weaker counterparts and persuaded the top five banks to provide some \$250 million. The government for its part loaned to the banks out of its own financial reserves, but the \$1 billion allocated for this purpose was exhausted by the end of April.⁵⁸ Only a major package of international assistance from the IMF, IBRD and IDB along with President Menem's reelection in mid-May 1995 quieted fears about the future of the convertibility law and the stability of the banks, leading a third of the deposits which had flowed out of Argentina's banks following the Mexican crisis to flow back in. Public funds were then used to finance the closure or privatization of the main provincial banks.

This episode has been taken as confirming that developing countries vulnerable to sudden shifts in capital flows cannot afford to peg their

⁵⁷ At the same time, smaller banks saw their loan portfolios deteriorate as a result of currency overvaluation, slow growth and mounting unemployment.

⁵⁸ In addition, a deposit insurance scheme was implemented in April in an effort to restore depositor confidence.

currencies (viz. Sachs 1995). If the confidence of foreign investors is disturbed, such countries can find themselves threatened by banking and balance-of-payments crises which will feed on one another in a vicious circle. Their central banks will have few options for responding to these crises. The counter-argument is that the problem in Mexico was not the exchange rate per se but the failure of the authorities to appropriately harmonize monetary and fiscal policies with the exchange rate peg. And, the critics continue, the case of Argentina shows that a government can undertake lender-of-last-resort operations even when maintaining a rigid currency peg.

Both objections are too simple. For Mexico it is now widely agreed that monetary and fiscal policies were only part of the problem, and a small part at that. Also important were a currency peg that offered one-way bets to speculators and large amounts of short-term, foreign-currency-denominated debt that offered scope for a debt run (Sachs, Tornell and Velasco 1996). Argentina for its part was able to support both its exchange rate peg and its banking system only because it received some \$8 billion of foreign financial assistance, mainly from the IMF, much of which was used to recapitalize the banks and fund a deposit insurance scheme. Thus, while Argentine experience confirms that a currency peg can be consistent with lender-of-last-resort intervention, it underscores the need for international cooperation.⁵⁹

In the wake of its 1995 crisis, the Argentine government has taken steps to secure lines of credit with foreign banks upon which it will be able to draw in the event that another crisis again compels it to inject liquidity

⁵⁹ Like that in which the Bank of England, the U.S. Treasury and other governmental institutions engaged in the 19th century.

into the banking system.⁶⁰ In addition, it has imposed high reserve and capital requirements on its banks, which limit the banks' ratios of liquid liabilities to liquid assets and therefore the resources that must be raised in the event of a run. High reserve requirements can also be lowered in the event of stringency, freeing up resources to meet depositors' demands. Thus, recent experience, like that of a hundred years ago, suggests that a rigid exchange rate peg and last-resort lending can be rendered compatible, but only in the presence of institutional arrangements specifically tailored to reconcile them.

B. European Prospects

Looking forward, it is in Europe where the exchange rate commitment and the lender-of-last-resort function may most strongly conflict. The danger is that European monetary unification and the creation of a European Central Bank (ECB) will heighten the tension between these two imperatives.

When Stage III of the monetary unification process commences, most likely on January 1st, 1999, the exchange rates of the participating countries will be locked, and the ECB will be committed to exchanging their currencies for one another at par.⁶¹ The ECB's mandate, stated in the draft central bank statute appended to the Maastricht Treaty, is to maintain price stability and advance the general economic interests of the EU without jeopardizing the primary objective of price stability. In particular, that statute states that the ECB is responsible for overseeing the operation of the payments system, a

⁶⁰ In a sense it is moving away from the 1890 model of intergovernmental support to the 1893-5 model in which the Belmont-Morgan Syndicate supported the operations and augmented the resources of the U.S. Treasury.

⁶¹ Under present plans, those national currencies will be replaced by the single European currency three years later, at the beginning of 2002.

provision which can be interpreted as preventing problems of bank illiquidity and insolvency from spreading contagiously through the financial system.

Under what conditions might an exchange rate commitment prevent the ECB from discharging this function? One circumstance would be when the ECB was obligated to peg the Euro against the dollar or a basket of foreign currencies, in which case the same kind of conflict that arose in Finland and Sweden in the early 'nineties between the exchange rate peg and the lender-of-last-resort function might force it to choose between defending the peg and the banking system. This scenario can be dismissed as a short-run possibility at least, on the grounds that the adoption of an external peg for the Euro is unlikely. While the Council of Ministers is free under the provisions of the Maastricht Treaty to provide "general orientations" for exchange rate policy the ECB is not obliged to act upon them. It is not likely to embrace a commitment to a "quiet target zone" for the Euro against the dollar or the yen while it is still in the process of establishing the credibility of its commitment to price stability. The Council of Ministers has the power to negotiate a formal agreement with countries outside Europe for the establishment of a Bretton-Woods-like exchange rate regime and to require the ECB to adapt policy to its dictates. But any such agreement is unlikely. With the inauguration of Stage III, the Euro zone will come to more closely resemble the relatively large, relatively closed economy epitomized by the United States, which has been disinclined, on standard optimum-currency-area grounds, to peg its currency against those of other countries.⁶²

⁶² An external exchange rate commitment for the Euro, in the form of a new international monetary system of pegged rates or target zone, is simply not in the cards, a position that I have argued at more length in Eichengreen (1994a).

While its statute clearly states the ECB's responsibility for the payments system and, by implication, the banks, it puts barriers in the way of central bank operations in support of the public finances. The "no-bailout" clause of the treaty (Article 21 of the Protocol on the European System of Central Banks) states that the ECB cannot acquire public debt directly from the issuer. In a sense, this rule is an exchange rate constraint, since Germany and other signatories of the Maastricht Treaty required its inclusion as a prerequisite for agreeing to the creation of a European Central Bank empowered to peg intra-European exchange rates once and for all.

Article 21 is designed to shelter the ECB from pressure to monetize public debts and thereby encourage fiscal profligacy. Knowing that the ECB is prohibited from purchasing public debt directly from the issuer and otherwise subsidizing the issue of public debt by governments, those governments will be deterred from issuing excessive debt and running excessive deficits, while the ECB will be deterred from inflating away existing debts.

A complication is that in many European countries commercial banks have substantial investments in public debt. Fear of default which caused the prices of those securities to plunge could therefore create problems of solvency for the banks and undermine depositor confidence. It is revealing that precisely this problem arose in Mexico in 1994-5, where the banks held large amounts of government paper and the run on tesobonos and cetes damaged their balance-sheet position. Were the ECB forced to stand back from the public-debt market in the event of a meltdown, it could then find itself faced with very serious problems in the banking system.

In fact, Article 21 only precludes ECB purchases of public debt directly from the issuer. Nothing prevents it from purchasing public debt on the

secondary market and from the banks in particular. In doing so it can help to restore the liquidity of the latter. But if public-debt prices have collapsed, the banks will be selling their government securities to the ECB at a loss. While the transaction will enhance their liquidity, the collapse in public debt prices will still eat into commercial bank capital, potentially undermining investor confidence. It may be necessary for the ECB to inject additional liquidity to stabilize the situation.

The question then becomes whether the ECB will hesitate to do so for fear of undermining the credibility of its commitment to price stability. Whether the ECB will ignore electorally-motivated pressure from governments to stimulate activity, for example, will have to be established. Credibility will require acquiring a track record for pursuing anti-inflationary policies. Buying up the public debt holdings of the banks and more generally engaging in last-resort lending could be seen by the markets as the ECB taking its eye off the ball. In particular, if the ECB was targeting the narrow money supply, providing liquidity in support of the banking system might be seen as blatant disregard of those targets and as a credibility-damaging signal.

Other central banks have been able to engage in lender-of-last-resort operations without damaging the credibility of their commitment to price stability; the Fed in 1987 springs to mind. Its injection of liquidity in the wake of the October stock market crash did not excite inflationary expectations or throw monetary policy off course. Once the panic passed, it withdrew the additional funds and restored policy to its previous trajectory. The Banco de Mexico in 1995 is an example of the opposite, where the injection of liquidity necessary to support the financial system was associated with an acceleration of inflation to the mid-double-digits. Two factors help to

explain the contrast. First, the Fed's 1987 operation occurred against a benign inflationary backdrop, in which aggregate supply and demand conditions were well balanced and there were few inflationary expectations to excite, whereas the Banco de Mexico's 1995 operation took place in a more unbalanced macroeconomic environment in which the climate for inflation was ripe. Second, the Fed's superior credibility, accumulated over many years, making for a better outcome.

The first of these two considerations suggests that the ECB should be willing and able to undertake lender-of-last-resort operations. In its early reputation-building years, it will take seriously the pursuit of price stability, so any banking problems will occur against the backdrop of a relatively benign inflationary climate. But an ECB that believes the second may be reluctant to lend on the grounds that it had not yet built the requisite reputation. Which scenario will actually obtain is uncertain, a fact which gives grounds for concern about how the ECB will respond to banking problems in its early years.

Can European governments, as opposed to the central bank, assist the banks, as the Argentine government did in 1995?⁶³ Yes, if the governments in question have financial reserves or the ability to borrow. The danger here is that European governments will be constrained by the Excessive Deficit Procedure of the Maastricht Treaty and the Stability Pact negotiated in December 1996 at the Dublin Summit. Under their provisions, countries with deficits in excess of three per cent of GDP may be subject to fines and sanctions unless they are exempted on grounds of an exceptionally severe

⁶³ Or Secretary Shaw did before 1913?

recession. For governments with balanced budgets or current surpluses, this constraint will not bind. But most European governments, with their recent history of large deficits, will be up against their Stability Pact limits when Stage III commences. They may lay themselves open to substantial fines if they expend additional resources to bail out the banks. And depositors, knowing the disincentive this provides for a government bailout, may not be deterred from running on the banks.

Thus, both the ECB and Europe's national governments should have the capacity to intervene to stabilize their banking systems once Stage III of the EMU process has been underway for some time. In the short run, however, the constraints of imperfect credibility and the Stability Pact may limit their room for maneuver. This is one of several grounds for thinking that the early years of Stage III may prove rather exciting.

V. Conclusions and Implications

While this review of the historical record shows that there is no simple mapping between exchange rate stability and financial stability, it confirms that the textbook insight about the origin of disturbances and the advantages of fixed and floating rates remains the obvious place to start. When disturbances are imported, a flexible rate provides useful insulation; when they are domestic, exchange rate stability allows them to be shared with the rest of the world and disciplines domestic policymakers. This simple logic applies directly to the stability of the banking system. When disturbances to the banking system originate abroad, exchange rate flexibility can help to insulate the banks from shocks to their funding and investments. It gives the authorities the opportunity to act as lenders of last resort. The Great

Depression provides perhaps the clearest illustration: in the 1930s most countries experienced the contraction of credit and collapse of activity as an imported shock, and those which allowed their exchange rates to adjust, decoupling domestic monetary and financial conditions from those abroad, were best able to avert banking panics, and to engage in lender-of-last-resort operations. Conversely, when macroeconomic and financial shocks jeopardizing the stability of the banking system are home grown, pegging the exchange rate allows idiosyncratic disturbances to spill out into the rest of the world and, perhaps more importantly, imposes discipline on domestic policymakers. Argentina in the 1990s illustrates the point: by adopting a rigid currency peg it has prevented domestic policymakers from succumbing to the monetary and fiscal excesses that long destabilized its banking system.⁶⁴

But this experience also illustrates the problems created for banking stability if the locus of disturbances shifts, as it did in Argentina at the beginning of 1995. An exchange-rate arrangement that had made a positive contribution to banking and financial stability so long as potential disturbances were primarily domestic in origin proved to be a liability once external disturbances came to dominate Argentina's financial affairs. A pegged exchange rate which insulated Argentina's banks from erratic domestic policy left them naked in the face of the Tequila Effect.

This case also highlights the positive role for policy in shaping the link between exchange rate and banking stability. A government or central bank can reconcile a commitment to peg the exchange rate with a readiness to act as lender of last resort by establishing credit lines abroad: this was the

⁶⁴ And led to one of the lowest ratios of bank deposits to GDP for a country at its stage of economic development.

expedient used by Argentina to recapitalize its banks without jeopardizing its currency peg. Additional devices include encouraging lifeboat operations among the banks (as in the Nordic countries) and invoking the exchange-rate escape clause (abandoning the peg temporarily). Admittedly, encouraging mutual-support operations, like establishing foreign credit lines, is easier said than done; if there is a government or a central bank in the background concerned that some financial institutions are too big to fail, strong banks may be reluctant to support their weaker counterparts, as in the United States in the Great Depression. This is a lesson of U.S. experience in the Great Depression. And for countries like Argentina, whose pegged rates are less than fully credible, invoking the exchange-rate escape clause is not an option.

Thus, to conclude that countries with delicate financial systems should avoid pegged exchange rates is too simple. Where erratic domestic policy is the main source of disturbances, pegged rates as a source of discipline have considerable appeal. The subtler lesson is that countries adopting pegged rates, for this or other reasons, must tailor financial arrangements affecting their banking systems to accommodate this additional constraint. In particular, they should arrange external credit lines, sponsor deposit insurance schemes, raise reserve and capital requirements, and encourage their banks to develop the institutions needed to launch lifeboat operations and avoid placing their banking systems at risk.

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