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## PART II: Papers

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# Chapter 1

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## DEPOSIT INSURANCE SCHEMES

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### Abstract

*More than two-thirds of member countries of the International Monetary Fund (IMF) have experienced one or more banking crises in recent years. The inherent fragility of banks has motivated about 50 percent of the countries in the world to establish deposit insurance schemes. By increasing depositor confidence, deposit insurance has the potential to provide for a more stable banking system. Although deposit insurance increases depositor confidence, it removes depositor discipline. Banks are thus freer to engage in activities that are riskier than would otherwise be the case. Deposit insurance itself, in other words, could be the cause of a crisis. The types of schemes countries have adopted will be assessed as well as the benefits and costs of these schemes in promoting stability in the banking sector.*

**Keywords:** deposit insurance; banks; regulation, banking crisis; bank runs; banking instability; depositor discipline; moral hazard; bank supervision; financial systems

### 1.1. Introduction

During the last three decades of the 20th century, more than two-thirds of member countries of the International Monetary Fund (IMF) have experienced one or more banking crises. These crises occurred in countries at all levels of income and in all parts of the world. This troublesome situ-

ation amply demonstrates that while banks are important for channeling savings to productive investment projects, they nonetheless remain relatively fragile institutions. And when a country's banking system experiences systemic difficulties, the results can be disruptive and costly for the whole economy. Indeed, the banking crises that struck many Southeast Asian countries in mid-1997 cost Indonesia alone more than 50 percent of its Gross Domestic Product (GDP).

The inherent fragility of banks has motivated many nations to establish deposit insurance schemes. The purpose of such schemes is to assure depositors that their funds are safe by having the government guarantee that these can always be withdrawn at full value. To the extent that depositors believe that the government will be willing and able to keep its promise, they will have no incentive to engage in widespread bank runs to withdraw their funds. By increasing depositor confidence in this particular way, deposit insurance thus has the potential to provide for a more stable banking system.

Although deposit insurance increases depositor confidence, however, it gives rise to what is referred to as "moral hazard" (Gropp and Vesala, 2001). This is a potentially serious problem, which arises when depositors believe their funds are safe. In such a situation they have little, if any, incentive to monitor and police the activities of banks. When this type of depositor discipline is removed because of deposit insurance, banks are freer to engage in

activities that are riskier than would otherwise be the case. To the extent that this type of moral hazard is not kept in check by the bank regulatory and supervisory authorities after a country establishes a deposit insurance scheme, its banking system may still be susceptible to a crisis. Deposit insurance itself, in other words, could be the cause of a crisis (Cooper and Ross, 2002; Diamond and Dybvig, 2000).

The establishment of a deposit insurance scheme therefore is not a sinecure. It provides both potential benefits and costs to a society. The difficult issue is maximizing the benefits while simultaneously minimizing the costs. It is for this reason that governments and citizens in countries around the globe need a better appreciation and understanding of deposit insurance. This is particularly the case insofar as ever more countries have been establishing such schemes in recent years. Indeed, since the first national deposit insurance scheme was established by the United States in 1933 (Bradley, 2000), nearly 70 more countries have done so, most within the past 20 years. The IMF, moreover, suggests that every country should establish one (Garcia, 2000).

### **1.2. The Inherent Fragility of Banks**

It is a well known and widely accepted fact that banks are an important part of a nation's financial system. They complement the nonbank financial institutions and the capital markets in promoting economic growth and development. In particular, banks extend credit to business firms for various investment projects and otherwise assist them in coping with various types of financial risk. They also facilitate the payment for goods and services by providing a medium of exchange in the form of demand deposits. But in providing these services, banks create longer-term assets (credit) funded with shorter-term liabilities (deposits). Therein lies the inherent source of bank fragility. Depositors may decide to withdraw their deposits from banks at any time.

The worst-case scenario is one in which depositors nationwide become so nervous about the

safety of their deposits that they simultaneously decide to withdraw their deposits from the entire banking system. Such a systemic run would force banks to liquidate their assets to meet the withdrawals. A massive sale of relatively opaque assets, in turn, would require that they be sold at "fire-sale" prices to obtain the needed cash. This situation could force illiquid but otherwise solvent institutions into insolvency.

The typical structure of a bank's balance sheet is therefore necessarily fragile. Any bank would be driven into insolvency if its assets had to be immediately sold to meet massive withdrawals by its depositors. This would not be a concern if such an event were a mere theoretical curiosity. There have in fact been widespread bank runs in various countries at various points in time. There have even been instances where bank runs in one country have spread beyond its borders to banks in other countries. Unfortunately, bank runs are not benign. They are destructive insofar as they disrupt both the credit system and the payments mechanism in a country. Worse yet, the bigger the role banks play in the overall financial system of a country, the more destructive a banking crisis will be on economic and social welfare. This is typically the situation in developing countries.

### **1.3. The Benefits of Deposit Insurance Schemes**

The primary purpose of a deposit insurance scheme is to minimize, if not entirely eliminate, the likelihood of bank runs. A secondary purpose is to protect small depositors from losses. At the time of the Great Depression in the United States, banks had experienced widespread runs and suffered substantial losses on asset sales in an attempt to meet deposit withdrawals. The situation was so devastating for banks that President Roosevelt declared a bank holiday. When banks were re-opened, they did so with their deposits insured by the federal government. This enabled depositors to be confident that their funds were now indeed safe, and therefore there was no need to withdraw them. This action by the government was sufficient

to restore confidence in depositors that their funds were safe in banks. By establishing a “safety net” for depositors of banks, bank runs were eliminated in the United States.

Before the establishment of deposit insurance in the United States, it was the responsibility of the Federal Reserve System to prevent bank runs. This goal was supposed to be accomplished by lending funds to those banks which were experiencing liquidity problems and not solvency problems. In other words, the Federal Reserve System was supposed to be a lender of the last resort, always ready to lend to illiquid but solvent banks, when nobody else was willing to do so. Yet, it did not fulfill its responsibility during the 1930s. It was therefore considered necessary to establish an explicit deposit insurance scheme to reassure depositors that their deposits would always be safe and readily available on demand. Deposit insurance thus became a first line of defense against bank runs.

For nearly 50 years after its establishment, the U.S. deposit insurance scheme worked as intended. There were no bank runs and the consensus was that deposit insurance was a tremendous success. But then events occurred that called this view into question. Savings and loans, which had also been provided with their own deposit insurance scheme at the same time as banks, were devastated by interest rate problems at first, and then by asset quality problems during the 1980s. The savings and loan problems were so severe that even their deposit insurance fund became insolvent during the mid-1980s. Ultimately, taxpayers were required to contribute the majority of the \$155 billion, the cost for cleaning up the mess. Fortunately, even though the deposit insurance fund for banks became insolvent during the late 1980s, the cleanup cost was only about \$40 billion. And taxpayers were not required to contribute to covering this cost.

The fact that several thousand depository institutions – in this case both savings and loans, and banks – could fail, and cost so much to resolve convincingly demonstrated to everyone that deposit insurance was not a panacea for solving

banking problems. Despite being capable of addressing the inherent fragility problem of banks, deposit insurance gave rise to another serious problem, namely, moral hazard.

#### **1.4. The Costs of Deposit Insurance Schemes**

While instilling confidence in depositors that their funds are always safe, so as to prevent bank runs, deposit insurance simultaneously increases the likelihood of another serious banking problem in the form of moral hazard. By removing all concerns that depositors have over the safety of their funds, deposit insurance also removes any incentive depositors have to monitor and police the activities of banks. Regardless of the riskiness of the assets that are acquired with their deposits, depositors are assured that any associated losses will be borne by the deposit insurance fund, and not by them. This situation therefore requires that somebody else must impose discipline on banks. In other words, the bank regulatory and supervisory authorities must now play the role formerly played by depositors.

There is widespread agreement that regulation and supervision are particularly important to prevent banking problems once countries have established a deposit insurance scheme. Countries doing so must more than ever contain the incentive for banks to engage in excessively risky activities once they have access to deposits insured by the government. The difficult task, however, is to replace the discipline of the private sector with that of the government. Nonetheless, it must and has been done with varying degrees of success in countries around the world. The proper way to do so involves both prudential regulations and effective supervisory practices.

Skilled supervisors and appropriate regulations can help prevent banks from taking on undue risk, and thereby exposing the insurance fund to excessive losses. At the same time, however, banks must not be so tightly regulated and supervised that they are prevented from adapting to a changing financial marketplace. If this happens, banks will be less

able to compete and thus more likely to fail. The regulatory and supervisory authorities must therefore strike an appropriate balance between being too lenient and too restrictive, so as to promote a safe and sound banking industry.

The appropriateness of specific regulations and supervisory practices necessarily depends upon the specific design features of a deposit insurance scheme. Some features may exacerbate moral hazard, whereas others may minimize it. In other words, it is important for a government to realize that when designing a scheme, one must take into account the effects the various features will have on both depositor confidence and moral hazard. In this regard, information has recently become available describing many of the important differences among deposit insurance schemes that have been established in a large number of countries. It is, therefore, useful to examine this “menu of deposit insurance schemes”. One can thereby appreciate the ways in which these schemes differ, and then try to assess which combination of features seems to strike a good balance between instilling depositor confidence so as to eliminate bank runs and yet containing the resulting moral hazard that arises when depositor discipline is substantially, if not entirely, eliminated.

### **1.5. Differences in Deposit Insurance Schemes Across Countries**

Of the approximately 220 countries in the world, about half of them have already established or plans to establish deposit insurance schemes. Information on selected design features for the schemes in 68 countries is presented in Table 1.1. It is quite clear from this information that there are important differences in key features across all these countries, which includes both emerging market economies and mature economies (DemirgüçKunt and Kane, 2002; DemirgüçKunt and Sobaci, 2001; DemirgüçKunt and Detragiache, 2000; Garcia, 1999). At the outset it should be noted that the vast majority of these countries have only recently established deposit insurance

for banks. Indeed, 50 of the 68 countries have established their schemes within the past 20 years. And 32 of these countries established them within the past decade. More countries are either in the process or likely in the near future to establish a deposit insurance scheme. Differences in each of the other important features noted in the table will now be briefly described in turn.

One key feature of any deposit insurance scheme is the coverage limit for insured depositors. The higher the limit the more protection is afforded to individual depositors, but the higher the limit the greater the moral hazard. The limits vary quite widely for countries, ranging from a low of \$183 in Macedonia to a high of \$260,800 in Norway. For purposes of comparison, the limit is \$100,000 in the United States. One problem with these comparisons, however, is that there are wide differences in the level of per capita income among these countries. It is therefore useful to compare the coverage limits after expressing them as a ratio to GDP per capita. Doing so one finds that Chad has the highest ratio at 15, whereas most of the other countries have a ratio at or close to 1. Clearly, ratios that are high multiples of per capita GDP are virtually certain to eliminate any discipline that depositors might have otherwise imposed on banks.

Apart from coverage limits, countries also differ with respect to coinsurance, which may or may not be a part of the deposit insurance scheme. This particular feature, when present, means that depositors are responsible for a percentage of any losses should a bank fail. Only 17 of the 68 countries have such a feature. Yet, to the extent that depositors bear a portion of any losses resulting from a bank's failure, they have an incentive to monitor and police banks. Usually, even when countries adopt coinsurance, the percentage of losses borne by depositors is capped at 10 percent. Even this relatively small percentage, however, is enough to attract the attention of depositors when compared to the return they can expect to earn on their deposits, and thereby help to curb moral hazard.

**Table 1.1.** Design features of deposit insurance schemes in countries around the world

| Countries                      | Date enacted/<br>revised | Coverage<br>limit | Coverage<br>ratio limit/<br>GDP per<br>capita | Coinsurance | Type of fund<br>(Yes = funded;<br>No = unfunded) | Risk-adjusted<br>Premiums | Type of<br>membership |
|--------------------------------|--------------------------|-------------------|---|-------------|--|---------------------------|-----------------------|
| Argentina                      | 1979/1995                | \$30,000          | 3   | No          | Yes  | Yes                       | Compulsory            |
| Austria                        | 1979/1996                | \$24,075          | 1   | Yes         | No   | No                        | Compulsory            |
| Bahrain                        | 1993                     | \$5,640           | 1   | No          | No   | No                        | Compulsory            |
| Bangladesh                     | 1984                     | \$2,123           | 6   | No          | Yes  | No                        | Compulsory            |
| Belgium                        | 1974/1995                | \$16,439          | 1   | No          | Yes  | No                        | Compulsory            |
| Brazil                         | 1995                     | \$17,000          | 4   | No          | Yes  | No                        | Compulsory            |
| Bulgaria                       | 1995                     | \$1,784           | 1   | No          | Yes  | Yes                       | Compulsory            |
| Cameroon                       | 1999                     | \$5,336           | 9   | No          | Yes  | Yes                       | Voluntary             |
| Canada                         | 1967                     | \$40,770          | 2   | No          | Yes  | No                        | Compulsory            |
| Central<br>African<br>Republic | 1999                     | \$3,557           | 13  | No          | Yes  | Yes                       | Voluntary             |
| Chad                           | 1999                     | \$3,557           | 15  | No          | Yes  | Yes                       | Voluntary             |
| Chile                          | 1986                     | \$3,600           | 1   | Yes         | No   | No                        | Compulsory            |
| Colombia                       | 1985                     | \$5,500           | 2   | Yes         | Yes  | No                        | Compulsory            |
| Croatia                        | 1997                     | \$15,300          | 3   | No          | Yes  | No                        | Compulsory            |
| Czech<br>Republic              | 1994                     | \$11,756          | 2   | Yes         | Yes  | No                        | Compulsory            |
| Denmark                        | 1988/1998                | \$21,918          | 1   | No          | Yes  | No                        | Compulsory            |
| Dominican<br>Republic          | 1962                     | \$13,000          | 7   | Yes         | Yes  | No                        | Voluntary             |
| Ecuador                        | 1999                     | N/A               | N/A   | No          | Yes  | No                        | Compulsory            |
| El Salvador                    | 1999                     | \$4,720           | 2   | No          | Yes  | Yes                       | Compulsory            |
| Equatorial<br>Guinea           | 1999                     | \$3,557           | 3   | No          | Yes  | Yes                       | Voluntary             |
| Estonia                        | 1998                     | \$1,383           | 0   | Yes         | Yes  | No                        | Compulsory            |
| Finland                        | 1969/1992/1998           | \$29,435          | 1   | No          | Yes  | Yes                       | Compulsory            |
| France                         | 1980/1995                | \$65,387          | 3   | No          | No   | No                        | Compulsory            |
| Gabon                          | 1999                     | \$5,336           | 1   | No          | Yes  | Yes                       | Voluntary             |
| Germany                        | 1966/1969/1998           | \$21,918          | 1   | Yes         | Yes  | No                        | Compulsory            |
| Gibraltar                      | 1998                     |                   | N/A   | Yes         | No   | No                        | Compulsory            |
| Greece                         | 1993/1995                | \$21,918          | 2   | No          | Yes  | No                        | Compulsory            |
| Hungary                        | 1993                     | \$4,564           | 1   | No          | Yes  | Yes                       | Compulsory            |
| Iceland                        | 1985/1996                | \$21,918          | 1   | Yes         | Yes  | No                        | Compulsory            |
| India                          | 1961                     | \$2,355           | 6   | No          | Yes  | No                        | Compulsory            |
| Ireland                        | 1989/1995                | \$16,439          | 1   | Yes         | Yes  | No                        | Compulsory            |
| Italy                          | 1987/1996                | \$125,000         | 6   | No          | No   | Yes                       | Compulsory            |
| Jamaica                        | 1998                     | \$5,512           | 2   | No          | Yes  | No                        | Compulsory            |
| Japan                          | 1971                     | N/A               | N/A   | No          | Yes  | No                        | Compulsory            |
| Kenya                          | 1985                     | \$1,757           | 5   | No          | Yes  | No                        | Compulsory            |
| Korea                          | 1996                     | N/A               | N/A   | No          | Yes  | No                        | Compulsory            |
| Latvia                         | 1998                     | \$830             | 0   | No          | Yes  | No                        | Compulsory            |
| Lebanon                        | 1967                     | \$3,300           | 1   | No          | Yes  | No                        | Compulsory            |
| Lithuania                      | 1996                     | \$6,250           | 2   | Yes         | Yes  | No                        | Compulsory            |

*(Continued)*

**Table 1.1.** Design features of deposit insurance schemes in countries around the world (*Continued*)

| Countries            | Date enacted/<br>revised | Coverage<br>limit   | Coverage<br>ratio limit/<br>GDP per<br>capita | Coinsurance | Type of fund<br>(Yes = funded;<br>No = unfunded) | Risk-adjusted<br>Premiums | Type of<br>membership   |
|----------------------|--------------------------|---------------------|---|-------------|--|---------------------------|-------------------------|
| Luxembourg           | 1989                     | \$16,439            | 0   | Yes         | No   | No                        | Compulsory              |
| Macedonia            | 1996                     | \$183               | 0   | Yes         | Yes  | Yes                       | Voluntary               |
| Marshall<br>Islands  | 1975                     | \$100,000           | N/A   | No          | Yes  | Yes                       | Voluntary               |
| Mexico               | 1986/1990                | N/A                 | N/A   | No          | Yes  | No                        | Compulsory              |
| Micronesia           | 1963                     | \$100,000           | N/A   | No          | Yes  | Yes                       | Voluntary               |
| Netherlands          | 1979/1995                | \$21,918            | 1   | No          | No   | No                        | Compulsory              |
| Nigeria              | 1988/1989                | \$588               | 2   | No          | Yes  | No                        | Compulsory              |
| Norway               | 1961/1997                | \$260,800           | 8   | No          | Yes  | No                        | Compulsory              |
| Oman                 | 1995                     | \$52,630            | 9   | Yes         | Yes  | No                        | Compulsory              |
| Peru                 | 1992                     | \$21,160            | 9   | No          | Yes  | Yes                       | Compulsory              |
| Philippines          | 1963                     | \$2,375             | 3   | No          | Yes  | No                        | Compulsory              |
| Poland               | 1995                     | \$1,096             | 0   | Yes         | Yes  | No                        | Compulsory              |
| Portugal<br>Republic | 1992/1995<br>1999        | \$16,439<br>\$3,557 | 1<br>5  | Yes<br>No   | Yes<br>Yes                                       | Yes<br>Yes                | Compulsory<br>Voluntary |
| Romania              | 1996                     | \$3,600             | 2   | No          | Yes  | Yes                       | Compulsory              |
| Slovak<br>Republic   | 1996                     | \$7,900             | 2   | No          | Yes  | No                        | Compulsory              |
| Spain                | 1977/1996                | \$16,439            | 1   | No          | Yes  | No                        | Compulsory              |
| Sri Lanka            | 1987                     | \$1,470             | 2   | No          | Yes  | No                        | Voluntary               |
| Sweden               | 1996                     | \$31,412            | 1   | No          | Yes  | Yes                       | Compulsory              |
| Switzerland          | 1984/1993                | \$19,700            | 1   | No          | No   | No                        | Voluntary               |
| Taiwan               | 1985                     | \$38,500            | 3   | No          | Yes  | No                        | Voluntary               |
| Tanzania             | 1994                     | \$376               | 2   | No          | Yes  | No                        | Compulsory              |
| Trinidad &<br>Tobago | 1986                     | \$7,957             | 2   | No          | Yes  | No                        | Compulsory              |
| Turkey               | 1983                     | N/A                 | N/A   | No          | Yes  | Yes                       | Compulsory              |
| Uganda               | 1994                     | \$2,310             | 8   | No          | Yes  | No                        | Compulsory              |
| Ukraine              | 1998                     | \$250               | 0   | No          | Yes  | No                        | Compulsory              |
| United<br>Kingdom    | 1982/1995                | \$33,333            | 1   | Yes         | No   | No                        | Compulsory              |
| United States        | 1934/1991                | \$100,000           | 3   | No          | Yes  | Yes                       | Compulsory              |
| Venezuela            | 1985                     | \$7,309             | 2   | No          | Yes  | No                        | Compulsory              |

Source: DemirgüçKunt, A. and Sobaci, T. (2001) 'Deposit Insurance Around the World', *The World Bank Economic Review*, 15(3): 481–490. Full database available at <http://econ.worldbank.org/programs/finance/topic/depinsurance/>

Some countries have elected to establish an *ex-ante* funded scheme, whereas others have chosen to provide the funds for any losses from bank failures *ex-post*. Of the 68 countries, only 10 have chosen to establish an *ex-post* or unfunded scheme. In this

case, the funds necessary to resolve bank failures are obtained only after bank failures occur. This type of arrangement may provide a greater incentive for private monitoring and policing, because everyone will know that the funds necessary to

resolve problems have not yet been collected. And everyone will also know that a way to keep any funds from being collected is to prevent banks from engaging in excessively risky activities. Of course, the degree of monitoring depends importantly on the source of funding. In this regard, there are three alternative arrangements: (1) public funding, (2) private funding, or (3) joint funding. Of these three sources, private funding provides the greatest incentive for private discipline and public funding the least. Although the information is not provided in the table, only 15 of the 68 countries fund their deposit insurance schemes solely on the basis of private sources. At the same time, however, only one country relies solely on public funding. Eleven of the schemes that are privately funded, moreover, are also either privately or jointly administered. No country, where there is only private funding, has decided to have the fund solely administered by government officials.

In addition to the design features already discussed, there are two other important features that must be decided upon when a country establishes a deposit insurance scheme. One is whether in those countries in which premiums are paid by banks for deposit insurance should be risk-based or not (Prescott, 2002). The advantage of risk-based premiums is that they potentially can be used to induce banks to avoid engaging in excessively risky activities. This would enable the banking authorities to have an additional tool to contain moral hazard. Yet, in practice it is extremely difficult to set and administer such a premium structure. Table 1.1 shows that slightly less than one-third of the countries have chosen to adopt risk-based premiums.

The last feature to be discussed is the membership structure of a deposit insurance scheme. A country has to decide whether banks may voluntarily join or will be required to join. A voluntary scheme will certainly attract all the weak banks. The healthy banks, in contrast, are unlikely to perceive any benefits from membership. If this happens, the funding for resolving problems will be questionable for both *ex-ante* and *ex-post* schemes. Indeed, the entire scheme may simply

become a government bailout for weak banks. By requiring all banks to become members, the funding base is broader and more reliable. At the same time, when the healthy banks are members, they have a greater incentive to monitor and police the weaker banks to help protect the fund.

### 1.6. Lessons Learned from Banking Crises

It is quite clear that although many countries at all levels of income and in all parts of the world have established deposit insurance schemes they have not chosen a uniform structure. The specific design features differ widely among the 68 countries for which information is available as already discussed and indicated in Table 1.1. The fact that so many countries around the globe have suffered banking crises over the past 20 years has generated a substantial amount of research focusing on the relationship between a banking crisis and deposit insurance. Although this type of research is still ongoing, there are currently enough studies from which to draw some, albeit tentative, conclusions about deposit insurance schemes that help promote a safe and sound banking industry. These are as follows:

- Even without a deposit insurance scheme, countries have on occasion responded to banking crises with unlimited guarantees to depositors. An appropriately designed scheme that includes a coverage limit may be better able to serve notice to depositors as to the extent of their protection, and thereby enable governments to avoid more costly *ex-post* bailouts.
- The design features of a deposit insurance scheme are quite important. Indeed, recent empirical studies show that poorly designed schemes increase the likelihood that a country will experience a banking crisis.
- Properly designed deposit insurance schemes can help mobilize savings in a country, and thereby help foster overall financial development. Research has documented this important linkage, but emphasizes that it only holds in



countries with a strong legal and regulatory environment.

- Empirical research shows that market discipline is seriously eroded in countries that have designed their deposit insurance schemes with a high coverage limit – an *ex-ante* fund – the government being the sole source of funds, and only public officials as the administrators of the fund.
- Empirical research shows that market discipline is significantly enhanced in countries that have designed their deposit insurance schemes with coinsurance, mandatory membership, and private or joint administration of the fund.

All in all, empirical research that has recently been completed indicates that governments should pay close attention to the features they wish to include in a deposit insurance scheme should they decide to adopt one, or to modify the one they have already established (Barth et al., 2006).

### 1.7. Conclusions

Countries everywhere have shown a greater interest in establishing deposit insurance schemes in the past two decades. The evidence to date indicates that much more consideration must be given to the design features of these schemes to be sure that their benefits are not offset by their associated costs.

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