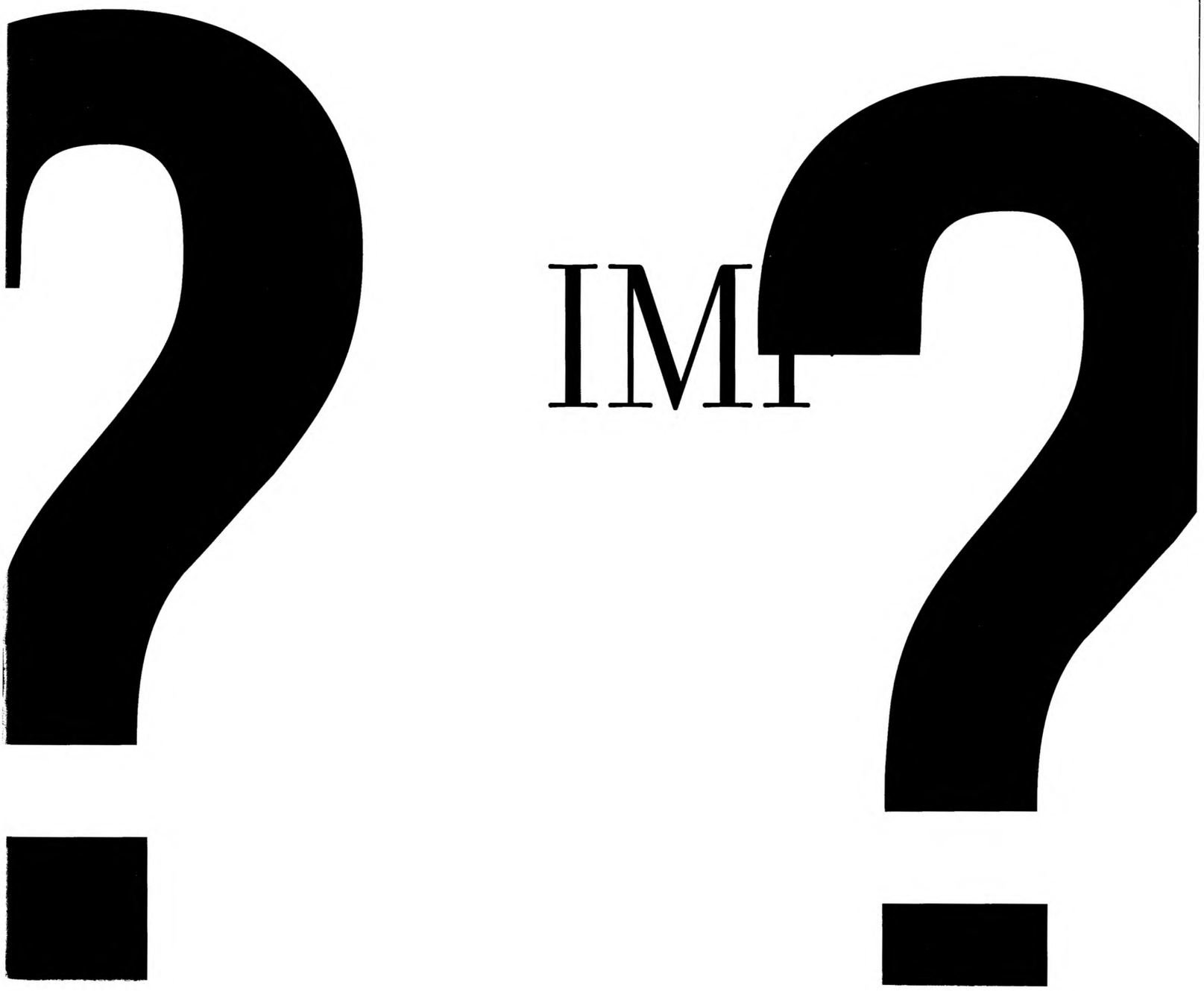
Federal Reserve Bank of Minneapolis
1998 Annual Report

The Region

Special Issue

Asking the Right Questions About the IMF



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Special Issue

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Asking the Right Questions About the IMF

By V.V. Chari and Patrick J. Kehoe

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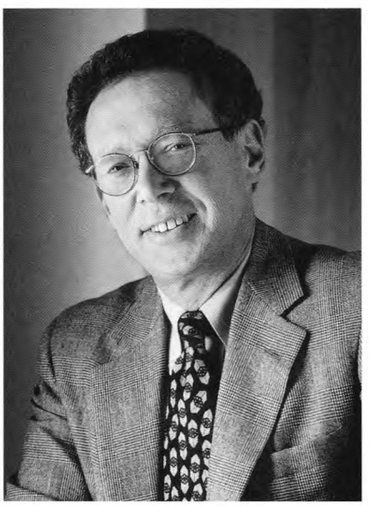
The views expressed herein are not necessarily those of the Federal Reserve System.

President's Message



This bank has a history of addressing issues that relate to the safety and soundness of the financial system and, in particular, questions relating to the financial system's safety net. Beginning with research in the 1970s and continuing with our *Annual Reports* of 1988 and 1997, we have analyzed the implications of broad-based deposit insurance programs and offered solutions that address the attendant problem of moral hazard. But we have also looked beyond our borders and considered international issues that require a coordinated response, as in our *Annual Report* of 1989 and its proposal for fixed exchange rates.

This year's *Annual Report* essay is an extension of those efforts. The current debate about the proper role of the International Monetary Fund (IMF) has focused, in large part, on whether the IMF should serve as a lender of last resort, that is, on whether the IMF should provide an international safety net based on a domestic model. The authors of this year's essay, V.V. Chari and Pat Kehoe, argue that the domestic model many have in mind is not appropriate for the IMF, but they also show that this debate misses a more fundamental point: The issue is not so much what the IMF should do, but what needs to be done and who can best do the job. In other words—to borrow from the essay title—before we determine a role for the IMF or any other international institution, we need to ask the right questions.

In the end, whether you agree with the authors' conclusions about the role of the IMF, we think it important that you at least consider their framework for assessing the need for a coordinated international response. For if we don't ask the right questions—it almost goes without saying—we can hardly be expected to come to the right policy prescriptions.

Gary H. Stern
President

We provide a framework that is based on the presumption that international agencies like the IMF should solve only problems that countries or individuals, acting on their own, cannot solve or solve poorly; such problems are known as international collective action problems.

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1998 Annual Report

Asking the Right Questions About the IMF

The International Monetary Fund was established after World War II to manage a system of fixed exchange rates. In the early 1970s that system collapsed, and since then the IMF has been a bureaucracy in search of a mission. In the 1990s the IMF has greatly increased its lending, especially in Mexico in 1995 and in Asia in 1997-1998. This evolution has led to an extensive debate on the appropriateness of its activities and has raised the question: What should be the mission of the IMF?

One view in this debate is that the IMF should be abolished. A second view is that the IMF should serve as an international lender of last resort by expanding its lending to debtor countries in financial difficulty to prevent worldwide financial crises. A third view is that the IMF should take on a new role; namely, it should serve as a type of international bankruptcy court that handles international debt problems.

Our view is that the IMF should cease its lending activities altogether. We argue that there is no need for the IMF to act as a lender of last resort because any threats to the integrity of the international financial system as a whole can be effectively handled by the central banks of the major powers. Moreover, current IMF lending policies encourage improvident international lending.

We do not believe, however, that the IMF should be abolished. We think, for example, that the IMF can serve an important role as a type of international bankruptcy court that handles international debt problems. We think the last two decades of international lending make it clear that private markets and national governments have not resolved these problems effectively.

Our framework for analyzing the debate consists of asking three questions that are the right ones for evaluating the appropriateness of the IMF's activities. But first the debate.

The authors would like to thank Andrew Atkeson, Harold Cole, David Fettig, Narayana Kocherlakota, Lee Ohanian and Art Rolnick for helpful comments. **The ideas in this paper were heavily influenced by those in Feldstein (1998), Jackson (1986) and Sachs (1995).**

The debate

Both critics and defenders of the IMF argue that the recent activities of the IMF resemble those of an international lender of last resort. Krugman (1998) and Fischer (1999) argue that the recent actions of the IMF are necessary for the smooth functioning of international financial markets. Indeed, they accept the view that by bailing out financially distressed countries

the IMF has become a world lender of last resort and applaud it for doing so. They argue that everyone accepts the need for a domestic lender of last resort so that, by analogy, everyone should also accept the need for a world lender of last resort.

Friedman (1998), Schultz (1998) and Schwartz (1998) accept that the IMF is trying to function as a lender of last resort and argue that it should be abolished. The crux of their argument for abolition is that IMF funds too often are used to bail out foreign lenders. The prospect of these bailouts reduces the incentives of lenders to probe into the conditions of individual countries. Individual governments, in turn, have less of an incentive to pursue painful, but responsible policies needed to convince lenders of their creditworthiness. These critics argue that since IMF loans distort the operations of international financial markets it is doing more harm than good.

Feldstein (1998) adopts an intermediate and somewhat more nuanced position. He argues that international financial institutions are needed to overcome the problems in the operation of private markets, but severely criticizes the IMF and insists that its lending programs should be tailored more finely to overcome problems in private markets.

Finally, Sachs (1995) is both a critic and a defender of the IMF. He argues that the world needs a lender of last resort, like the IMF, but that lately the IMF has been doing a poor job. In addition, he argues that the world needs a new institutional framework that functions as an international bankruptcy court.

Our framework

To help resolve this debate, we provide a framework that is based on the presumption that international agencies like the IMF should solve only problems that countries or individuals, acting on their own, cannot solve or solve poorly; such problems are known as international collective action problems. As we explain below, the IMF was designed to solve this type of problem. Collective action problems exist if actions taken by individuals or governments result in greater welfare when actions are coordinated rather than independently made. Thus, to determine if a suggested role for the IMF is appropriate, we must ask the right questions:

- Is there a clear collective action problem?
- Is the proposed solution narrowly tailored to solve the identified collective action problem?
- Is the IMF the best institution to solve the identified collective action problem?

If the answer to any of these questions is no, then the suggested role for the IMF is not appropriate.

A classic example of an international collective action problem is in setting tariff policy. Each country acting on its own has an incentive to set high tariffs in order to exploit its market power, but if all countries collectively agreed to lower their tariffs, all countries would be made better off. While it is easy to find collective action problems it is often difficult to solve them. The difficulty in solving the tariff problem, for example, is that if all other countries lowered their tariffs there would be an incentive for any one country to charge high tariffs. To solve this problem, then, enforceable agreements need to be reached that provide individual countries with the appropriate incentives to follow the coordinated policy prescription.

We use this framework to analyze the historical record of the IMF and to argue that the IMF should cease its lending activities and reconstitute itself as an international bankruptcy court.

An overview of our analysis

The IMF's designers saw the need for an institution to solve a collective action problem in monetary policy similar to that in tariff policy. This problem is that each country acting on its own has the incentive to pursue self-interested monetary policies that help itself and hurt other countries. Coordination in monetary policies could make all countries better off. The particular method proposed to coordinate monetary policy was through a fixed exchange rate system administered by the IMF. By the early 1970s a consensus developed that while there was a collective action problem in monetary policy, this particular solution had smaller benefits than costs, and the system was disbanded. Currently, countries try to solve the collective action problem in monetary policy with informal agreements like those between the United States and Japan, and regional agreements like the European Monetary Union.

Since the early 1970s the most coherent rationale for the IMF is that it solves a collective action problem created when uncoordinated lenders set off a worldwide financial crisis by fleeing from the debts of many developing countries' governments or from the banking systems in such countries. The IMF attempts to solve this collective action problem by bailing out financially distressed countries with loans that have various conditions attached. The justification for these bailouts is the IMF is acting as a world lender of last resort, a role analogous to the one a domestic central bank plays in stemming domestic banking panics.

Does the world need a lender of last resort, and, if so, are the IMF's actions appropriate for such a lender? The need for a world lender of last resort is sometimes based on a flawed analogy between individual banks and governments. Just as domestic banking systems could suffer from bank runs, it is argued that governments could suffer from liquidity crises in which they are unable to roll over their short-term debt. In a domestic context the critical feature that allows bank panics to happen in the first place is the mismatch of the duration of assets and liabilities in the banking system taken as a whole. Assets and liabilities of virtually all developed countries' governments are not mismatched. Hence, a crisis affecting a developing country is unlikely to spill over into the developed nations, and this analogy does not justify a world lender of last resort.

The flawed analogy notwithstanding, the world does need some mechanism to deal with the possibility that worldwide financial crises, similar to domestic banking panics, could occur. The questions here are what is the appropriate way a world lender of last resort should function and what is the extent to which existing central banks can handle crises. We argue that a lender of last resort should not bail out individual financially distressed institutions. In the event of a financial crisis, such a lender should rather provide liquidity to the market as a whole, say by open market operations and by giving all banks more favorable terms at the discount window of the central bank. In essence the lender will end up supplying liquidity by

Collective action problems exist if actions taken by individuals or governments result in greater welfare when actions are coordinated rather than independently made. Thus, to determine if a suggested role for the IMF is appropriate, we must ask the right questions:

- **Is there a clear collective action problem?**
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replacing less liquid assets with more liquid assets. The market can then allocate this new liquidity as it sees fit. Under this policy, some financially distressed institutions will fail, but the financial system as a whole will not collapse. Fortunately, we already have mechanisms in place to deal with worldwide financial crises. The major central banks of the world have the capacity and the will to provide liquidity in a coordinated fashion. One example of this capacity and will was in the fall of 1998 when, in the face of a possible worldwide financial crisis, major central banks reduced short-term interest rates in an apparently coordinated fashion. In this sense, the IMF is redundant to prevent worldwide financial crises.

Furthermore, these central banks typically provide liquidity to the market as a whole rather than attempting to bail out specific institutions. In sharp contrast, IMF loans are always made to specific countries and governments in trouble. The IMF's policies generate rampant moral hazard so that they may actually increase the likelihood that countries get into financial difficulties. In this sense, the IMF's activities are harmful.

While we think the central banks of the major powers can and do deal with worldwide financial crises efficiently, we think there is a need for an international bankruptcy court to resolve smaller collective action problems between individual debtor countries and their creditors. We have seen two types of such problems at the country level in the last two decades. First, there can be coordination problems among lenders that lead to creditor panics for otherwise healthy economies. Cole and Kehoe (1996) argue that the situation in Mexico in 1995 is a classic example of a creditor panic: Mexico was unable to roll over its short-term debts even though most observers agreed that Mexico was fundamentally sound. Second, for unhealthy economies with large external debts, there can be a need for a coordinated debt workout. For example, Bulow and Rogoff (1990) argue that coordination problems among private sector banks blocked efficiency-enhancing debt workouts in the Latin American debt crises of the late 1980s.

While we think the central banks of the major powers can and do deal with worldwide financial crises efficiently, we think there is a need for an international bankruptcy court to resolve smaller collective action problems between individual debtor countries and their creditors.

We argue that both kinds of coordination problems can be efficiently handled by a new international mechanism that is somewhat analogous to a bankruptcy court. This court would work as follows: When a debtor government is unable to meet its debt obligations it would seek the protection of the international bankruptcy court. The court would then assemble the creditors to facilitate negotiations and to provide expertise in evaluating conditions in the debtor country. If the court and the creditors determined that the government was financially sound, an agreement would be reached to solve the immediate liquidity problem. If they determined that the government was financially unsound, then the court and the creditors would propose a debt workout plan to the government. If the government in question agreed with the plan, then it would be carried out; if the government in question refused to abide by the plan; then creditors would be free to pursue their claims against the government through the standard channels. This court would thus serve to ameliorate the major coordination problems on the creditor side.

In addition, there are two other collective action problems that the IMF could solve. Briefly, the IMF could provide a nominal anchor by issuing a type of world money and making its supply independent of any particular country's economic conditions. Countries could

peg their currency to this world money rather than to the currencies of major powers. In so doing they could make their commitment to responsible monetary policy transparent and not be subject to the vagaries of policies in other countries. Such a nominal anchor is a public good that private markets and individual governments have difficulty providing. The IMF could also enforce the disclosure of accurate information regarding countries' economic conditions and policies. Such information helps international financial markets function smoothly. Private markets and individual governments might have problems ensuring that information is accurately disclosed.

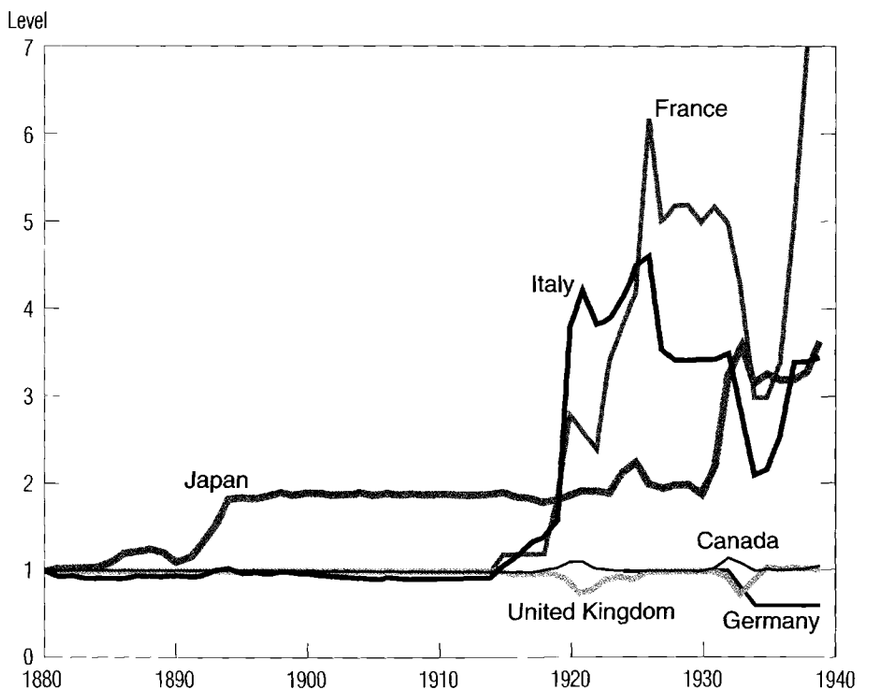
Origins of the IMF

The IMF was originally designed to promote cooperation among countries in the conduct of monetary policy. Before World War I all the major powers were on the gold standard. The commitment to peg to gold both fixed countries' exchange rates and sharply limited any country's ability to pursue an autonomous monetary policy. During the interwar period countries went on and off the gold standard and exchange rates fluctuated wildly. Figure 1 shows the absolute change in the nominal exchange rates between the currencies of six major economic powers and the U.S. dollar. The figure shows that before 1913 the exchange rates changed hardly at all, while between 1919 and 1938 they fluctuated enormously.

In addition, there are two other collective action problems that the IMF could solve. Briefly, the IMF could provide a nominal anchor by issuing a type of world money and making its supply independent of any particular country's economic conditions.

Figure 1: Exchange Rates vs. U.S. Dollar

1881 - 1938



The designers of the IMF saw the extraordinary volatility in exchange rates as deriving substantially from the attempts of each country to use its policies for domestic gain. They saw the system as one with a collective action problem in which all nations lost as each nation privately pursued its own gain. Specifically, they believed that during recessions each country has an incentive to devalue its currency to aid exporters and thereby raise domestic employment and income. This devaluation reduces imports and thus reduces employment and income abroad.

In July 1944, over 300 representatives of 44 allied nations met for three weeks at Bretton Woods, N.H. The participants in the meeting wanted to create an institution that would remedy the collective action problem. The Bretton Woods meeting led to the Articles of Agreement that established the IMF. (*See stories on pages 9, 13 and 15.*) These articles make clear that the designers wanted to promote cooperation in the conduct of monetary policy. In particular, the articles set up a system in which exchange rates could be altered only by mutual consent through the approval of the IMF. The idea was that each country would gain more by the commitment of other countries not to devalue than it would lose by giving up its freedom to do so.

The evolving role of the IMF

The role of the IMF has greatly evolved over its tenure.

The Bretton Woods years

With the collapse of the IMF's original mission, the history since 1973, on the face of it, seems to reveal a bureaucracy at the IMF in search of a new mission. The IMF appears to see a variety of collective action problems that it must remedy. Its remedies have been criticized vigorously.

From 1946-1958 most countries in the world had capital controls that restricted the holdings of foreign assets by their domestic residents and the IMF played a minimal role. Over this period, the system evolved into one where the United States pegged the dollar to gold and other countries pegged to the dollar. In the 1960s the system ran into more and more problems. Germany revalued in 1961 and again in 1969; the United Kingdom suffered a major currency crisis and was forced to devalue in 1967; France suffered a currency crisis in 1969 and devalued.

Fixed exchange rates constrained monetary policy severely. The persistent devaluations and revaluations during this period revealed that most countries wanted to use monetary policy to meet domestic objectives and were unwilling to accept the constraints imposed by the fixed exchange rate system. Thus, when there was a conflict between domestic objectives and keeping the exchange rate fixed, most countries preferred to change the exchange rate.

The United States faced this conflict as well and showed unwillingness to sacrifice domestic objectives for fixed exchange rates. Over the 1960s the United States chose to increase its money supply growth rates substantially to achieve some domestic objectives. The consequent increase in inflation meant that the United States could not maintain the price of the dollar fixed relative to gold without a subsequent deflation. Unwilling to follow deflationary policies, the United States let the system collapse. After 1973 countries were at liberty to let their exchange rates fluctuate without IMF consent.

The Bretton Woods system collapsed and was not revived because of a growing consensus that a system of fixed exchange rates for the world as a whole was not the appropriate solution to the collective action problem in monetary policy. This system placed such severe limits on discretionary monetary policy that the benefits from this type of coordination were smaller than the costs. A variety of other formal and informal mechanisms are now pursued to solve this collective action problem.

After Bretton Woods: Searching for a mission

With the collapse of the IMF's original mission, the history since 1973, on the face of it, seems to reveal a bureaucracy at the IMF in search of a new mission. The IMF appears to see a variety of collective action problems that it must remedy. Its remedies have been criticized vigorously.

During the late 1970s Latin American countries greatly increased their indebtedness to the rest of the world, particularly to banks in the developed countries. In the 1980s a deterioration of their economic circumstances made it clear that they would not be able to repay

Purposes of the IMF

Article I of the Agreement describes the purposes of the IMF. The agreement imposed obligations on members. Members were to conduct their policies so as to maintain a stable global financial system.

Article I: Purposes

(i) To promote international monetary cooperation through a permanent institution which provides the machinery for consultation and collaboration on international monetary problems.

(ii) To facilitate the expansion and balanced growth of international trade, and to contribute thereby to the promotion and maintenance of high levels of employment and real income and to the development of the productive resources of all members as primary objectives of economic policy.

(iii) To promote exchange stability, to maintain orderly exchange arrangements among members, and to avoid competitive exchange depreciation.

(iv) To assist in the establishment of a multilateral system of payments in respect of current transactions between members and in the elimination of foreign exchange restrictions which hamper the growth of world trade.

(v) To give confidence to members by making the general resources of the Fund temporarily available to them under adequate safeguards, thus providing them with opportunity to correct maladjustments in their balance of payments without resorting to measures destructive of national or international prosperity.

(vi) In accordance with the above, to shorten the duration and lessen the degree of disequilibrium in the international balances of payments of members.

The Fund shall be guided in all its policies and decisions by the purposes set forth in this Article.

these debts. Collectively, creditors could gain by restructuring their debts in a coordinated fashion, thereby preventing default, but each creditor had an incentive to let the burden of restructuring to fall on other creditors. Hence there was the potential for the IMF to play a useful role in solving this collective action problem by coordinating the restructuring of government debts owed to the banks.

A number of economists, including Bulow and Rogoff (1990), argue that instead of helping matters the IMF intervention actually worsened them. They argue that the banks hardened their positions on the hope that by doing so the IMF would end up giving more subsidized loans to the indebted countries that could then be used to increase the amount that the banks received. Hence, the net effect of the IMF's interventions was to prolong the bargaining process during which the unresolved claims of the banks discouraged other investors from investing. In this sense, the IMF's actions may well have harmed its intended beneficiaries.

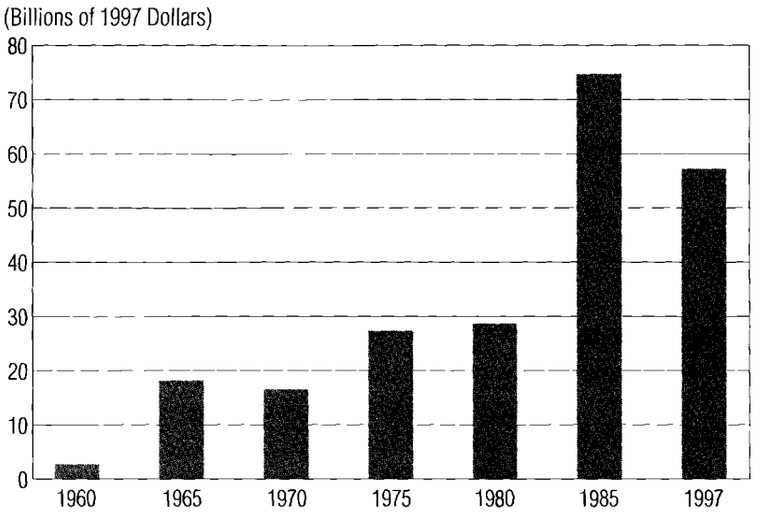
More recently, the IMF has taken on a somewhat more ambitious role. Figure 2 shows outstanding loans from the IMF to its member countries and shows a very sizable increase in the level of IMF loan activity. In 1994, the Mexican government had difficulty rolling over its short-term debt, raising the possibility that the government would default. The collective action problem here was that if only lenders could jointly agree to roll over the debt there would be no prospect of default and all the lenders would have profited. The fear that other lenders would not lend raised the prospect of default and made each individual lender reluctant to lend. We refer to this type of collective action problem at the country level as a creditor panic.

The bailout in Mexico reduced the incentives of lenders to probe into the conditions of other countries before making new loans. In addition, and perhaps to a lesser extent, the prospect of similar bailouts gave these governments less of an incentive to pursue painful, but responsible policies needed to convince lenders of their creditworthiness.

Operationally, the IMF and the U.S. government attempted to solve this collective action problem by providing substantial funding. The IMF provided about $18 billion in loans, roughly 5 percent of Mexican GDP, out of a total loan package of $55 billion, about 16 percent of Mexican GDP. The conditions attached to the loans primarily required the Mexican government to follow responsible monetary and fiscal policies. Friedman, Schwartz, Schultz and others argue that this funding package was at better rates than the market would provide and hence was a bailout. They argue that this bailout raised the beliefs of lenders that similar bailouts would occur in other developing countries when a crisis arose. Hence, the bailout in Mexico reduced the incentives of lenders to probe into the conditions of other countries before making new loans. In addition, and perhaps to a lesser extent, the prospect of similar bailouts gave these governments less of an incentive to pursue painful, but responsible policies needed to convince lenders of their creditworthiness. Hence, they argue the bailout policies of the IMF, paradoxically, tend to destablize international financial markets. In our view there is considerable merit to these arguments.

The IMF is also extensively involved in providing assistance to the countries of Eastern Europe and the former Soviet Union. The loans to these countries are intended to make their transition to capitalist economies smoother. The conditions attached to these loans go well beyond traditional monetary and fiscal policy prescriptions, specifying a comprehensive agenda for structural reforms which includes details of privatizing large parts of their economy, facilitating land registration, increasing public awareness of property rights and

Figure 2: Outstanding Debt of Member Countries to IMF



agreements that the government will not renationalize or increase its equity position in enterprises and commercial banks. (See Camdessus 1996.) The nature of the collective action problem associated with reforming domestic institutions and legal arrangements is not clear to us.

In many of the countries the IMF deals with there is also the problem of misuse of funds. Recently, Treasury Secretary Rubin testified that much of the $4.8 billion in loans to Russia in the summer of 1998 may have simply helped wealthy Russian oligarchs move billions of dollars out of the country, instead of being used to help further the reforms that Russia agreed to. (See *New York Times*, March 19, 1999.) Critics of the IMF like Friedman, Schwartz, Schultz and others use examples like this to argue that besides leading to moral hazard many of the loans are simply wasted.

In July 1997, a financial crisis struck a number of countries in Asia. There were sharp reversals in capital flows as lenders refused to roll over short-term loans. Banks in these countries had borrowed heavily using short-term debt and had difficulties meeting their payments to foreign creditors. The IMF helped organize substantial loans to these countries.

For example, in Indonesia the IMF lent approximately $10 billion, roughly 5 percent of Indonesian GDP out of a total loan package of $33 billion, about 16 percent of Indonesian GDP. In Korea, the IMF lent approximately $20 billion, roughly 4 percent of Korean GDP out of a total loan package of $57 billion, about 12 percent of Korean GDP. The conditions attached to these loans went well beyond the traditional strictures governing fiscal and monetary policy. In Korea, for example, the conditions included raising the ceiling on foreign ownership of a firm's equity from 7 percent to 50 percent, a variety of measures to open the economy to imports, changes in accounting standards for corporations and a variety of detailed reforms of labor markets that made layoffs easier. Again, the collective action problem associated with reforming domestic institutions escapes us.

Analyzing the roles of the IMF

The IMF's analysis of its role

The IMF's leadership has sought to develop an intellectual rationale for its actions. The IMF leadership apparently sees three types of problems that it should solve. First, its goal is to ensure that defaults by developing country governments do not have contagious effects on other countries and lead to worldwide financial crises (see Fischer 1999). Second, the IMF's goal is to prevent financial panics in developing countries even when they do not threaten to destabilize international financial markets. Such panics can reduce the volume of trade and thereby reduce employment and income in the rest of the world. Third, the IMF sees its goal as one of encouraging and enforcing general policy reform, even if it is not directly connected to countries' financial systems (see Masson and Mussa 1997).

We think that the contagious effects of developing country defaults are partly based on a flawed analogy. We do think worldwide financial crises can be triggered in various ways, including problems in developing countries, but they are best handled by the central banks of the major powers.

We think that the contagious effects of developing country defaults are partly based on a flawed analogy. We do think worldwide financial crises can be triggered in various ways, including problems in developing countries, but they are best handled by the central banks of the major powers. We think that financial panics affecting developing country governments are also the result of a collective action problem, but they are best handled by an international bankruptcy court. Finally, we question whether poor policy, in general, is the result of an obvious collective action problem. While it is well understood that for some policies, like tariffs on international trade, there is collective action problem, for a variety of other policies, like facilitating land registration in Russia or reforming labor markets in Korea, there is no obvious collective action problem for the world as a whole to solve.

An inappropriate role: Lender of last resort

The argument for an international lender of last resort begins with the observation that most economists agree on the need for a domestic lender of last resort; therefore, it follows that we need an international lender of last resort. For some, like Krugman (1998), the argument ends with this observation, while others, such as Fischer (1999), conduct a deeper analysis of the strengths and weakness of the analogy.

While economists agree that it is desirable to establish institutions that prevent countrywide financial panics, there is less agreement on how such lenders of last resort should operate. One view, espoused by Fischer (1999), is that in the event of a crisis the lender of last resort should provide favorable terms to those banks that are financially distressed. We term this the *bailout prescription.* A second view, espoused by Bordo (1993), is that in the event of a crisis this lender of last resort should not focus on financially distressed institutions but instead should provide liquidity to the market as a whole, say by open market operations or by giving all banks more favorable terms at the discount window of the central bank. In essence the central bank will end up supplying liquidity by replacing less liquid assets with more liquid assets. The market can then allocate this new liquidity as it sees fit. We term this the *liquidity provider prescription.*

We argue that bailouts lead to rampant moral hazard problems and that a lender of last resort which acts solely as a liquidity provider can contain financial panics effectively and efficiently. We begin by reviewing the case for a domestic lender of last resort and then see what parts of that case apply in the international setting. We will argue that while there is a need for an international lender of last resort, that role is already adequately filled by the central banks of the major powers.

The case for a domestic lender of last resort

Bank liabilities are largely deposits that pay fixed rates and can be redeemed upon demand. Thus deposits can be thought of as bonds of instantaneous maturity that are automatically rolled over by depositors until they are withdrawn. Bank assets are typically relatively longer-term claims on firms and households. There are a variety of reasons for this way of structuring assets and liabilities, but this structure almost automatically creates the possibility of systemwide bank panics.

In such panics most depositors attempt to redeem their deposits because they fear

General obligations of members

Article IV of the Articles of Agreement spells out the obligations of members, authorizes the Fund to maintain a watch to ensure that countries are following responsible policies and empowers the Fund to require members to consult with it on their policies.

Article IV: Extract from Section 1. General obligations of members

In particular, each member shall:

(i) endeavor to direct its economic and financial policies toward the objective of fostering orderly economic growth with reasonable price stability, with due regard to its circumstances;

(ii) seek to promote stability by fostering orderly underlying economic and financial conditions and a monetary system that does not tend to produce erratic disruptions;

(iii) avoid manipulating exchange rates or the international monetary system in order to prevent effective balance of payments adjustment or to gain an unfair competitive advantage over other members; and

(iv) follow exchange policies compatible with the undertakings under this Section.

Article IV: Extract from Section 3. Surveillance over exchange arrangements

(a) The Fund shall oversee the international monetary system in order to ensure its effective operation, and shall oversee the compliance of each member with its obligations under Section 1 of this Article.

(b) In order to fulfill its functions under (a) above, the Fund shall exercise firm surveillance over the exchange rate policies of members, and shall adopt specific principles for the guidance of all members with respect to those policies. Each member shall provide the Fund with the information necessary for such surveillance, and, when requested by the Fund, shall consult with it on the member's exchange rate policies.

that banks will become insolvent. To meet depositors' demands the banking system as a whole attempts to sell its assets and call in its loans. Asset prices fall, economic activity declines and the banking system is unable to meet its depositors' demands. When asset prices fall, many hitherto solvent banks can become insolvent.

This panic is self-fulfilling. If depositors did not attempt to redeem their deposits, asset prices would not fall, banks would not become insolvent and each depositor could be assured that his deposits would be reasonably safe. This dependence of the asset side of banks' balance sheets on the behavior of those who hold their liabilities creates the possibility of an uncertain outcome, or what is known as a multiple equilibrium problem. If depositors fear that other depositors will redeem their deposits, they should rationally attempt to redeem their deposits first, while if they are confident that other depositors will not, then they should not either.

In our view the bailout prescription leads to severe moral hazard problems similar to those created by deposit insurance. The prospect of receiving funds from the lender of last resort, even if the bank is insolvent, reduces the extent to which interest rates on deposits vary with the riskiness of the bank's portfolio. Thus, the lender of last resort implicitly subsidizes the risk taking by banks.

The decline in economic activity associated with a systemwide banking panic imposes significant social costs. Obviously, these costs could be avoided if only depositors could all somehow agree jointly not to withdraw their deposits. Almost from the beginnings of banking systems, bankers have understood the extent to which they collectively depend upon the confidence of the public and have attempted a variety of institutional arrangements to solve this problem. The most widely used is the prescription that a central bank should provide all the liquidity that is needed to stem the crisis. This assurance by the central bank enables the banking system to meet the claims of its depositors without selling assets or calling in loans. Individual depositors, therefore, can be confident that their deposits are relatively safe even if other depositors run on banks. This confidence eliminates the panic equilibrium.

The central bank can carry out its prescription in two distinct ways. Each way recognizes that to meet their depositors' needs banks may have to sell assets both to the central bank and to the public. In the bailout view, the central bank directly lends to troubled banks at subsidized rates. In the liquidity provider view the central bank purchases a sufficient amount of securities in the marketplace to ensure that the banking system as a whole has access to the liquidity it needs to fulfill its obligations to depositors. At first the central bank buys securities like treasury bills and commercial paper. If that is insufficient it lends to the banking system as a whole against less liquid assets like mortgages. The net effect of the central bank's liquidity injection is to ensure that the panic does not reduce the overall level of asset prices in the economy too much. Troubled banks can then sell their assets, not to the central bank, but to the marketplace to obtain the liquidity they need to pay off their depositors.

In our view the bailout prescription leads to severe moral hazard problems similar to those created by deposit insurance. The prospect of receiving funds from the lender of last resort, even if the bank is insolvent, reduces the extent to which interest rates on deposits vary with the riskiness of the bank's portfolio. Thus, the lender of last resort implicitly subsidizes the risk taking by banks. This subsidy leads banks to take on excessive risk and paradoxically can make financial panics more frequent and more severe when they occur. One way the lender of last resort could avoid moral hazard problems is to lend only to illiquid but solvent banks. In practice, it is often difficult to distinguish insolvent from illiquid banks and to eval-

Governance and operating procedures

The IMF has roughly 2,600 employees. Their principal day-to-day business is to conduct surveillance of the policies of the members, consult periodically with them about their policy, make technical assistance available to members, to collect and disseminate a wide variety of statistics on the members' economies and to make loans to members.

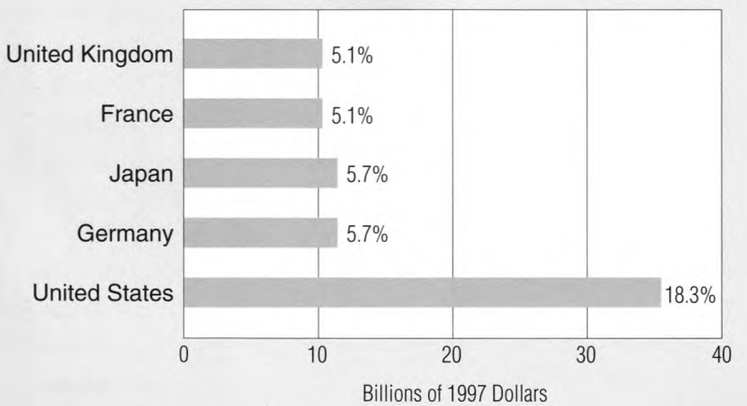
The most important function of the IMF is to make loans that are financed by members as follows. On joining the IMF, each member country must make a specified contribution, called a quota. At most, 75 percent of the quota can be in the money of the member country while the rest must be in readily marketable securities and currency or gold. The size of this quota is determined essentially by a country's gross domestic product. Figure 3 gives the quotas of the largest five members. The quotas contributed by the members serve as the capital that enables the IMF to make loans to member countries.

The IMF lends money only to member countries with balance of payment problems. It allows the member to borrow funds temporarily to pay for balance of payments deficits with the expectation that the country will alter its policy so as to reduce its balance of payments deficit. A member borrows from the fund by using its own currency to purchase from the fund other currencies or Special Drawing Rights (which are essentially claims to a weighted average of eight major countries' currencies). The loan is repaid when the member repurchases its own currency. A member country can unilaterally withdraw the 25 percent of its quota that is paid for with readily marketable assets. To borrow more than 25 percent the member country makes a request to the executive directors, who represent the entire membership. Figure 4 gives the amount borrowed by major users. As the figure shows less-developed countries have been the

Continued on page 16

Figure 3: Largest IMF Members by Quota* in 1997

(with percent of total quotas)



*Upon joining the IMF, each member must make a contribution, or quota, based on its gross domestic product. These quotas serve as capital to make loans.

Continued from page 15

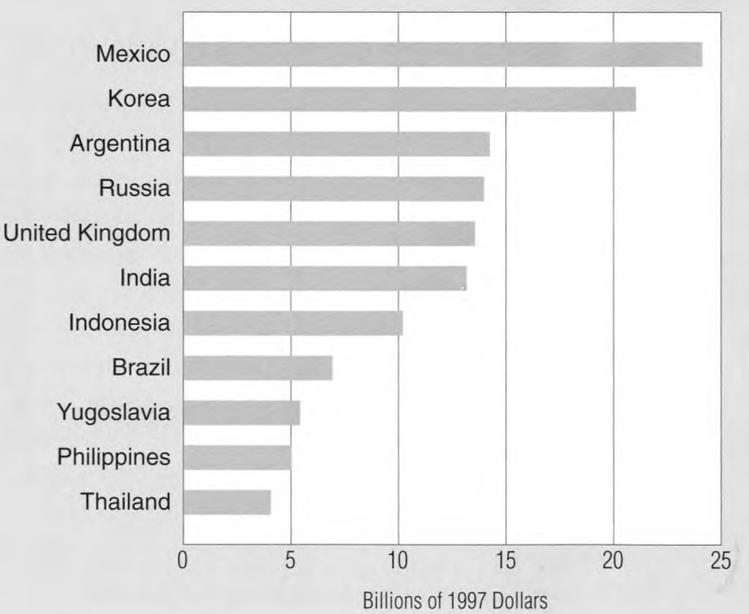
predominant borrowers from the IMF, with the exception of the United Kingdom which borrowed substantial amounts in the 1960s.

Originally, under the *Basic Credit Facility*, they could borrow up to 125 percent of their quotas. Later a variety of special facilities were added to allow members to borrow substantially larger amounts. Along with the request for a loan the potential borrower presents to the IMF a plan for reform to reduce the payments problem. This plan of reform stipulates various conditions for reasonable progress in reform. Typically, these conditions include tightening of monetary policy, raising tax revenues, lowering government spending and other measures to deal with weaknesses in the economy that underlie the payments problem. If the plan for reform meets the executive directors' approval, the loan is disbursed in installments which are tied to the member's successful progress in meeting the conditions stipulated in the reform plan. Requests for larger loans are typically accompanied by reform plans with more stringent conditions. Currently, borrowers pay a one-time fee of 0.25 percent of the amount borrowed and annual interest charges of about 4.5 percent, while the rate paid to lending countries is roughly 4 percent per annum.

The business of the IMF is conducted by the Executive Board. At present eight executive directors represent individual countries: China, France, Germany, Japan, Russia, Saudi Arabia, the United Kingdom and the United States. The other 16 directors each represent groups of individual countries. The voting power of each director is determined by the quotas of the countries represented by that director. Depending on the specific issue, approval requires anywhere from a simple majority to four-fifths of the vote.

Figure 4: Principal Users of IMF Financing

1947-1997



uate the quality of the collateral, so that moral hazard problems cannot be avoided. The moral hazard problems here are essentially identical to those created by deposit insurance. (See Boyd and Rolnick 1988 and the references therein.)

The liquidity provider prescription does not suffer from moral hazard problems because the lender of last resort is not implicitly subsidizing individual banks. Under this prescription illiquid but solvent banks borrow directly from the market, at unsubsidized rates, to pay off their depositors. An important aspect of this prescription is that the lender of last resort should lend directly to troubled banks only on readily marketable securities. If the lender of last resort attempts to substitute its judgment for that of the market about the value of other securities it runs the risk of implicitly subsidizing risk taking. We should emphasize that under this prescription it is quite likely that some banks will fail when financial panics occur. The reason is that financial panics typically occur when economic conditions are poor and in such situations some banks are likely to be insolvent. This kind of failure of individual insolvent banks, like the failure of other firms in the economy, is part of a well-functioning economic system.

It is certainly true that domestic lenders of last resort have not always carried out their role by strictly adhering to our liquidity provider prescription. We would argue, however, that in the United States and elsewhere concerns about moral hazard are shifting policy away from bailouts and toward liquidity provision.

It is certainly true that domestic lenders of last resort have not always carried out their role by strictly adhering to our liquidity provider prescription. We would argue, however, that in the United States and elsewhere concerns about moral hazard are shifting policy away from bailouts and toward liquidity provision. For example, between 1985 and 1990 over 99.7 percent of uninsured depositors at failed banks were fully protected by the U.S. government. Concern that the virtual 100 percent guarantee to uninsured depositors was leading to moral hazard led Congress to pass the Federal Deposit Insurance Corp. Improvement Act in 1991. This act erected a number of hurdles that must be passed before any uninsured depositors can be protected. These hurdles include approval by two-thirds of the governors of the Federal Reserve System, two-thirds of the directors of the Federal Deposit Insurance Corp. and approval of the Secretary of the Treasury. Although these new hurdles are an important step in mitigating moral hazard, Feldman and Rolnick (1997) argue that these hurdles are not yet high enough, and they give specific proposals on how they should be raised. In this sense the winds seems to be shifting away from bailouts domestically. We argue that it should shift in the international arena as well.

It is sometimes argued (see Fischer 1999) that the bailout prescription follows directly from the policies advocated in the classic analyses of a lender of last resort by Bagehot (1873) and Thornton (1802). We argue that this interpretation is mistaken. These writers thought the lender of last resort had the obligation to guarantee the liquidity of the whole economy, but not to particular institutions in the economy. They prescribed last-resort lending to the market as a whole during systemwide panics and not for emergency situations affecting isolated banks. For example, Bagehot (1873) in urging the central bank to lend liberally to the marketplace as a whole wrote:

"The holders of the cash reserve must be ready not only to keep it for their own liabilities, but to advance it most freely for the liabilities of others. They must lend to merchants, to minor bankers, to 'this man and that man', whenever the security is good." (p. 25, 1962 edition)

Thornton (1802) clearly had moral hazard in mind when he wrote:

"It is by no means intended to imply, that it would become the Bank of England to relieve every distress which the rashness of country banks may bring upon them: the bank, by doing this, might encourage their improvidence."[1]

To summarize, the case for a domestic lender of last resort stems from the extreme mismatch between maturities and risk characteristics of assets and liabilities common to banking systems. There are compelling reasons for the lender of last resort to lend freely in the general marketplace rather than to individual banks.

The case against the IMF as an international lender of last resort

In the international arena, there is no necessary mismatch between maturities of assets and liabilities of governments. If assets and liabilities are roughly matched, then international financial panics, if they occur at all, are unlikely to bear any resemblance to domestic banking panics. In this sense, when assets and liabilities are roughly matched there is no case for an international lender of last resort.

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Less-developed countries' governments, especially those in troubled economic times, rely heavily on short-term debt. Since the assets of governments are mostly claims to future tax revenues, such governments face a mismatch between assets and liabilities. In such a situation panics are possible. If the government issues only short-term debt it is forced to rely on the willingness of creditors to roll over the debt as it comes due. If the size of the debt is large relative to the resources of individual creditors, there is a potential coordination problem which arises when each creditor correctly believes that other creditors will be unwilling to roll over their portion of the debt. If few of the lenders are unwilling to role over their debt, then the government is faced with a liquidity crisis and is often forced into default. The prospect of default makes it rational for each creditor to refrain from rolling over the debt and justifies each creditor's beliefs about other creditors. The basic problem here arises from the presumed inability of creditors to coordinate their behavior. This coordination problem can lead to a flight from the country's debt, which we refer to as *creditor panics*.

As we describe below, creditor panics can justify an international body to define and enforce rules that help solve the coordination problem. (In the story on page 19, we investigate whether private markets can solve this coordination problem.) These panics, however, do not provide a justification for lending at subsidized rates to troubled countries. First, such panics can occur only if the government chooses to rely heavily on short-term financing. Most developed countries stagger their debt maturities so that at any given time only a small fraction of the overall debt has to be rolled over. Therefore, developed countries are relatively

[1] In stemming the panic, Thorton argues that, in a panic the lender of last resort should greatly increase the amount of liquidity in the system to stop the problem from spreading broadly through the system rather than focus on simply bailing out individual banks.

"If any one bank fails, a general run on neighboring ones is apt to take place, which if not checked at the beginning by a pouring into the circulation a large quantity of gold, leads to very extensive mischief."(p. 180, 1962 edition)

Can creditor panics be avoided by other means?

One might ask whether private markets can solve the coordination problem completely. Private institutions do exist to solve these coordination problems. The most obvious one is the practice of issuing syndicated loans in which groups of lenders jointly commit to make loans. Other institutions, like the London Club, which is an association of private lenders, negotiate debt-restructuring on behalf of all their members. The fact that international financial crises that bear some resemblance to creditor panics have occurred, in spite of the existence of the private institutions, suggests that these institutions cannot completely solve the problem. In any event, the mechanism we describe below to help solve creditor panics will do no harm if private institutions can solve the coordination problems and will do some good if they cannot.

One might also ask whether the government could meet its liquidity needs by expanding the money supply, perhaps by borrowing directly from its central bank. This way of meeting liquidity needs typically raises the inflation rate and can wreck the domestic economy. If new creditors think that the government will meet its needs to pay off existing short-term debt by expanding the money supply, they may well become even more reluctant to lend to the government because future prospects for the domestic economy look so bleak and future default becomes even more likely. These considerations suggest that creditor panics are likely even if the government has access to the printing presses to meet its liquidity needs.

One way creditor panics might be avoided is for developing countries to refrain from issuing short-term debt. Indeed, since short-term debt might lead to creditor panics and developing countries suffer costs from these panics, one would expect the countries to willingly refrain from issuing short-term debt. That developing countries seem to prefer short-term debt is prima facie evidence that they view the benefits to short-term debt as outweighing the costs. In Chari and Kehoe (1999) we develop a simple story for why developing countries may prefer short-term to long-term debt, when governments are better informed than markets about future prospects. The principal force is that governments that are more optimistic about their long-term prospects than the markets are better off by issuing short-term debt. Governments that issue long-term debt are regarded by markets as being more pessimistic and are penalized in the form of higher interest rates. This force induces both optimistic and pessimistic governments to rely on short-term debt. We argue that substantial uncertainty about future prospects and differences of information between governments and markets are much more likely in developing countries than in developed ones so that developed countries have no problems issuing long-term debt.

In practice, another force leads developing countries to rely excessively on short-term debt. The very fact that the IMF stands ready to provide liquidity to countries that are facing credit problems reduces the level of concern over the possibility of creditor panic. Hence, the IMF's liquidity provision reduces the cost of issuing short-term debt relative to long-term debt and thereby increases both the number of countries that rely on short-term debt and the volume of such borrowing. Paradoxically, the increased reliance on short-term debt increases the possibility of creditor panics and thus the perceived need for the IMF to provide liquidity. Thus, the IMF's liquidity provision mechanisms cause a subtle moral hazard problem by leading countries to shorten the maturity structure of their debt.

immune from creditor panics. Second, even if financial panics contagiously spread from one nation to another through some mechanism other than creditor panics, central banks have the ability and the willingness to expand world liquidity to prevent severe damage to the world economy.

The liquidity provider role of a lender of last resort can be played, for the world as a whole, through joint intervention by the central banks of the major powers. Recall that these interventions do not require that funds be directed to a particular country. All that is needed is that liquid funds be readily available in the marketplace so that the market can direct them to the best possible use. Indeed, we think there is considerable merit in the argument that interest rate reductions taken in the summer and the fall of 1998 by the Federal Reserve System and most European central banks was a coordinated response by major economic powers to stem concerns about potential international financial panics. IMF lending is therefore unnecessary to stem worldwide financial crises. Furthermore, since it is directed at individual borrowers, it is harmful because of the moral hazard problems such lending creates. The IMF perhaps has a role to play in advising central banks about the state of international financial markets, but the central banks of the major powers can be, have been and should be the international lenders of last resort.

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Some appropriate roles for the IMF

Since, as we have argued, the IMF is not necessary to solve the collective action problem associated with the lender of last resort, and that such an institution can even exacerbate the problem, where does that leave the IMF? Based on our framework, we identify three collective action problems and propose the following roles for the IMF: to serve as an international bankruptcy court, to provide a nominal anchor through issuance of a type of world currency and to enforce disclosure of accurate information regarding countries' economic conditions and policies.

An appropriate role: To establish an international bankruptcy court

Even if the central banks of the major powers adequately fill the role of lender of last resort, there still can be smaller collective action problems at the country level that create the need for institutions that can solve the coordination problems of debtors. First, as we argue below, there can be coordination problems among lenders that lead to creditor panics for otherwise healthy economies. Second, for unhealthy economies with large external debts there can be a need for a coordinated debt workout. This is a case where an analogy to a domestic institution is helpful rather than misleading. Coordination problems of this kind occur in lending to firms as well as countries. Countries solve this coordination problem through bankruptcy procedures, which are difficult to set up internationally, but are just as necessary. (This view is held by Eaton (1990), Feldstein (1998) and especially Sachs (1995).)

To see how coordination problems can arise at the level of lending to an individual firm consider the following. Suppose the legal system pays off debtors of firms in order of when they lay claims. Consider a firm with an existing stock of debt payments currently due

that is larger than the value of its current stock of physical assets. Suppose first that the firm, if allowed to continue in operation, can pay off its debt claims with future revenues. The creditors of such a firm can face a coordination problem analogous to that faced by debtors to a government. If each creditor believes that none of the other creditors will lay claims, then he has no incentive to do so and the firm will be able to pay off all of its debts. But, if each debtor believes that other creditors will lay claims to the firm and dismember it, then that debtor should attempt to lay a claim as well. This coordination problem can create creditor panics at the level of individual firms.

Suppose next that the firm cannot pay off its debt claims with future revenues, even if it is allowed to continue. Coordination problems among creditors can lead to prolonged periods of disagreement during which the value of the assets that will eventually be divided up shrink greatly.

Such problems typically do not arise at the level of the individual firm because sensibly organized societies adopt bankruptcy procedures rather than paying off creditors in the order in which they happen to show up. Three provisions of bankruptcy procedures in the United States seem directly oriented toward resolving coordination problems. The first provision is the *Automatic Stay Provision* which prevents "any act to collect, assess, or recover a claim against the debtor that arose before the commencement" of the bankruptcy proceeding that remains in force until the bankruptcy is resolved. The second provision requires that plans for reorganizing the financial structure of the firm treat creditors within each class equitably within and across classes of creditors. The third, the *Debtor in Possession Provision*, allows firms to obtain working capital and continue in operation under court supervision by assigning priority to the new loans above the loans obtained before the bankruptcy declaration.

Even if the central banks of the major powers adequately fill the role of lender of last resort, there can still be smaller collective action problems at the country level that create the need for institutions that can solve the coordination problems of debtors.

The first two provisions ensure that in the event of bankruptcy no debtor gains by attempting to lay claims and seizing assets ahead of other creditors. The third provision allows a bankrupt firm with relatively good prospects to continue in operation and thereby enhance overall payments to the creditors. The three provisions together effectively eliminate creditor panics. This analysis of bankruptcy law draws heavily on Jackson (1986).

In the international arena, legal agreements cannot be enforced without the cooperation of the governments of the involved countries. Debt contracts between lenders and governments are particularly prone to difficulties in enforcement. The absence of international bankruptcy procedures creates the possibility of creditor panics. This is one area where international agreements seem particularly necessary and can be highly beneficial.

We have argued that there is a need for an institution that can oversee and administer debt contracts between governments and foreign lenders. That is, the world needs an international bankruptcy court. Such an institution could be empowered to administer provisions similar to the three described above. The automatic stay and the equitable treatment provisions have the effect of lengthening the maturity structure of the government debt and, thereby, reducing the liquidity squeeze. The debtor in possession provision allows the government to continue collecting revenues from its citizens as well as providing necessary services to them until the financial reorganization is finalized. Notice that suspension of convertibility prac-

ticed by the U.S. banking system in the 19th century is a type of automatic stay provision. In the same way that suspension of convertibility helped to stem bank panics, our suggested procedures can help to stem creditor panics.

An international bankruptcy court can also deal with situations where the borrowing country is simply unable to meet its debt commitments. In such a situation the court could oversee orderly debt workouts and arrange for an equitable reduction in payments owed to foreigners.

One concern about the functioning of an international bankruptcy court is that such a court obviously cannot have the powers to dismiss governments or to seize collateral located in the borrowing country. In this respect, such a court seems much weaker than a domestic bankruptcy court that can replace incumbent management or liquidate assets. This concern has some validity, but an international court does have effective powers of enforcement. The principal such power is to stop protecting governments from the demands of their creditors. Effectively, such a move would allow each creditor to pursue his or her claims without hindrance. In this process, ordinary trade, of course, would be disrupted and substantial costs would be imposed upon the borrowing countries. Indeed, the country may be forced into default.

A subtle concern is that a well-functioning court, by making it easy to renegotiate contracts, might distort the kinds of contracts the parties sign in the first place.[2] It is uncertain how important this consideration is relative to the possibility of creditor panics. Fortunately, we can let the market make this judgment by requiring that all new debt contracts specify whether they will be adjudicated by the international bankruptcy court in the event of disputes. Presumably the parties will agree to the arrangement that delivers the highest ex-ante benefits.

Eichengreen and Portes (p. xvi, 1995) take the view that a proposal like ours is "a nonstarter, given the very great legal obstacles to implementation." They suggest a variety of more modest proposals, which seem to come down to encouraging countries and lenders to take actions that already seem to be in the interests of the parties concerned. While we take no stand on the political feasibility of our proposal, recent events have made obvious the economic benefits of fundamental institutional change.

If the IMF carries out these responsibilities well we would expect to see few, if any, creditor panics at the level of a country, just as the domestic bankruptcy court tends to eliminate them at the level of a firm. Moreover, for countries that are simply unable to meet their debt commitments we would expect to see efficient debt workouts.

An appropriate role: To provide a stable nominal anchor

There is another collective action problem that the IMF could solve. The IMF could provide a

[2] Indeed, in optimal contract theory with private information, a standard result is that ex-ante efficient contracts are not ex-post efficient and increasing the extent to which contracts are ex-post efficient can reduce their ex-ante efficiency. (See Chari 1983 for example.)

public good by providing an easy-to-verify nominal anchor that any country that wishes can peg to for as little or as long as the country sees fit. Private markets and individual governments would clearly have difficulty in providing such an anchor.

A key monetary policy problem faced by most monetary authorities is to convince their people that they are committed to pursue responsible monetary policies. One transparent way of conveying their commitment is to peg their exchange rates to a foreign currency. It is relatively easy to verify whether a monetary authority is adhering to its commitment. Alternative devices, such as money supply or inflation targets, are subject to manipulation and extraneous forces and thus often serve as poor communication devices of commitment to responsible monetary policy.

In practice many countries now peg to either a single foreign currency or to a basket of foreign currencies. A major problem with either of these is that changes in the foreign countries' economic conditions and policies typically force domestic policy adjustments. These adjustments are often undesirable, but are the price paid to purchase commitment. A clear example of this problem occurred in the early 1970s when the Bretton Woods system broke down. U.S. monetary policy led to high inflation in the United States, which was then transmitted to the rest of the world through the fixed exchange rate system. The rest of the world decided the costs of importing this high inflation were less than the benefits from the peg and, since the United States was unwilling to pursue deflationary policies, the system broke down.

If the IMF provided a currency whose supply expanded at a steady rate, independent of economic conditions, individual countries could peg to the IMF's currency, and thus they could purchase commitment without being subject to the whims of other countries' policies. In one sense, such a system would function somewhat like the gold standard did, without being subject to the problem of fluctuations in the price of gold relative to other commodities occasioned by vagaries in the world supply of gold.

If the IMF provided a currency whose supply expanded at a steady rate, independent of economic conditions, individual countries could peg to the IMF's currency, and thus they could purchase commitment without being subject to the whims of other countries' policies.

This nominal anchor is subject to a natural market test. It would have no value if both no country chose to peg its currency to it and no private individuals or institutions chose to use it in transactions. The need for a stable nominal anchor is self-evident because so many countries choose to peg to foreign countries.

An appropriate role: To certify policy and enforce accurate disclosure

The IMF appears to act as a certifier of good policy for financially distressed borrowing countries. One question is whether there is a collective action problem here, so that a publicly supported entity is needed to certify the financial conditions of individual countries. In answering this question it is helpful to draw analogies to domestic financial markets. In such markets there are a variety of rating agencies, securities analysts and the like whose job it is to certify the financial conditions of firms. None of these is publicly funded. In this sense, it is not obvious there is a collective action problem in certifying good policy. Hence it is unlikely that the IMF is necessary as a certifier of countries in global financial markets.

In domestic financial markets it is generally agreed that there is a need for government agencies, like the Securities and Exchange Commission, to enforce accurate disclosure of

information. There is every reason to believe that the market and individual governments will not adequately provide these services when it comes to international borrowing as well. Hence, there may well be a collective action problem here that the IMF could solve by providing these services. An important and useful service the IMF currently provides is to collect and disseminate data. Given the public good nature of this activity it seems clear that some international organization is needed to ensure that this service is provided adequately.

Conclusion

Worldwide financial crises are the result of a collective action problem, but the IMF should not try to prevent them since the central banks of the major powers can better handle this problem. Country-level financial panics are the result of a collective action problem, but the IMF should not bail out countries in order to prevent them since an international bankruptcy court can better solve this problem.

To determine the appropriate role for the IMF, we must ask the right questions:

- Is there a clear collective action problem?
- Is the proposed solution narrowly tailored to solve the identified collective action problem?
- Is the IMF the best institution to solve the identified collective action problem?

If the answer to any of these questions is no, then the suggested role for the IMF is not appropriate.

We have asked these questions and determined the following. Worldwide financial crises are the result of a collective action problem, but the IMF should not try to prevent them since the central banks of the major powers can better handle this problem. Country-level financial panics are the result of a collective action problem, but the IMF should not bail out countries in order to prevent them since an international bankruptcy court can better solve this problem. The role of this international bankruptcy court, then, is an appropriate one for the IMF. Additionally, there are collective action problems in providing a stable nominal anchor and enforcing the accurate disclosure of information, both of which the IMF can best solve.

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January 6, 1999

To the Board of Directors

The management of the Federal Reserve Bank of Minneapolis is responsible for the preparation and fair presentation of the Statement of Financial Condition, Statement of Income, and Statement of Changes in Capital as of December 31, 1998 (the "Financial Statements"). The Financial Statements have been prepared in conformity with the accounting principles, policies, and practices established by the Board of Governors of the Federal Reserve System and as set forth in the Financial Accounting Manual for the Federal Reserve Banks, and as such, include amounts, some of which are based on judgments and estimates of management.

The management of the Federal Reserve Bank of Minneapolis is responsible for maintaining an effective process of internal controls over financial reporting including the safeguarding of assets as they relate to the Financial Statements. Such internal controls are designed to provide reasonable assurance to management and to the Board of Directors regarding the preparation of reliable Financial Statements. This process of internal controls contains self-monitoring mechanisms, including, but not limited to, divisions of responsibility and a code of conduct. Once identified, any material deficiencies in the process of internal controls are reported to management, and appropriate corrective measures are implemented.

Even an effective process of internal controls, no matter how well designed, has inherent limitations, including the possibility of human error, and therefore can provide only reasonable assurance with respect to the preparation of reliable financial statements.

The management of the Federal Reserve Bank of Minneapolis assessed its process of internal controls over financial reporting including the safeguarding of assets reflected in the Financial Statements, based upon the criteria established in the "Internal Control—Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this assessment, the management of the Federal Reserve Bank of Minneapolis believes that the Federal Reserve Bank of Minneapolis maintained an effective process of internal controls over financial reporting including the safeguarding of assets as they relate to the Financial Statements.

President

First Vice President

Chief Financial Officer

PRICEWATERHOUSECOOPERS

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Report of Independent Accountants

To the Board of Directors of the
Federal Reserve Bank of Minneapolis:

We have examined management's assertion that the Federal Reserve Bank of Minneapolis ("FRB Minneapolis") maintained effective internal control over financial reporting and the safeguarding of assets as they relate to the Financial Statements as of December 31, 1998, included in the accompanying Management's Assertion.

Our examination was made in accordance with standards established by the American Institute of Certified Public Accountants, and accordingly, included obtaining an understanding of the internal control over financial reporting, testing, and evaluating the design and operating effectiveness of the internal control, and such other procedures as we considered necessary in the circumstances. We believe that our examination provides a reasonable basis for our opinion.

Because of inherent limitations in any internal control, misstatements due to error or fraud may occur and not be detected. Also, projections of any evaluation of the internal control over financial reporting to future periods are subject to the risk that the internal control may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, management's assertion that the FRB Minneapolis maintained effective internal control over financial reporting and over the safeguarding of assets as they relate to the Financial Statements as of December 31, 1998, is fairly stated, in all material respects, based upon criteria described in "Internal Control – Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission.

PricewaterhouseCoopers LLP

March 5, 1999

Federal Reserve Bank of Minneapolis

Financial Statements
for the years ended
December 31, 1998 and 1997

PRICEWATERHOUSECOOPERS

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Report of Independent Accountants

To the Board of Governors of The Federal Reserve System
and the Board of Directors of The Federal Reserve
Bank of Minneapolis:

We have audited the accompanying statements of condition of the Federal Reserve Bank of Minneapolis (the Bank) as of December 31, 1998 and 1997, and the related statements of income and changes in capital for the years then ended. These financial statements are the responsibility of the Bank's management. Our responsibility is to express an opinion on the financial statements based on our audit.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As discussed in Note 3, the financial statements were prepared in conformity with the accounting principles, policies, and practices established by the Board of Governors of The Federal Reserve System. These principles, policies, and practices, which were designed to meet the specialized accounting and reporting needs of The Federal Reserve System, are set forth in the "Financial Accounting Manual for Federal Reserve Banks" and constitute a comprehensive basis of accounting other than generally accepted accounting principles.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Bank as of December 31, 1998 and 1997, and the results of its operations for the years then ended, on the basis of accounting described in Note 3.

PricewaterhouseCoopers LLP

Minneapolis, Minnesota
March 5, 1999

Federal Reserve Bank of Minneapolis

Statements of Condition

(in millions)

	As of December 31, 1998	1997
Assets		
Gold certificates	128	147
Special drawing rights certificates	123	123
Coin	15	20
Items in process of collection	510	701
Loans to depository institutions	—	5
U.S. government and federal agency securities, net	5,017	6,044
Investments denominated in foreign currencies	710	395
Accrued interest receivable	47	57
Interdistrict settlement account	1,381	—
Bank premises and equipment, net	157	160
Other assets	15	20
Total assets	$ 8,103	$ 7,672
Liabilities and Capital		
Liabilities:		
Federal Reserve notes outstanding, net	6,136	4,792
Deposits:		
Depository institutions	1,039	629
Other deposits	6	6
Deferred credit items	442	610
Surplus transfer due U.S. Treasury	32	2
Interdistrict settlement account	—	1,205
Accrued benefit cost	36	34
Other liabilities	8	11
Total liabilities	7,699	7,289
Capital:		
Capital paid-in	202	194
Surplus	202	189
Total capital	404	383
Total liabilities and capital	$ 8,103	$ 7,672

The accompanying notes are an integral part of these financial statements.

Federal Reserve Bank of Minneapolis

Statements of Income

(in millions)

	For the years ended December 31, 1998	1997
Interest income:		
Interest on U.S. government securities	$ 314	$ 358
Interest on foreign currencies	15	9
Interest on loans to depository institutions	2	4
Total interest income	331	371
Other operating income:		
Income from services	47	47
Reimbursable services to government agencies	20	16
Foreign currency gains (losses), net	67	(60)
Other income	1	1
Total other operating income	135	4
Operating expenses:		
Salaries and other benefits	63	63
Occupancy expense	12	10
Equipment expense	7	7
Cost of unreimbursed Treasury services	—	3
Assessments by Board of Governors	11	9
Other expenses	28	29
Total operating expenses	121	121
Net income prior to distribution	$ 345	$ 254
Distribution of net income:		
Dividends paid to member banks	12	10
Transferred to surplus	13	87
Payments to U.S. Treasury as interest on Federal Reserve notes	128	
Payments to U.S. Treasury as required by statute	192	157
Total distribution	$ 345	$ 254

The accompanying notes are an integral part of these financial statements.

Statements of Changes in Capital

for the years ended December 31, 1998, and December 31, 1997

(in millions)

	Capital Paid-in	Surplus	Total Capital
Balance at January 1, 1997 (2.1 shares)	$ 107	$ 104	$ 211
Net income transferred to surplus	—	87	87
Statutory surplus transfer to the U.S. Treasury		(2)	(2)
Net change in capital stock issued (1.8 shares)	87	—	87
Balance at December 31, 1997 (3.9 shares)	194	189	383
Net income transferred to surplus	—	13	13
Net change in capital stock issued (0.2 shares)	8	—	8
Balance at December 31, 1998 (4.1 shares)	$ 202	$ 202	$ 404

The accompanying notes are an integral part of these financial statements.

Notes to Financial Statements

1. ORGANIZATION

The Federal Reserve Bank of Minneapolis ("Bank") is part of the Federal Reserve System ("System") created by Congress under the Federal Reserve Act of 1913 ("Federal Reserve Act") which established the central bank of the United States. The System consists of the Board of Governors of the Federal Reserve System ("Board of Governors") and twelve Federal Reserve Banks ("Reserve Banks"). The Reserve Banks are chartered by the federal government and possess a unique set of governmental, corporate, and central bank characteristics. Other major elements of the System are the Federal Open Market Committee ("FOMC"), and the Federal Advisory Council. The FOMC is composed of members of the Board of Governors, the president of the Federal Reserve Bank of New York ("FRBNY") and, on a rotating basis, four other Reserve Bank presidents.

Structure

The Bank and its branch in Helena, Montana, serve the Ninth Federal Reserve District, which includes Minnesota, Montana, North Dakota, South Dakota, and portions of Michigan and Wisconsin. In accordance with the Federal Reserve Act, supervision and control of the Bank is exercised by a Board of Directors. Banks that are members of the System include all national banks and any state chartered bank that applies and is approved for membership in the System.

Board of Directors

The Federal Reserve Act specifies the composition of the board of directors for each of the Reserve Banks. Each board is composed of nine members serving three-year terms: three directors, including those designated as Chairman and Deputy Chairman, are appointed by the Board of Governors, and six directors are elected by member banks. Of the six elected by member banks, three represent the public and three represent member banks. Member banks are divided into three classes according to size. Member banks in each class elect one director representing member banks and one representing the public. In any election of directors, each member bank receives one vote, regardless of the number of shares of Reserve Bank stock it holds.

2. OPERATIONS AND SERVICES

The System performs a variety of services and operations. Functions include: formulating and conducting monetary policy; participating actively in the payments mechanism, including large-dollar transfers of funds, automated clearinghouse operations, and check processing; distribution of coin and currency; fiscal agency functions for the U.S. Treasury and certain federal agencies; serving as the federal government's bank; providing short-term loans to depository institutions; serving the consumer and the community by providing educational materials and information regarding consumer laws; supervising bank holding companies, and state member banks; and administering other regulations of the Board of Governors. The Board of Governors' operating costs are funded through assessments on the Reserve Banks.

The FOMC establishes policy regarding open market operations, oversees these operations, and issues authorizations and directives to the FRBNY for its execution of transactions. Authorized transaction types include direct purchase and sale of securities, matched sale-purchase transactions, the purchase of securities under agreements to resell, and the lending of U.S. government

securities. Additionally, the FRBNY is authorized by the FOMC to hold balances of and to execute spot and forward foreign exchange and securities contracts in fourteen foreign currencies, maintain reciprocal currency arrangements ("F/X swaps") with various central banks, and "warehouse" foreign currencies for the U.S. Treasury and Exchange Stabilization Fund ("ESF") through the Reserve Banks.

3. SIGNIFICANT ACCOUNTING POLICIES

Accounting principles for entities with the unique powers and responsibilities of the nation's central bank have not been formulated by the Financial Accounting Standards Board. The Board of Governors has developed specialized accounting principles and practices that it believes are appropriate for the significantly different nature and function of a central bank as compared to the private sector. These accounting principles and practices are documented in the "Financial Accounting Manual for Federal Reserve Banks" ("Financial Accounting Manual"), which is issued by the Board of Governors. All Reserve Banks are required to adopt and apply accounting policies and practices that are consistent with the Financial Accounting Manual.

The financial statements have been prepared in accordance with the Financial Accounting Manual. Differences exist between the accounting principles and practices of the System and generally accepted accounting principles ("GAAP"). The primary differences are the presentation of all security holdings at amortized cost, rather than at the fair value presentation requirements of GAAP, and the accounting for matched sale-purchase transactions as separate sales and purchases, rather than secured borrowings with pledged collateral, as is required by GAAP. In addition, the Bank has elected not to present a Statement of Cash Flows or a Statement of Comprehensive Income. The Statement of Cash Flows has not been included as the liquidity and cash position of the Bank are not of primary concern to the users of these financial statements. The Statement of Comprehensive Income, which comprises net income plus or minus certain adjustments, such as the fair value adjustment for securities, has not been included because as stated above the securities are recorded at amortized cost and there are no other adjustments in the determination of Comprehensive Income applicable to the Bank. Other information regarding the Bank's activities is provided in, or may be derived from, the Statements of Condition, Income, and Changes in Capital. Therefore, a Statement of Cash Flows or a Statement of Comprehensive Income would not provide any additional useful information. There are no other significant differences between the policies outlined in the Financial Accounting Manual and GAAP.

The preparation of the financial statements in conformity with the Financial Accounting Manual requires management to make certain estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of income and expenses during the reporting period. Actual results could differ from those estimates. Unique accounts and significant accounting policies are explained below.

a. Gold Certificates

The Secretary of the Treasury is authorized to issue gold certificates to the Reserve Banks to monetize gold held by the U.S. Treasury. Payment for the gold certificates by the Reserve Banks is made by crediting equivalent amounts in dollars into the account established for the U.S. Treasury. These gold certificates held by the Reserve Banks are required to be backed by the gold of the U.S. Treasury. The U.S. Treasury may reacquire the gold certificates at any time and the

Reserve Banks must deliver them to the U.S. Treasury. At such time, the U.S. Treasury's account is charged and the Reserve Banks' gold certificate accounts are lowered. The value of gold for purposes of backing the gold certificates is set by law at $42 2/9 a fine troy ounce. The Board of Governors allocates the gold certificates among Reserve Banks once a year based upon Federal Reserve notes outstanding in each District at the end of the preceding year.

b. Special Drawing Rights Certificates

Special drawing rights ("SDRs") are issued by the International Monetary Fund ("Fund") to its members in proportion to each member's quota in the Fund at the time of issuance. SDRs serve as a supplement to international monetary reserves and may be transferred from one national monetary authority to another. Under the law providing for United States participation in the SDR system, the Secretary of the U.S. Treasury is authorized to issue SDR certificates, somewhat like gold certificates, to the Reserve Banks. At such time, equivalent amounts in dollars are credited to the account established for the U.S. Treasury, and the Reserve Banks' SDR certificate accounts are increased. The Reserve Banks are required to purchase SDRs, at the direction of the U.S. Treasury, for the purpose of financing SDR certificate acquisitions or for financing exchange stabilization operations. The Board of Governors allocates each SDR transaction among Reserve Banks based upon Federal Reserve notes outstanding in each District at the end of the preceding year.

c. Loans to Depository Institutions

The Depository Institutions Deregulation and Monetary Control Act of 1980 provides that all depository institutions that maintain reservable transaction accounts or nonpersonal time deposits, as defined in Regulation D issued by the Board of Governors, have borrowing privileges at the discretion of the Reserve Banks. Borrowers execute certain lending agreements and deposit sufficient collateral before credit is extended. Loans are evaluated for collectibility, and currently all are considered collectible and fully collateralized. If any loans were deemed to be uncollectible, an appropriate reserve would be established. Interest is recorded on the accrual basis and is charged at the applicable discount rate established at least every fourteen days by the Board of Directors of the Reserve Banks, subject to review by the Board of Governors. However, Reserve Banks retain the option to impose a surcharge above the basic rate in certain circumstances.

d. U.S. Government and Federal Agency Securities and Investments Denominated in Foreign Currencies

The FOMC has designated the FRBNY to execute open market transactions on its behalf and to hold the resulting securities in the portfolio known as the System Open Market Account ("SOMA"). In addition to authorizing and directing operations in the domestic securities market, the FOMC authorizes and directs the FRBNY to execute operations in foreign markets for major currencies in order to counter disorderly conditions in exchange markets or other needs specified by the FOMC in carrying out the System's central bank responsibilities.

Purchases of securities under agreements to resell and matched sale-purchase transactions are accounted for as separate sale and purchase transactions. Purchases under agreements to resell are transactions in which the FRBNY purchases a security and sells it back at the rate specified at the commencement of the transaction. Matched sale-purchase transactions are transactions in which the FRBNY sells a security and buys it back at the rate specified at the commencement of the transaction.

Reserve Banks are authorized by the FOMC to lend U.S. government securities held in the SOMA to U.S. government securities dealers and to banks participating in U.S. government securities clearing arrangements, in order to facilitate the effective functioning of the domestic securities market. These securities-lending transactions are fully collateralized by other U.S. government securities. FOMC policy requires the lending Reserve Bank to take possession of collateral in amounts in excess of the market values of the securities loaned. The market values of the collateral and the securities loaned are monitored by the lending Reserve Bank on a daily basis, with additional collateral obtained as necessary. The securities loaned continue to be accounted for in the SOMA.

Foreign exchange contracts are contractual agreements between two parties to exchange specified currencies, at a specified price, on a specified date. Spot foreign contracts normally settle two days after the trade date, whereas the settlement date on forward contracts is negotiated between the contracting parties, but will extend beyond two days from the trade date. The FRBNY generally enters into spot contracts, with any forward contracts generally limited to the second leg of a swap/warehousing transaction.

The FRBNY, on behalf of the Reserve Banks, maintains renewable, short-term F/X swap arrangements with authorized foreign central banks. The parties agree to exchange their currencies up to a pre-arranged maximum amount and for an agreed upon period of time (up to twelve months), at an agreed upon interest rate. These arrangements give the FOMC temporary access to foreign currencies that it may need for intervention operations to support the dollar and give the partner foreign central bank temporary access to dollars it may need to support its own currency. Drawings under the F/X swap arrangements can be initiated by either the FRBNY or the partner foreign central bank, and must be agreed to by the drawee. The F/X swaps are structured so that the party initiating the transaction (the drawer) bears the exchange rate risk upon maturity. The FRBNY will generally invest the foreign currency received under an F/X swap in interest-bearing instruments.

Warehousing is an arrangement under which the FOMC agrees to exchange, at the request of the Treasury, U.S. dollars for foreign currencies held by the Treasury or ESF over a limited period of time. The purpose of the warehousing facility is to supplement the U.S. dollar resources of the Treasury and ESF for financing purchases of foreign currencies and related international operations.

In connection with its foreign currency activities, the FRBNY, on behalf of the Reserve Banks, may enter into contracts which contain varying degrees of off-balance sheet market risk, because they represent contractual commitments involving future settlement, and counter-party credit risk. The FRBNY controls credit risk by obtaining credit approvals, establishing transaction limits, and performing daily monitoring procedures.

While the application of current market prices to the securities currently held in the SOMA portfolio and investments denominated in foreign currencies may result in values substantially above or below their carrying values, these unrealized changes in value would have no direct effect on the quantity of reserves available to the banking system or on the prospects for future Reserve Bank earnings or capital. Both the domestic and foreign components of the SOMA portfolio from time to time involve transactions that can result in gains or losses when holdings are sold prior to maturity. However, decisions regarding the securities and foreign currencies transac-

tions, including their purchase and sale, are motivated by monetary policy objectives rather than profit. Accordingly, earnings and any gains or losses resulting from the sale of such currencies and securities are incidental to the open market operations and do not motivate its activities or policy decisions.

U.S. government and federal agency securities and investments denominated in foreign currencies comprising the SOMA are recorded at cost, on a settlement-date basis, and adjusted for amortization of premiums or accretion of discounts on a straight-line basis. Interest income is accrued on a straight-line basis and is reported as "Interest on U.S. government securities" or "Interest on foreign currencies," as appropriate. Income earned on securities lending transactions is reported as a component of "Other income." Gains and losses resulting from sales of securities are determined by specific issues based on average cost. Gains and losses on the sales of U.S. government and federal agency securities are reported as "Other income." Foreign currency denominated assets are revalued monthly at current market exchange rates in order to report these assets in U.S. dollars. Realized and unrealized gains and losses on investments denominated in foreign currencies are reported as "Foreign currency gains (losses), net." Foreign currencies held through F/X swaps, when initiated by the counter party, and warehousing arrangements are revalued monthly, with the unrealized gain or loss reported by the FRBNY as a component of "Other assets" or "Other liabilities," as appropriate.

Balances of U.S. government and federal agencies securities bought outright, investments denominated in foreign currency, interest income, amortization of premiums and discounts on securities bought outright, gains and losses on sales of securities, and realized and unrealized gains and losses on investments denominated in foreign currencies, excluding those held under an F/X swap arrangement, are allocated to each Reserve Bank. Securities purchased under agreements to resell and the related premiums, discounts and income, and unrealized gains and losses on the revaluation of foreign currency holdings under F/X swaps and warehousing arrangements are allocated to the FRBNY and not to other Reserve Banks. Income from securities lending transactions is recognized only by the lending Reserve Bank.

e. Bank Premises and Equipment

Bank premises and equipment are stated at cost less accumulated depreciation. Depreciation is calculated on a straight-line basis over estimated useful lives of assets ranging from 2 to 50 years. New assets, major alterations, renovations, and improvements are capitalized at cost as additions to the asset accounts. Maintenance, repairs, and minor replacements are charged to operations in the year incurred.

f. Interdistrict Settlement Account

At the close of business each day, all Reserve Banks and branches assemble the payments due to or from other Reserve Banks and branches as a result of transactions involving accounts residing in other Districts that occurred during the day's operations. Such transactions may include funds settlement, check clearing and automated clearinghouse ("ACH") operations, and allocations of shared expenses. The cumulative net amount due to or from other Reserve Banks is reported as the "Interdistrict settlement account."

g. Federal Reserve Notes

Federal Reserve notes are the circulating currency of the United States. These notes are issued through the various Federal Reserve agents to the Reserve Banks upon deposit with such Agents

of certain classes of collateral security, typically U.S. government securities. These notes are identified as issued to a specific Reserve Bank. The Federal Reserve Act provides that the collateral security tendered by the Reserve Bank to the Federal Reserve Agent must be equal to the sum of the notes applied for by such Reserve Bank. In accordance with the Federal Reserve Act, gold certificates, special drawing rights certificates, U.S. government and agency securities, loans allowed under Section 13, and investments denominated in foreign currencies are pledged as collateral for net Federal Reserve notes outstanding. The collateral value is equal to the book value of the collateral tendered, with the exception of securities, whose collateral value is equal to the par value of the securities tendered. The Board of Governors may, at any time, call upon a Reserve Bank for additional security to adequately collateralize the Federal Reserve notes. To satisfy its obligation to provide sufficient collateral for its outstanding Federal Reserve notes, the Reserve Banks have entered into an agreement that provides that certain assets of the Reserve Banks are jointly pledged as collateral for the Federal Reserve notes of all Reserve Banks. In the event that this collateral is insufficient, the Federal Reserve Act provides that Federal Reserve notes become a first and paramount lien on all the assets of the Reserve Banks. Finally, as obligations of the United States, Federal Reserve notes are backed by the full faith and credit of the United States government.

The "Federal Reserve notes outstanding, net" account represents Federal Reserve notes reduced by cash held in the vaults of the Bank of $1,554 million and $1,689 million at December 31, 1998 and 1997, respectively.

h. Capital Paid-in

The Federal Reserve Act requires that each member bank subscribe to the capital stock of the Reserve Bank in an amount equal to 6% of the capital and surplus of the member bank. As a member bank's capital and surplus changes, its holdings of the Reserve Bank's stock must be adjusted. Member banks are those state-chartered banks that apply and are approved for membership in the System and all national banks. Currently, only one-half of the subscription is paid-in and the remainder is subject to call. These shares are nonvoting with a par value of $100. They may not be transferred or hypothecated. By law, each member bank is entitled to receive an annual dividend of 6% on the paid-in capital stock. This cumulative dividend is paid semiannually. A member bank is liable for Reserve Bank liabilities up to twice the par value of stock subscribed by it.

i. Surplus

The Board of Governors requires Reserve Banks to maintain a surplus equal to the amount of capital paid-in as of December 31. This amount is intended to provide additional capital and reduce the possibility that the Reserve Banks would be required to call on member banks for additional capital. Reserve Banks are required by the Board of Governors to transfer to the U.S. Treasury excess earnings, after providing for the costs of operations, payment of dividends, and reservation of an amount necessary to equate surplus with capital paid-in. Payments made after September 30, 1998, represent payment of interest on Federal Reserve notes outstanding.

The Omnibus Budget Reconciliation Act of 1993 (Public Law 103-66, Section 3002) codified the existing Board surplus policies as statutory surplus transfers, rather than as payments of interest on Federal Reserve notes, for federal government fiscal years 1998 and 1997 (which began on October 1, 1997 and 1996, respectively). In addition, the legislation directed the Reserve Banks to

transfer to the U.S. Treasury additional surplus funds of $107 million and $106 million during fiscal years 1998 and 1997, respectively. Reserve Banks were not permitted to replenish surplus for these amounts during this time. The Reserve Banks made these transfers on October 1, 1997, and October 1, 1996, respectively. The Bank's share of the 1997 transfer is reported as "Statutory surplus transfer to the U.S. Treasury."

In the event of losses, payments to the U.S. Treasury are suspended until such losses are recovered through subsequent earnings. Weekly payments to the U.S. Treasury vary significantly.

j. Cost of Unreimbursed Treasury Services

The Bank is required by the Federal Reserve Act to serve as fiscal agent and depository of the United States. By statute, the Department of the Treasury is permitted, but not required, to pay for these services. The costs of providing fiscal agency and depository services to the Treasury Department that have been billed but will not be paid are reported as the "Cost of unreimbursed Treasury services."

k. Taxes

The Reserve Banks are exempt from federal, state, and local taxes, except for taxes on real property, which are reported as a component of "Occupancy expense."

4. U.S. GOVERNMENT AND FEDERAL AGENCY SECURITIES

Securities bought outright and held under agreements to resell are held in the SOMA at the FRBNY. An undivided interest in SOMA activity, with the exception of securities held under agreements to resell and the related premiums, discounts, and income, is allocated to each Reserve Bank on a percentage basis derived from an annual settlement of interdistrict clearings. The settlement, performed in April of each year, equalizes Reserve Bank gold certificate holdings to Federal Reserve notes outstanding. The Bank's allocated share of SOMA balances was approximately 1.099% and 1.393% at December 31, 1998 and 1997, respectively.

The Bank's allocated share of securities held in the SOMA at December 31, that were bought outright, were as follows (in millions):

	1998	1997
Par value:		
Federal agency	¢	¢ 10
U.S. government:		
Bills	2,140	2,745
Notes	2,064	2,426
Bonds	763	827
Total par value	4,971	6,008
Unamortized premiums	81	86
Unaccreted discounts	(35)	(50)
Total allocated to Bank	$ 5,017	$ 6,044

Total SOMA securities bought outright were $456,667 million and $434,001 million at December 31, 1998 and 1997, respectively.

The maturities of U.S. government and federal agency securities bought outright, which were allocated to the Bank at December 31, 1998, were as follows (in millions):

	Par value		
Maturities of Securities Held	U.S. Government Securities	Federal Agency Obligations	Total
Within 15 days	$ 13	$ —	$ 13
16 days to 90 days	1,089	—	1,089
91 days to 1 year	1,578	1	1,579
Over 1 year to 5 years	1,183	1	1,184
Over 5 years to 10 years	492	2	494
Over 10 years	612	—	612
Total	$ 4,967	$ 4	$ 4,971

At December 31, 1998 and 1997, matched sale-purchase transactions involving U.S. government securities with par values of $20,927 million and $17,027 million, respectively, were outstanding, of which $230 million and $237 million were allocated to the Bank. Matched sale-purchase transactions are generally overnight arrangements.

5. INVESTMENTS DENOMINATED IN FOREIGN CURRENCIES

The FRBNY, on behalf of the Reserve Banks, holds foreign currency deposits with foreign central banks and the Bank for International Settlements and invests in foreign government debt instruments. Foreign government debt instruments held include both securities bought outright and securities held under agreements to resell. These investments are guaranteed as to principal and interest by the foreign governments.

Each Reserve Bank is allocated a share of foreign-currency-denominated assets, the related interest income, and realized and unrealized foreign currency gains and losses, with the exception of unrealized gains and losses on F/X swaps and warehousing transactions. This allocation is based on the ratio of each Reserve Bank's capital and surplus to aggregate capital and surplus at the preceding December 31. The Bank's allocated share of investments denominated in foreign currencies was approximately 3.589% and 2.314% at December 31, 1998 and 1997, respectively.

The Bank's allocated share of investments denominated in foreign currencies, valued at current exchange rates at December 31 were as follows (in millions):

	1998	1997
German Marks:		
Foreign currency deposits	$ 375	$ 191
Government debt instruments including agreements to resell	85	74
Japanese Yen:		
Foreign currency deposits	24	14
Government debt instruments including agreements to resell	222	114
Accrued interest	4	2
Total	$ 710	$ 395

Total investments denominated in foreign currencies were $19,769 million and $17,046 million at December 31, 1998 and 1997, respectively, which include $15 million and $3 million in unearned interest for 1998 and 1997, respectively, collected on certain foreign currency holdings that is allocated solely to the FRBNY.

The maturities of investments denominated in foreign currencies which were allocated to the Bank at December 31, 1998, were as follows (in millions):

Maturities of Investments Denominated in Foreign Currencies	
Within 1 year	$ 676
Over 1 year to 5 years	18
Over 5 years to 10 years	16
Total	$ 710

At December 31, 1998 and 1997, there were no open foreign exchange contracts or outstanding F/X swaps.

At December 31, 1998, the warehousing facility was $5,000 million, with zero outstanding.

6. BANK PREMISES AND EQUIPMENT

A summary of bank premises and equipment at December 31 is as follows (in millions):

	1998	1997
Bank premises and equipment:		
Land	$ 13	$ 13
Buildings	109	107
Building machinery and equipment	14	14
Construction in progress	—	1
Furniture and equipment	46	47
	182	182
Accumulated depreciation	(25)	(22)
Bank premises and equipment, net	$ 157	$ 160

Depreciation expense was $8 million and $5 million for the years ended December 31, 1998 and 1997, respectively.

This Bank has not entered into any capitalized leases for bank premises and equipment.

Future minimum payments under agreements in existence at December 31, 1998, were immaterial.

7. COMMITMENTS AND CONTINGENCIES

At December 31, 1998 and 1997, the Bank was not obligated under any noncancelable leases for premises and equipment.

Rental expense under operating leases for certain operating facilities, warehouses, and data processing and office equipment (including taxes, insurance and maintenance when included in rent), net of sublease rentals, was $259 thousand and $1 million for the years ended December 31, 1998 and 1997, respectively. Certain of the Bank's leases have options to renew.

Under the Insurance Agreement of the Federal Reserve Banks dated as of June 7, 1994, each of the Reserve Banks has agreed to bear, on a per incident basis, a pro rata share of losses in excess of 1% of the capital of the claiming Reserve Bank, up to 50% of the total capital and surplus of all Reserve Banks. Losses are borne in the ratio that a Reserve Bank's capital bears to the total capital of all Reserve Banks at the beginning of the calendar year in which the loss is shared. No claims were outstanding under such agreement at December 31, 1998 or 1997.

The Bank is involved in certain legal actions and claims arising in the ordinary course of business. Although it is difficult to predict the ultimate outcome of these actions, in management's opinion, based on discussions with counsel, the aforementioned litigation and claims will be resolved without material adverse effect on the financial position or results of operations of the Bank.

There were no other commitments and long-term obligations in excess of one year at December 31, 1998.

8. RETIREMENT AND THRIFT PLANS

Retirement Plans

The Bank currently offers two defined benefit retirement plans to its employees, based on length of service and level of compensation. Substantially all of the Bank's employees participate in the Retirement Plan for Employees of the Federal Reserve System ("System Plan") and the Benefit Equalization Retirement Plan ("BEP"). The System Plan is a multi-employer plan with contributions fully funded by participating employers. No separate accounting is maintained of assets contributed by the participating employers. The Bank's projected benefit obligation and net pension costs for the BEP at December 31, 1998 and 1997, and for the years then ended, are not material.

Thrift plan

Employees of the Bank may also participate in the defined contribution Thrift Plan for Employees of the Federal Reserve System ("Thrift Plan"). The Bank's Thrift Plan contributions totaled $2 million for each of the years ended December 31, 1998 and 1997, respectively, and are reported as a component of "Salaries and other benefits."

9. POSTRETIREMENT BENEFITS OTHER THAN PENSIONS AND POSTEMPLOYMENT BENEFITS

Postretirement benefits other than pensions

In addition to the Bank's retirement plans, employees who have met certain age and length of service requirements are eligible for both medical benefits and life insurance coverage during retirement.

The Bank funds benefits payable under the medical and life insurance plans as due and, accordingly, has no plan assets. Net postretirement benefit cost is actuarially determined using a January 1 measurement date.

Following is a reconciliation of beginning and ending balances of the benefit obligation (in millions):

	1998	1997
Accumulated postretirement benefit obligation at January 1	$ 27.0	$ 25.7
Service cost-benefits earned during the period	0.8	0.9
Interest cost of accumulated benefit obligation	1.8	1.8
Actuarial loss (gain)	1.4	(0.7)
Contributions by plan participants	0.1	0.1
Benefits paid	(0.9)	(0.8)
Plan amendments, acquisitions, foreign currency exchange rate changes, business combinations, divestitures, curtailments, settlements, special termination benefits	—	—
Accumulated postretirement benefit obligation at December 31	$ 30.2	$ 27.0

Following is a reconciliation of the beginning and ending balance of the plan assets, the unfunded postretirement benefit obligation, and the accrued postretirement benefit cost (in millions):

	1998	1997
Fair value of plan assets at January 1	$ —	$ —
Actual return on plan assets	—	—
Contributions by the employer	0.8	0.7
Contributions by plan participants	0.1	0.1
Benefits paid	(0.9)	(0.8)
Fair value of plan assets at December 31	$ 0	$ 0
Unfunded postretirement benefit obligation	$ 30.2	$ 27.0
Unrecognized initial net transition asset (obligation)	—	—
Unrecognized prior service cost	—	—
Unrecognized net actuarial gain	1.3	2.9
Accrued postretirement benefit cost	$ 31.5	$ 29.9

Accrued postretirement benefit cost is reported as a component of "Accrued benefit cost."

The weighted-average assumption used in developing the postretirement benefit obligation as of December 31 is as follows:

	1998	1997
Discount rate	6.25%	7.00%

For measurement purposes, an 8.5% annual rate of increase in the cost of covered health care benefits was assumed for 1999. Ultimately, the health care cost trend rate is expected to decrease gradually to 4.75% by 2006, and remain at that level thereafter.

Assumed health care cost trend rates have a significant effect on the amounts reported for health care plans. A one percentage point change in assumed health care cost trend rates would have the following effects for the year ended December 31, 1998 (in millions):

	1 Percentage Point Increase	1 Percentage Point Decrease
Effect on aggregate of service and interest cost components of net periodic postretirement benefit cost	$ 0.6	$ (0.5)
Effect on accumulated postretirement benefit obligation	6.0	(5.4)

The following is a summary of the components of net periodic postretirement benefit cost for the years ended December 31 (in millions):

	1998	1997
Service cost-benefits earned during the period	$ 0.8	$ 0.9
Interest cost of accumulated benefit obligation	1.8	1.8
Amortization of prior service cost	—	—
Recognized net actuarial loss	(0.1)	—
Net periodic postretirement benefit cost	$ 2.5	$ 2.7

Net periodic postretirement benefit cost is reported as a component of "Salaries and other benefits."

Postemployment benefits

The Bank offers benefits to former or inactive employees. Postemployment benefit costs are actuarially determined and include the cost of medical and dental insurance, survivor income, and disability benefits. Costs were projected using the same discount rate and health care trend rates as were used for projecting postretirement costs. The accrued postemployment benefit costs recognized by the Bank for each of the years ended December 31, 1998 and 1997, were $4 million. This cost is included as a component of "Accrued benefit cost." Net periodic postemployment benefit costs included in 1998 and 1997 operating expenses were $1 million for each year.

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December 31, 1998