The trouble with insurance—or, do high real interest rates cause bank crises?

*Given the enormous potential costs of government guarantees, bank regulators should recognize signals that they might be used.*

A financial system's functions are important enough that nearly every government explicitly or implicitly guarantees the system. These guarantees protect the payments system, prevent runs on banks, and protect depositors against losses. However, they also can promote excessive risk taking and provide bank owners with resources that can be used for one-sided bets: if they win they keep the profits, if they lose the government pays the debt. Thus guarantees may lead to bad banks and, eventually, to costly crises.

The biggest cost, however, is the forgone opportunity for higher growth that a well-functioning financial system provides (King and Levine 1993). In open and stable economies the banking system can influence the allocation of savings, generating sizable gains in the productivity of investment. Thus there is a close link between good banks and limited—if any—government financial guarantees. Given the large potential costs of these guarantees, it is worth tracking the variables that may signal an environment in which bank owners or managers have the incentive and opportunity to maximize the value of a government guarantee. This note focuses on real deposit and loan rates.

**Insurance and guarantees**

Guarantees operate in the same way as a put option on a bank's assets: if the value of the bank's assets drops below the value of its liabilities, the guarantee makes up the difference. Like a put option, an increase in the riskiness of the bank's assets increases the value of the guarantee to bank owners (and possibly to bank managers), since higher risk increases the potential for large profits while the guarantee insures depositors that they will not be responsible for losses. Without a countervailing force, deposit guarantees will be destabilizing because banks will attempt to maximize the value of the guarantees.

A positive franchise value—that is, a bank's value as an ongoing operation, including the human capital invested in specialized knowledge of bank borrowers and industries—can act as such a force. A positive franchise value is enhanced by regulatory barriers to entry, such as a high minimum level of subscribed capital required to start a bank. A sudden loosening of entry restrictions, by contrast, diminishes franchise value. Aggregate shocks (such as a decline in a country's terms of trade) lower the net worth of banks in two ways: by increas-
ing the risk of default on current loans and by lowering the quality of a bank's information on borrowers. Policy-induced shocks, such as trade liberalization, can affect a bank in much the same way if a large portion of the bank's loans are to firms adversely affected by the policy change.

When a bank has a positive franchise value and a healthy balance sheet, the value of the government's guarantee to a banker is relatively small. The guarantee provides no incentive to undertake excessive risk because the downside risk is borne by the bank. If the franchise value has been eroded, however, even minor deteriorations in the balance sheet can encourage risk-taking strategies that may trigger the government guarantee. And if a large portion of a bank's assets become nonperforming, even a positive franchise value may be insufficient to prevent excessive risk taking. Indeed, if it is easy and cheap to purchase a franchise, "bad bankers" will enter the system. People seeking easy profits will go into banking to exploit the combination of public trust and government support, as was the case in Russia immediately after the demise of unitary banking.

Banks that attempt to maximize the value of a government guarantee can create big problems. In just two to three years excessive risk taking and rapid credit creation can cause a banking crisis that can easily involve a direct fiscal cost of 8 percent of GDP and contingent debt liabilities of 40–50 percent of GDP (Caprio and Klingebiel 1997). Deadweight costs of taxation as well as costs associated with bankruptcy proceedings and the interruption of new lending can easily double the direct fiscal cost. The fiscal cost usually develops because the lender of last resort (in most cases the central bank) cannot cover its explicit and implicit guarantees. Or the central bank may choose to print money, as may the fiscal authority that typically controls the central bank.

Identifying crises

A substantial rise in real interest rates almost always causes bank balance sheets to deteriorate. This is partly because of the term transformation role played by banks: deposits are short term and assets are longer term. Higher interest rates raise the cost of deposits without bringing in compensating income from payments on outstanding loans. And even if loan contracts are short term and rolled over, the higher real loan rates may cause firms' finances to deteriorate, ultimately causing an increase in nonperforming loans. If the high real rates are only transitory, healthy banks will not be unduly affected. But if the high rates persist and banks' net worth is sufficiently compromised, banks may attempt to grow out of their problems with risky loans and investments.

At what point do high real interest rates signal an impending banking crisis? There is no easy answer, especially since there are long and variable lags between the onset of high real rates and the emergence of a visible crisis requiring fiscal support. Before undertaking an extensive analysis, however, a few simple diagnostic steps can be taken to determine whether there might be trouble.

The first step is to make two adjustments in the nominal deposit rate. Deflating the nominal deposit rate by the underlying rate of inflation gives the real return on deposits relative to holding the basket of goods comprising the price index; this is the real deposit rate. Deflating the nominal deposit rate by the sum of the change in the exchange rate plus the (three-month) U.S. Treasury-bill rate gives the real return on deposits relative to the return on T-bills; this is the deposit rate spread. Although there is no single definition of low and high deposit rates, persistent real rates above 10 percent (say, for a year) may be signaling a problem. Furthermore, if the real deposit rate appears low while the deposit rate spread appears high, there will usually have been an appreciation of the real exchange rate combined with expectations of a future depreciation. If this is the case, what has come to be known as the "peso problem" is driving up interest rates (Blanco and Garber 1986).

The peso problem

The peso problem is important because expectations of future exchange rate depreciation will drive up interest rates even if the government has no intention of making a sharp exchange rate adjustment. If maintained over a long period, high interest rates can erode the net worth of firms and banks, encouraging bankers to respond to the perverse incentives created by government deposit guarantees.
A rough proxy for devaluation expectations can be computed by subtracting the U.S. dollar interest rate from the local currency interest rate. If the expected devaluation consistently and significantly exceeds the actual change in the exchange rate, chances are there is a peso problem. Mexico's recent exchange rate crisis clearly had its roots in a peso problem (figure 1). The expected depreciation rate began exceeding the promised depreciation rate in March 1994—nine months before the onset of the crisis.

In some countries deposits are indexed to prices. In that case inflation expectations can be computed by subtracting the indexed interest rate from the nonindexed rate. If expected inflation consistently exceeds actual inflation, there may be a peso problem. In Chile expected inflation began exceeding actual inflation in 1981, causing real interest rates to rise to high levels in the months before the June 1982 devaluation (figure 2). Mexico had a similar experience: expected inflation began exceeding actual inflation in March 1994, causing sharp increases in real interest rates (figure 3). Brazil has had the same problem (figure 4). There, real interest rates remain volatile and high because financial markets doubt the central bank's ability to hold down inflation and maintain the exchange rate band without stronger adjustments in fiscal policy.

A number of analytical approaches—including speculative attack models, self-fulfilling crisis models, and credibility models—can be used to explain why the peso problem occurs. Whatever its cause, the high real interest rates that accompany it can trigger a banking crisis. Government guarantees can exacerbate the crisis by allowing banks to avoid a quick resolution of their portfolio problems and by creating incentives for bankers to take on risk ("bet the bank") and, in some cases, to commit fraud.

Looking further

Even if these models do not provide convincing evidence that there is a peso problem, that does not necessarily mean that there is no potential for a banking crisis. For example, the U.S. savings and loan crisis grew out of the risk-taking behavior of thrifts that were able to borrow at interest rates close to the risk-free rate—a rate that was extended because of the belief that deposit guarantees were backed by the U.S. Treasury. Bankers in Chile and Mexico also may have used high-risk loan strategies to exploit deposit guarantees before those countries' peso problems emerged. If real deposit rates are high but evidence on the peso problem is ambiguous, examination of the real loan rate is the next step.

To begin, the real loan rate is considered relative to the real growth rate of bank credit. If over the course of a year the real loan rate was 20 percent and the real growth rate of bank credit was 25 percent, then 80 percent (20 divided by 25) of the growth in bank credit might simply have involved rolling over existing loans and capitalizing contracted interest payments. If over a long period high real loan rates account for most of the

**Figure 1. Interest rate spreads in Mexico, June 1993–November 1994**

![Graph showing interest rate spreads in Mexico](source: Authors' calculations based on Bank of Mexico data.)

**Figure 2. Spread of expected over actual inflation in Chile, January 1981–December 1983**

![Graph showing spread of expected over actual inflation in Chile](source: Authors' calculations based on Brock 1996.)
growth in domestic credit, there is cause for concern about the eventual size of a government bailout. For example, between June 1976 and June 1979 the compounded real loan rate in Chile was 243 percent, or 78 percent of the 310 percent increase in real bank credit over the period. Between June 1994 and March 1996 the compounded real loan rate in Brazil was 153 percent while real credit actually fell by 4 percent.

It could be argued, however, that this trend is a good development in a second-best environment. It certainly is better than the counterfactual (high credit expansion in an environment of high loan rates). A complementary exercise is to estimate the share of nonperforming loans in bank assets at the beginning of a period of high real interest rates and compare it with later levels, knowing that nonperforming loans will be rolled over. In Chile industry estimates put nonperforming loans at 10–15 percent of assets at the beginning of 1977. By mid-1979 this share would have fallen to 8–12 percent of bank assets (78 percent of 10 and 15). In Brazil, assuming that nonperforming loans were a comparable share of June 1994 loan portfolios, nonperforming loans could have increased to 30–45 percent of bank assets by March 1996. These figures are high relative to bank capital, and suggest a need for caution about the potential harm from bank actions protected by government deposit guarantees.

If the analysis of deposit rates and loan rates suggests cause for concern, then a more thorough financial assessment is called for. Banks respond differently in a risky environment. Some adopt slower growth and prudent lending strategies, while others engage in high-growth, high-risk strategies. These differences can be uncovered by analyzing individual banks' balance sheets. Getting additional private information on bank portfolios and lending practices requires the efforts of bank regulators.

— Paulo Vieira da Cunha and Phil Brock

Further reading


