OCCASIONAL PAPER 132



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## The 1980s and 1990s

Liliana Rojas-Suárez and Steven R. Weisbrod

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**Library of Congress Cataloging-in-Publication Data**

Rojas-Suárez, Liliana.
Financial fragilities in Latin America : the 1980s and 1990s /
Liliana Rojas-Suárez and Steven R. Weisbrod.
p. cm. — (Occasional Paper, ISSN 0251-6365 ; no. 132)
Includes bibliographical references.
ISBN 1-55775-502-7
1. Banks and banking—Latin America. 2. Finance—Latin America.
I. Weisbrod, Steven Riess, 1948– . II. Title. III. Series:
Occasional paper (International Monetary Fund) ; no. 132.
HG2710.5.A6R64 1995
332.1'098—dc20 95-44242
CIP

Price: US$15.00
(US$12.00 to full-time faculty members and
students at universities and colleges)

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International Monetary Fund, Publication Services
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The following symbols have been used throughout this paper:

. . . to indicate that data are not available;

— to indicate that the figure is zero or less than half the final digit shown, or that the item does not exist;

– between years or months (e.g., 1991–92 or January–June) to indicate the years or months covered, including the beginning and ending years or months;

/ between years (e.g., 1991/92) to indicate a crop or fiscal (financial) year.

"Billion" means a thousand million.

Minor discrepancies between constituent figures and totals are due to rounding.

The term "country," as used in this paper, does not in all cases refer to a territorial entity that is a state as understood by international law and practice; the term also covers some territorial entities that are not states, but for which statistical data are maintained and provided internationally on a separate and independent basis.

# Preface

This study was prepared by Liliana Rojas-Suárez, currently on leave from the IMF as Principal Advisor to the Chief Economist at the Inter-American Development Bank, and Steven R. Weisbrod, a consultant to the IMF. Norma Alvarado, Isabel Cardona, and Cecilia Coder provided excellent assistance in typing text and tables. Ivan Sergio Guerra, Kellett W. Hannah, and Subramanian S. Sriram provided highly competent research assistance. The authors are also grateful to Elisa Diehl of the External Relations Department, who edited the manuscript and coordinated production of the publication.

The study has benefited from the comments of staff and consultants in the Research Department and other departments in the IMF. Opinions expressed are those of the authors and do not necessarily reflect the views of the IMF.

# I Introduction

In late 1994, several Latin American economies, particularly Mexico and Argentina, experienced sharp reversals of international capital inflows that had characterized the previous four years. The immediate cause of the reversals was the loss of international investor confidence in these countries' ability to defend their exchange rate and in the authorities' ability to service their external debt on a timely basis. Short-term interest rates rose to extraordinarily high levels. Because many borrowers could not afford to service their debts at these high interest rates, the credit quality of domestic banks' loan portfolios deteriorated dramatically, creating concerns about the solvency of the banking systems in these economies.

The current crisis has occurred during a period of economic and financial reform in Latin America. After almost a decade of macroeconomic and financial difficulties, since the last part of the 1980s and the beginning of the 1990s, many Latin American countries have undertaken major transformations of their economic structures. These efforts have included not only comprehensive stabilization programs aimed at correcting macroeconomic imbalances but also deep structural reforms designed to improve the efficiency of market mechanisms in pricing and allocating resources among the different sectors of these economies.

Among the reforms, the restructuring of financial markets was crucial. Latin America does not stand alone in having learned the lesson that difficulties in the financial sector may conflict seriously with policy objectives as governments have had to abandon their fiscal and monetary targets to rescue insolvent or troubled financial institutions. Several industrial countries, including the United States and three Nordic countries, are among the recent cases where banking difficulties have had a severe impact on the fiscal stance. Within the Latin American region, the banking difficulties experienced in a number of countries following the eruption of the debt crisis in the 1980s imposed constraints on policymakers that, in some cases, lasted for almost an entire decade.

As policymakers again face challenges similar to those faced in the 1980s, it is important to assess whether the financial reforms implemented in the early 1990s have strengthened their hand in dealing with financial crisis. By reviewing the experiences of Latin American countries with the restructuring of their financial sectors since 1982, this paper derives lessons regarding the most effective ways to deal with banking difficulties in developing countries. It then discusses whether these lessons have been put into practice during the latest crisis. A sample of five countries—Argentina, Chile, Colombia, Mexico, and Peru—is used for this purpose.

In addition, the paper analyzes policy issues associated with the long-run health of the financial system: (1) the proper design of policies to respond to large and volatile flows of capital having the complementary objectives of maintaining long-run macroeconomic stability and a healthy financial system; and (2) the effect on bank soundness of increased competition from recent developments in domestic capital markets.

Section II sets the stage by presenting a framework for analyzing banks' behavior. A lack of transparency in the legal and accounting infrastructures is the main feature that defines the special role of banks in developing countries: because investors cannot rely on the legal infrastructure to aid in evaluating the creditworthiness of borrowers, they search for alternative methods of evaluation. One method is for lenders to force borrowers to remain liquid by restricting their borrowing opportunities to short-term funds and carefully monitoring their cash flow; that is, in these financial systems liquidity becomes a primary proof of solvency. In developing countries, banks are in a unique position to intermediate between borrowers and lenders because they are the only nongovernment issuers of short-term liabilities.

A sound banking system issues the appropriate loan contracts and establishes the appropriate monitoring procedures to maintain borrower liquidity. Conclusions regarding the behavior of banks in this environment are based on incentive-driven arguments: where policymakers put in place mechanisms to motivate banks to perform their role of maintaining borrower liquidity, bankers become well

equipped not only to evaluate properly the risks they undertake, but also to develop "workout" programs with their borrowers if sudden adverse shocks weaken the quality of loans, thereby leading to banking difficulties. Thus, although a strong banking system does not mean that banking difficulties can be prevented altogether, it implies that problems are faced promptly and bankers have incentives to restore defaulted borrowers to performing status.

Section III uses the framework described above to examine the resolution of banking crises in the sample of five Latin American countries during the 1980s. The discussion shows that the strength of banks at the onset of the crisis and the quality of central bank leadership were important determinants in how quickly public confidence was restored to the financial systems in the sample countries. Countries are grouped by the strength of their banking systems at the inception of the banking crisis. In those countries where the strength of the banking system was greater, bank supervisors and bankers were able to respond to the crisis with a credible program to restore confidence in the banking system; although the programs involved a substantial increase in credit, the soundness of the rescue programs prevented the eruption of inflation. In sharp contrast, in those countries with relatively weak banking systems, banking regulators further aggravated the problem by attempting to take over the role of banks as direct lenders; that is, supervisors removed authority from bankers, substituting the credit judgment of the central bank or the government directly. In those cases, credit expansion was associated with big inflations as the public realized that the credit extended would not be repaid in real terms.

By the early 1990s, many of the perceived mistakes of the 1980s were corrected, and comprehensive efforts were made to liberalize financial markets and strengthen bank supervision. However, by the end of 1994, the reformed systems of two of the five sample countries—Mexico and Argentina—were severely challenged when a reversal of international capital flows led to sharp increases in domestic interest rates and a general weakening of the quality of financial assets. Section IV discusses the strengths and weaknesses of the banking systems in these two economies on the eve of the 1994 crisis and assesses the options available to policymakers in restructuring their financial systems.

The last two sections of the paper deal with the long-run challenges policymakers face in dealing with the performance of the banking sector. Section V discusses the impact of stabilization policies and structural developments in capital markets on the strength of the banking system, and Section VI turns the question around and analyzes the contribution of a sound banking system in dealing with an adverse shock that leads to a speculative attack on the exchange rate.

Section V focuses on two factors that affect the strength of the banking system: sterilization policies and the securitization of many financial instruments that heretofore appeared mostly on bank balance sheets. Regarding the first factor, the impact of sterilization policies on the soundness of banks is emphasized. Conclusions regarding both the desirability and the method of sterilization are linked to the strength of the central bank relative to that of commercial banks. The message is straightforward: as the decision to sterilize or not implies a decision to concentrate resources in the central bank rather than in the commercial banks or other financial institutions, it follows that resources should be channeled to the institutions that can manage those funds better. This section concludes that the stability of investments made in the domestic equity markets is closely related to the strength of the banking systems: stock market volatility is lower in those countries with relatively strong banking systems.

The analysis also shows that the second risk to the strength of banks, namely, the recent development of capital markets, is still years away from becoming a serious threat to bank soundness. Even in those countries where fixed-income markets—such as commercial paper or the corporate bond market—have developed, open market interest rates are still high relative to bank interest expenses and the instruments are still held by only a few investors. The discussion shows that a strong banking system complements, rather than competes with, the development of healthy markets for equity issues. The development of equity markets, however, may pose some dangers for policymakers worried about unstable capital inflows. In this connection, the analysis shows that these dangers can be minimized by strengthening the domestic banking sector.

Finally, Section VI deals with a key macroeconomic issue: the ability of central banks to withstand speculative attacks on the exchange rate, with an emphasis on the role of banks' performance in facilitating the policy objective. The main argument is that the degree to which a Latin American central bank may be able to withstand a speculative attack on its domestic currency is influenced by two aspects of the financial markets: the first one, which is a natural extension of the well-known literature on speculative attacks, is the extent of the commitment of the central bank to the stabilization of prices in the financial sector. The second one, and the one emphasized in this paper, is the strength of the banking sector. In this connection, the paper also deals with the role of dollarization. A conclusion from the analysis is that, when the banking system is sound,

dollarization may be an ally for governments pursuing exchange-rate-based stabilization programs. In an insolvent, bank-dominated financial system, however, dollarization imposes an additional constraint on policymakers facing a speculative attack. In dealing with these topics, this section addresses the issue of the appropriate holdings of foreign exchange reserves by central banks.

# II Role of Banks in Developing Countries

Financial systems in developing countries are typically dominated by banks: bank deposits constitute the most important form of household savings, and bank loans are the most important source of external finance for firms. As will be shown below, Latin American countries by and large have this type of financial structure. This section focuses on the particular features that distinguish banking systems in developing countries from those in industrial countries and on the special role that the banking sector plays as a source of economic growth in developing economies.

Banks—in both industrial and developing economies—can be distinguished from other financial institutions by a unique characteristic that will be termed here "the franchise value of banks," that is, the special power conferred by the banking charter to issue liabilities that are accepted as a means of payment. In developing countries, the state of the legal and accounting systems makes it difficult for institutions that are not connected to the payments system to issue short-term liabilities such as commercial paper. Hence, banks are the only nongovernment issuers of these liabilities. Because investors require borrowers' liquidity as proof of their solvency, borrowers are restricted to the short-term market, which is dominated by banks.[1]

## Overview of Financial Structure in Latin America

Commercial banks played a central role in Latin America in the 1980s. As reported in Morris and others (1990), these institutions provided short-term financing that, owing to the severe economic difficulties these countries faced during the decade, was the only kind of resource that financial institutions could mobilize.

During the late 1980s and early 1990s, a number of variables, both domestic (macroeconomic stabilization programs, financial liberalization, and financial sector reforms) and external (the decline in interest rates in the United States and other industrial countries, which increased foreign investors' demand for Latin American securities), contributed to the rapid expansion of alternative sources of finance for firms, such as bonds and equity. However, bank loans remained the most important source of finance for the private sector.

The composition of credit commercial banks and other financial institutions (excluding the stock exchanges) provided to the private sector in a number of Latin American countries indicates a clear bank dominance through the 1980s and early 1990s although the importance of banks varied across countries and across time (Table 1). In this regard, two clarifications of the data are needed.

First, owing to a lack of consistent data across Latin American countries, development banks—institutions, typically government owned, established to extend credit to specific sectors of the economy—are included under "other financial institutions."[2] Hence, in several countries, a large component of credit extended through other financial institutions is also bank credit.[3] For example, assets held by development banks in Bolivia, Guatemala, and Peru accounted for 21, 14, and 47 percent of total assets of financial institutions, respectively, by the end of 1987 (Morris and others, 1990). The importance of development banks, however, declined significantly during the late 1980s and early 1990s, reflecting the privatization programs in many Latin American countries. Mexico is a clear example of the privatization efforts; there, the share of commercial bank credit in total credit to the private sector increased from 76 percent in 1987 to 91 percent in 1992. The same trend is apparent in Bolivia, Brazil, Ecuador,

[1]For a discussion of the role of banks in transition economies, see Blommestein and Spencer (1994).

[2]The exception is Argentina, where the category "commercial banks" includes the Caja Nacional de Ahorro y Seguros, the Banco Hipotecario Nacional, and the Banco Nacional de Desarrollo (BANADE). BANADE was closed in May 1993. As reported in Morris and others (1990), assets of developing financial institutions in Argentina accounted for about 20 percent of total assets of the financial sector by 1987.

[3]Typically, development banks are recipients of public funds and enjoy special privileges from the government.

**Table 1. Composition of the Stock of Net Credit to the Private Sector by Commercial Banks and Other Financial Institutions**
*(Percent)*

| | 1980 | | 1987 | | 1992 | |
|---|---|---|---|---|---|---|
| Country | Commercial banks | Other financial institutions | Commercial banks | Other financial institutions | Commercial banks | Other financial institutions |
| Argentina[1] | 85.42 | 14.58 | 97.99 | 2.01 | 98.75 | 1.25 |
| Bolivia | 73.90 | 26.09 | 76.37 | 23.63 | 93.98[2] | 6.02[2] |
| Brazil[3] | — | — | 48.88[4] | 51.12[4] | 62.35 | 37.65 |
| Chile | — | — | 95.44 | 4.57[5] | 78.70 | 21.30[5] |
| Colombia[6] | 46.39 | 53.61 | 42.12 | 57.88[7] | 49.01 | 50.99[7] |
| Ecuador | 52.32 | 47.68 | 57.98 | 42.02 | 66.86[2] | 33.14[3] |
| Guatemala | 79.15[8] | 20.85 | 85.12[8] | 14.88 | 85.71[8,9] | 14.29[9] |
| Honduras | 60.05 | 39.95[10] | 74.79 | 25.21[10] | 78.09 | 21.91[10] |
| Mexico | 80.62 | 19.38 | 75.84 | 24.16 | 91.27 | 8.73 |
| Peru | 53.37 | 46.63[11] | 51.01 | 48.99[11] | 75.93 | 24.07[11] |
| Venezuela | 55.25 | 44.75[12] | 67.21 | 32.79[12] | 85.26 | 14.74[12] |

Source: IMF staff estimates.

Note: Commercial banks include private and government-owned commercial banks. Other financial institutions include development banks and all other financial institutions whose activities are reported by the central banks. The informal financial markets and the stock exchanges are not included.

[1]Commercial banks include national and provincial banks also.

[2]June 1992 data.

[3]After 1985, commercial banks include the Bank of Brazil. The rest of the banking system includes the National Development Bank (BNDES), state development banks, investment banks, the Federal Savings Bank (CEF), state savings banks, savings and loan associations, housing credit companies, the National Housing Bank (BNH), and the National Bank of Cooperative Credit (BNCC).

[4]1988 data.

[5]Including nonbank financial intermediaries and pension funds.

[6]A new reporting system for financial system accounts was introduced at end-1990. Data for 1990 are therefore not strictly comparable with earlier data. Data for 1990 exlude PROEXPO.

[7]Comprising development finance corporations, trade finance companies, savings and loan companies, cooperative institutions, and development banks (BANCOLDEX, FINAGRO, FINDETER).

[8]Including development banks.

[9]August 1992 data.

[10]Includes National Bank for Agricultural Development (BANADESA), the Municipal Bank (BMA), the specialized savings institutions, the National Investment Corporation (CONADI), and private nonbank financial intermediaries. The private nonbank financial intermediaries consist of the Honduran Federation of Savings and Loan Cooperative (FACACH), insurance companies, and the Honduran Federation of Housing Cooperatives (FEHCOVIL).

[11]Includes the National Bank and development banks only.

[12]Includes mortgage banks, the Agricultural Development Bank (BANDAGRO), savings and loans, and the Workers' Bank.

and Peru.[4] The reduction in government participation in the financial sector has, therefore, resulted in a significant increase in the importance of commercial banks in financing the activities of the private sector. Indeed, the share of credit from commercial banks in total credit to the private sector clearly exhibited an upward trend during 1980–92 in all but one of the countries shown in Table 1. The exception was Colombia, where savings and loan institutions maintained about one-third of the total financial credit to the private sector throughout the period under consideration.

[4]Although Venezuela showed a similar trend by 1992, the recent banking crisis was followed by large injections of government funds into the commercial banks in early 1994.

Second, the data in Table 1 do not include the informal financial market and the stock exchanges. The informal market became an important source of financial intermediation in many Latin American countries during the years of severe financial difficulties in the banking sectors of several Latin American countries; that pattern, however, reversed in the late 1980s and early 1990s in many countries as stabilization policies and policies directed at restructuring and recapitalizing banks resulted in a reintermediation of financial activities back into the formal institutions (see Section III). In contrast, the stock exchanges were not important sources of finance for the private sector as a whole during the early and mid-1980s when many Latin American stock markets even contracted, as reflected by their market

**Table 2. Market Capitalization**
*(Percent of GDP)*

| Country | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Argentina | 1.80 | 1.21 | 0.98 | 1.33 | 1.29 | 2.55 | 1.79 | 1.34 | 1.55 | 2.64 | 1.95 | 9.76 | 8.14 | 16.98 |
| Brazil (São Paulo) | 3.90 | 4.78 | 3.64 | 7.45 | 13.80 | 19.21 | 15.66 | 5.78 | 9.83 | 9.89 | 3.41 | 10.54 | 11.71 | 25.10 |
| Chile | 34.09 | 21.60 | 18.05 | 13.10 | 10.96 | 12.56 | 24.14 | 28.17 | 31.01 | 37.76 | 49.07 | 89.33 | 78.23 | 110.82 |
| Colombia | 5.71 | 4.96 | 4.65 | 3.00 | 2.77 | 1.29 | 2.35 | 3.45 | 2.92 | 2.87 | 3.52 | 9.44 | 11.58 | 16.39 |
| Costa Rica | — | — | — | 3.75 | 4.26 | 4.97 | 5.84 | — | — | — | — | 5.64 | 7.97 | — |
| Mexico | 6.70 | 4.06 | 1.01 | 2.03 | 1.26 | 2.08 | 3.40 | 5.98 | 8.05 | 11.02 | 13.56 | 34.75 | 42.98 | 57.67 |
| Peru | — | 5.46 | 2.76 | 2.84 | 2.00 | 4.43 | 9.52 | 2.54 | — | 2.59 | 2.08 | 2.40 | 5.84 | 11.19 |
| Venezuela | 3.80 | 3.11 | 3.02 | 3.50 | — | 1.82 | 3.06 | 4.65 | 3.33 | 3.35 | 17.20 | 21.00 | 12.44 | 10.38 |

Sources: International Finance Corporation, *Emerging Stock Markets: Factbook*, various issues; and International Monetary Fund, *World Economic Outlook*.

capitalization measured both in U.S. dollars and as a percentage of GDP (Table 2).[5]

Consistent with better economic prospects and, more recently, with a large inflow of foreign capital, market capitalization in several of these countries recovered in 1989–90 and expanded dramatically in 1991–93.[6] In spite of the tremendous growth of equity prices and in the daily turnover of private sector shares, equity finance in Latin America is still confined largely to the largest corporations and has not yet become a significant competitor for bank finance for the corporate sector as a whole.

The number of companies listed on several Latin American stock exchanges is shown in Table 3. Although the absolute number of listed companies has limited usefulness because it does not account for the difference in size among corporations or the size of the country, the important conclusion that can be derived from Table 3 is that, with the exception of Peru, the number of listed companies did not show any significant growth in spite of the sharp increase in market capitalization during the most recent period. These data, therefore, indicate that the large capitalization observed recently in several countries may be attributed to the performance of a limited number of stocks and not to a generalized improvement in the performance of corporations in Latin America. Moreover, by the end of 1993, market concentration—measured as the share of market capitalization held by the ten largest stocks—was above 50 percent in a number of Latin American countries, including Argentina, Chile, Colombia, Peru, and Venezuela. This compares with a much lower market concentration in several developing countries in Asia (including China, Indonesia, Korea, Malaysia, and Thailand), which averaged about 30 percent by the end of 1993.[7]

Have banks remained the single most important source of finance for the private sector? The paper explores the possibility of using national flow of funds data, which provide information on financial asset and liability structures across sectors. Data on corporate financial structure are essential to assess the relative importance of bank loans in financing production. Unfortunately, flow of funds data are practically nonexistent in most Latin American countries. Indeed, time-series data on flow of funds were found only for Chile (for 1978–91).[8] However, given the recent developments in financial markets in Chile—the rapid growth of pension funds, the significant increase in the issuance of corporate bonds, and the rapid increase in market capitalization in the

[5]Brazil is a noticeable exception to this trend. Market capitalization is defined as the market value of the equity of firms quoted on the stock exchanges.

[6]For a discussion of the issues related to the rapid increase in market capitalization in a number of developing countries, see Feldman and Kumar (1994).

[7]Data on market concentration are taken from International Finance Corporation, *Emerging Stock Markets: Factbook* (various issues).

[8]Limited data for Mexico are also reported in Singh and Hamid (1992). The data show that during 1984–88, the top fifty manufacturing corporations listed on the stock exchange used equity as their most important external source of finance. However, this result is derived using financing flows rather than stocks and should therefore be viewed with caution as it may lead to serious misinterpretations of the Mexican financial structure. During 1984–88, restrictive monetary policies in Mexico had a significant impact on the availability of bank loans. Moreover, during that period, corporations in Mexico achieved almost no real growth. Thus, as the authors themselves concluded: ". . . in the peculiar circumstances of the Mexican economy in the mid-1980s, the Mexican corporations achieved relatively little growth; but of the growth that did occur, a large proportion of it was financed by equity" (p. 47). The point to be learned from this analysis is that in economies facing large variations in real economic activity and in the design of economic policies, conclusions regarding the corporate financial structure cannot be based on flow data, which may be temporary. The particular advantage of using stock data is that they dilute temporary fluctuations.

**Table 3. Number of Domestic Companies Listed on Selected Stock Exchanges**

| Country | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Argentina | 278 | 263 | 248 | 238 | 236 | 227 | 217 | 206 | 186 | 178 | 179 | 174 | 175 | 180 |
| Brazil (São Paulo) | 426 | 477 | 493 | 505 | 522 | 541 | 592 | 590 | 589 | 592 | 581 | 570 | 565 | 550 |
| Chile | 265 | 242 | 212 | 214 | 208 | 228 | 231 | 209 | 205 | 213 | 215 | 221 | 245 | 266 |
| Colombia | — | — | 193 | 196 | 180 | 102 | 99 | 96 | 86 | 82 | 80 | 83 | 80 | 80 |
| Costa Rica | 13 | 19 | 24 | 32 | 41 | 51 | 61 | 71 | 76 | 78 | — | 82 | 93 | — |
| Mexico | 259 | 229 | 206 | 163 | 160 | 157 | 155 | 190 | 203 | 203 | 199 | 209 | 195 | 190 |
| Peru | 103 | 133 | 144 | 150 | 157 | 159 | 177 | 197 | 236 | 256 | 294 | 298 | 287 | — |
| Venezuela | — | — | 98 | — | 116 | 108 | 108 | 110 | 60 | 60 | 66 | 66 | 66 | 93 |

Source: International Finance Corporation (1993).

stock exchange—it is worth exploring what this experience may show in terms of the importance of bank loans in financing private sector activities.

Table 4 shows the financing sources available (in stocks) for households and firms in Chile during 1978–91. It is well known that increases in equity prices may present a problem in measuring the relative sources of corporate funding because part of the increase in equity prices may be due to capital gains on projects undertaken and financed in previous years. For example, assume a firm undertakes a million peso project in year 1 that it finances half with equity and half with bank loans. In year 2, the market value of the project increases to 2 million pesos in real terms. The equity issued in year 1 will reflect the entire capital gain on the project, not just that earned on the equity portion because the bank loan does not capture capital gains. Thus, in year 1, using current market prices of equity, bank financing and equity financing are each 500,000 pesos. In year 2, equity financing increases to 1.5 million pesos and bank loan funding remains constant, even though the proportion of the project funded by each instrument has not changed. Corbo and others (1992) attempt to correct for this effect, and it is their adjusted figures that are used here.[9]

**Table 4. Chile: Private Sector Finance Structure**
*(Ratios of total domestic financial liabilities outstanding)*

| Year | Bank Loans[1] | Corporate Bonds | Equity[2] |
|---|---|---|---|
| 1978 | 0.69 | 0.01 | 0.22 |
| 1979 | 0.73 | 0.01 | 0.23 |
| 1980 | 0.76 | — | 0.22 |
| 1981 | 0.80 | — | 0.17 |
| 1982 | 0.78 | 0.03 | 0.18 |
| 1983 | 0.79 | 0.03 | 0.18 |
| 1984 | 0.81 | 0.03 | 0.15 |
| 1985 | 0.86 | 0.03 | 0.11 |
| 1986 | 0.86 | 0.02 | 0.11 |
| 1987 | 0.84 | 0.03 | 0.12 |
| 1988 | 0.82 | 0.05 | 0.12 |
| 1989 | 0.81 | 0.07 | 0.11 |
| 1990 | 0.75 | 0.11 | 0.14 |
| 1991 | 0.70 | 0.13 | 0.17 |

Source: Corbo and others, *El Sistema Bancario Chileno: Desarrollos Recientes y sus Perspectivas*, Instituto de Economía, Pontificia Universidad Católica de Chile (1992), Table 3.

Note: The finance structure includes domestic sources of finance and government enterprises. Ratios do not need to add to one because there are other financial liabilities (such as liabilities from Sistema Nacional de Ahorro y Préstamos (SINAP) not included here.

[1]Include banks and savings companies.

[2]Adjusted for capital gains on previous stock issues.

Bank loans remained the most important source of domestic finance for the Chilean private sector (households and firms) during the period under study, averaging 79 percent over the entire period. The share rose during the years immediately after the debt crisis, peaking at 86 percent in 1985–86. Financial reform measures taken since 1986, including the new banking law, which limited permissible activities by banks, and the increased competition from other financial institutions lowered the share of bank loans in total domestic financing.[10] Corporate bonds rather than equity—which by the end of 1991 had not reached its predebt crisis share in domestic financing—were the main source of domestic competition for bank loans during the period considered. As will be further discussed below, the emergence

[9]Corbo and others (1992) indicate their methodology may understate equity funding, but the understatement is less severe than the overstatement that would arise if current market prices were used.

[10]The recent increased access by a number of firms to international capital markets may be viewed as an additional source of competition to bank loans. This issue is discussed in Section IV.

**Table 5. Corporate Finance Structure in Germany and the United States**
*(Percent of total financial liabilities outstanding)*

| | Bank Loans | Bonds | Other Nonbank Securities[1] | Equity |
|---|---|---|---|---|
| Germany | | | | |
| 1980 | 60.7 | 1.5 | 24.5 | 13.3 |
| 1985 | 55.4 | 1.4 | 22.5 | 20.7 |
| 1990 | 55.9 | 1.9 | 22.7 | 19.5 |
| United States | | | | |
| 1980 | 12.2 | 15.7 | 22.9 | 49.3 |
| 1985 | 11.8 | 16.1 | 23.5 | 48.6 |
| 1990 | 11.9 | 17.1 | 23.8 | 47.1 |

Sources: Deutsche Bundesbank (1992); and United States, Board of Governors of the Federal Reserve System (1992).

Note: Only domestic sources of finance are included.

[1]Include commercial paper, loans from finance companies, and government loans.

and rapid growth of private pension funds have played a crucial role in the surge in medium-term corporate bonds.

In contrast to the expansion of medium-term bonds, the market for commercial paper in Chile remains small and illiquid. This pattern diverges from that observed in a number of industrial countries, where corporations have been able to satisfy their demand for liquidity and their short-term financing needs directly in liquid securities markets.[11]

Notwithstanding the decline in the ratio of bank loans in total financing in recent years, the ratio remained high at 70 percent by the end of 1991. This finding is important in the Latin American context. Among Latin American countries, Chile's banks probably face the greatest competition from other domestic financial institutions; that competition largely comes from private pension funds, which are only at an early stage of development in some countries (like Argentina and Peru) and nonexistent in most others. Therefore, the predominance of bank loans as a source of private sector finance in Chile reinforces the view that this feature is a Latin American phenomenon.

How does the role of banks in Latin America compare with that in industrial countries? Table 5 uses flow of funds data for Germany and the United States to show the ratio of bank loans to corporate domestic liabilities during the 1980s and 1990s. These two countries were chosen because they are often cited as representing the two extremes in the range of financial market structures in the industrial world. Germany represents the "universal banking system," where banks face limited competition from other financial institutions, and the United States represents the "Anglo-Saxon" financial structure, where securitized money and capital markets compete with wholesale banks as sources of funds for the corporate sector.

Not surprisingly, a major finding is that the ratio of bank loans to domestic corporate liabilities in Germany was much higher than in the United States throughout the period under consideration.[12] The average share of bank loans in Germany's corporate liability was about 57 percent compared with an average of about 12 percent in the United States. Indeed, in Germany, private securities markets remain fragmented and relatively illiquid,[13] and, at the short end of the market, there are very few domestic substitutes for bank loans. In contrast, commercial paper is among the preferred instruments for short-term financing by U.S. firms.

Although the Latin American experience is indicative of the predominance of banks as a source of finance, the discussion also shows that the importance of banks in domestic financial markets varies across countries. Indeed, some financial systems, such as Argentina's, seem to be more bank oriented than, say, Chile's. Because financial markets are still being reformed, there is a significant probability that a wide range of financial structures may emerge from the transformation. An important lesson emerges from the experience of the industrial countries, namely that, even in a highly integrated and global financial environment, alternative financial structures can coexist. There is no reason to believe that they cannot also coexist in Latin America.

## Unique Features of Banks in Developing Countries

Gerald Corrigan, former president of the Federal Reserve Bank of New York, argues that banks are special because the bank charter gives them the unique power to provide means of payment in noncash transactions; this special power is called the franchise value of banks.[14] When a bank customer

[11]See International Monetary Fund (1992) for a discussion of the trend toward securitization observed in industrial countries.

[12]For a more detailed comparison between the financial systems in Germany and the United States, see International Monetary Fund (1992).

[13]As reported in International Monetary Fund (1992), commercial paper programs in Germany started only in 1991. It is interesting to note, however, that notwithstanding the limitations of private securities markets in Germany, the government bond market is large and liquid.

[14]See Corrigan (1991).

withdraws funds from his or her bank deposit or writes a draft against that account, the bank delivers an "outside" asset, or "good funds"—namely, reserves on deposit at the central bank, or cash—to the customer or to the bank of the payee named on the draft.[15]

In fact, when other liability issuers promise to deliver payment, they promise to deliver bank deposits. Consider, for example, money market mutual funds in the United States, which invest in money market assets, such as commercial paper and treasury bills, and issue short-term claims on this portfolio to investors. When an investor wants to use money market mutual fund shares to purchase goods and services, the money market mutual fund must deliver funds from its bank deposit to the bank deposit of the payee designated by the investor.

Even though money market mutual funds must rely on banks to make payments for them, the markets for their assets have become so liquid that they can be sold for bank deposits immediately and at very low cost. Hence, the public is willing to hold money market mutual funds as perfect substitutes for bank deposits for some transactions.

In contrast, in developing countries, there are no issuers of perfect substitutes for bank deposits, such as money market mutual funds, because markets for such nonbank liabilities as commercial paper are illiquid. Commercial paper markets are illiquid because the accounting and legal frameworks are insufficiently developed to permit investors to evaluate corporate cash flow and their legal standing in the event of default for all but the most well-known firms; that is, investors cannot rely on the legal infrastructure to aid in evaluating the creditworthiness of most potential borrowers. Hence, the potential pool of issuers is not large enough to create a liquid market for nonbank short-term paper. Therefore, in developing countries, banks are not only the unique issuers of the means of payment, they are also the unique nongovernmental issuers of all liquid instruments.

In developing country markets, the only institutions that can credibly promise to deliver bank deposits are banks. Banks' claim to deliver means of payments is more credible than claims of other liability issuers because banks maintain deposits at the central bank and have access to a central bank credit facility, usually referred to as discount window privileges.

The public in developing economies is willing to accept bank deposits as liquid liabilities because banks hold deposits at the central bank. If, however, banks borrowed excessively from the central bank to keep their deposits liquid, the economy would soon experience high levels of inflation, and the value of the bank franchise would be destroyed; that is, the special power conferred by the banking charter would be worthless because the bank liabilities would have lost their real value. Therefore, if the central bank wants to preserve the franchise value of the banking system, it must avoid lending large amounts of funds to banks on a sustained basis. To this end, the central bank must ensure that banks have procedures in place to monitor the ability of their loan customers to deliver cash. In a market with undeveloped accounting standards, this implies restricting borrowers to short-term loans and frequent calls for payment of principal, which effectively means that most investment projects will be short term. In addition, banks must use the tools at hand—namely, the threat to seize a firm's bank deposits and freeze its ability to make payments—in order to enforce loan contracts. When a borrower gets into trouble, a bank must have established procedures to resolve problems quickly if it is to maintain its commitment to deliver cash against deposits.

In sum, a sound banking system is taken to mean one that is able to preserve its franchise value—that is, banks' commitment to deliver good funds against their deposit liabilities. In a developing country, the banking system must effectively monitor the liquidity of its borrowers and, in the face of difficulties, quickly establish loan workout programs to restore defaulted borrowers to performing status.

## Measuring the Franchise Value of the Bank in Developing Economies

When investors evaluate the quality of banks in developing countries, they confront the same obstacles that they face in evaluating nonfinancial firms: accounting data are often undependable guides to quality. For example, usual indicators of bank soundness in industrial countries, such as ratios of capital to assets and loan loss provisions to nonperforming loans, are often uninformative because banks are not subject to standard procedures for placing loans on nonaccrual status or deducting defaulted credits from capital and loan loss accounts. Hence, investors in developing countries must look for other ways to assess the quality of bank balance sheets.

A bank could convince investors that it is sound and, therefore, able to deliver good funds by holding a large amount of cash assets—cash and deposits at the central bank (reserves)—relative to its deposit liabilities. In other words, a bank could convert itself into a vault. If, however, banks were to act as vaults, they would have less incentive to press borrowers to remain liquid, and they would reduce the amount of credit supplied to borrowers for a given amount of

[15]The unique role of banks as providers of "good funds" is analyzed in Garber and Weisbrod (1992).

deposits issued. In other words, the liquidity demands of investors would be met by holding cash assets in the central bank rather than by supplying credit to domestic borrowers in a form that forces borrowers to remain liquid. The market discipline imposed by banks on borrowers would be adversely affected.

As the evidence presented in the next section demonstrates, when banks do not discipline borrowers, the credit risk in the financial system increases. Some other institution, usually government related, ends up supplying credit without imposing discipline on borrowers. When borrowers default, bank depositors are often forced to absorb the losses through outright confiscation or through inflation. Hence, one measure of the quality of the bank franchise is the ratio of cash assets to deposit liabilities—a relatively high ratio represents a weak franchise.[16] That is, the market discipline exerted by banks on borrowers—by requiring frequent delivery of good funds as a way to prove borrowers' creditworthiness—is reduced. In this connection, exceedingly high reserve requirements may jeopardize the franchise value of banks.

A second and related measure of franchise value is the ratio of loans to assets. Banks that hold a high ratio of nonloan assets to assets—usually government bonds, development bonds, and central bank bonds—are not fulfilling their role of policing the liquidity of borrowers. When reserve requirements are high, issuers of bonds often use the proceeds to provide long-term credit to borrowers who are not able to use these funds efficiently. In addition, when banks hold a high portion of their assets in government-related bonds, bankers do not obtain the experience of helping private borrowers work their way out of credit problems. When credit crises occur, bankers tend to try to resolve them by expanding credit without establishing loan workout programs to ensure that the new credit is used to correct the deficiencies in the borrower's business plan that led to credit problems in the first place.[17]

[16]In industrial economies, low liquidity ratios are often taken as an indicator of problems in a bank; this is because banks in industrial countries operate at much lower cash ratios than those in developing economies. It is necessary to use caution when applying, for developing countries, the same ratios used to assess banks' performance in industrial countries. The ratio of cash assets to deposits has a completely different meaning when it reaches the high levels found in some developing countries.

[17]Once again, an important difference needs to be taken into account when analyzing ratios in developing countries relative to those in industrial countries. In industrial economies, a high loan-to-asset ratio can imply an unsound bank. However, the extremely low ratios found in some developing countries cannot be interpreted the same way as the moderately low loan-to-asset ratios of sound banks in industrial economies. The main reason is the quality of nonloan assets held by banks. In industrial countries, banks frequently hold bonds from highly rated companies or other high-quality assets.

## Central Bank and Franchise Value of Banking System

If a bank maintains low cash ratios and high loan and deposit ratios relative to assets, it must, as indicated above, ensure that its borrowing customers remain liquid. Even the best banks, however, cannot depend solely on their own loan customers for liquidity; they must have access to good funds through the banking system to satisfy temporary shortages of liquidity. Good funds take two forms: the interbank market for short-term funds and loans from the central bank.

In many developing countries, the interbank market is uncompetitive; hence, practically speaking, the central bank must play a pivotal role in maintaining bank liquidity. To fulfill this role, the central bank must take the same attitude toward the banks with which it has a lending relationship that the banks must maintain with their borrowing customers. That is, the central bank must ensure that the credit it extends to a bank for liquidity purposes is not used to provide credit to borrowers that are in default. The central bank must therefore play a major role in supervising banks or at least have access to the supervisory data collected by other agencies.[18] In fact, a major benefit of having a banking system with a low ratio of cash to assets and a high ratio of loans to assets is that the central bank is forced to maintain a close supervisory relationship with its banks because it may be called upon to provide liquidity assistance.

Moreover, when banks maintain high cash ratios, the central bank ends up with a large balance sheet relative to deposits outstanding because the cash, in the form of either vault cash or reserves, is a liability of the central bank. The evidence presented in Section III for a number of Latin American countries suggests that when cash assets held by banks at the central bank were exceedingly large, the central bank took over much of the role of extending domestic credit from the banks.[19] When the central bank operates as a bank that provides direct credit to the market, one of the most important checks on loan decisions is removed. As lender of last resort to banks, the central bank maintains an arm's-length relationship with ultimate borrowers. Hence, it is in a position to criticize the lending decisions of banks. When the central bank lends directly to the market, it no longer has a supervisory role to play.

[18]Even in countries that supervise banks through other agencies, such as an independent deposit insurance system, a banking commission, or the ministry of finance, the central bank must have access to bank supervisors if it is to fulfill its role as lender of last resort.

[19]The evidence indicates that, with the exception of Peru, banks held a high ratio of cash to assets only when they were subject to high reserve requirements.

The experience of the central bank in acting as supervisor rather than as direct lender is a crucial determinant of how a banking system survives a systemwide banking crisis, as occurred in many Latin American countries in the 1980s. In a major crisis, the central bank has an important role in reviving confidence in the system, and, to perform this role, it usually finds itself in a position in which it must lend funds to banks with severe credit problems. To prevent this credit expansion from being viewed as inflationary, the central bank must establish a lending program to banks that creates incentives for bankers to work with their borrowers to improve their businesses rather than to provide new funds for projects with no economic value. In other words, investors must be convinced that the credit created by the central bank will lead ultimately to real revenue gains.

The credit created will lead to real revenue gains if bank stockholders have incentives to help borrowers with nonperforming loans regain solvency. If central bank credit is provided to banks at below-market interest rates and banks view this credit as an unlimited source of funds, they might use the low interest rate credit to cover the unpaid interest payments on nonperforming loans—which might even restore the spread they enjoyed when they funded through the market. This policy, however, would do nothing to create future real revenue gains. In fact, it would only lead to continuous central bank losses. Instead, the central bank must tie its subsidized credit to a program that provides bankers with incentives to work with borrowers so that nonperforming or restructured loans return to performing status. Central banks have devised several strategies to deal with this problem, and several of these will be discussed and evaluated in Section III.

If a central bank lacks credibility in its lending policies, it may find it desirable to signal to the market that it is willing to subject itself to constraints that encourage prudence. One such constraint is to permit the banking system to freely offer loans and deposits denominated in a hard foreign currency, such as the U.S. dollar, a policy known as dollarization. Because the central bank cannot extend credit in the foreign currency without borrowing that currency in the international marketplace, it is more likely to lend funds less carelessly than it would in the domestic currency, which it can create. If banks can maintain high loan and low cash ratios in their foreign currency portfolios, they will have the proper incentives to monitor their borrowers. For example, dollarization of a banking system may not be detrimental to an economy if it is the only means by which loans can be extended in a disciplined manner.

The next section describes how the strength of the banking payments franchise and the quality of central bank leadership were important determinants in quickly restoring public confidence in the financial systems in the five Latin American economies after the onset of the debt crisis in the early 1980s.

# III Franchise Value of Banks and Resolution of Banking Crises: 1982–90

It is well documented that the challenges faced by policymakers in Latin America following the outbreak of the debt crisis included not only the correction of the countries' macroeconomic imbalances but also the restoration of their domestic banking systems.[20] It is now fully recognized that the serious problems faced by the banking systems in a number of countries in the region placed additional constraints on the effectiveness and sustainability of the stabilization programs implemented in the years immediately after the onset of the debt crisis.[21]

This section draws on the characterization of the role of banks in developing countries presented in Section II to analyze how the authorities and the banking sectors in Argentina, Chile, Colombia, Mexico, and Peru responded to the financial difficulties during the early and mid-1980s.[22] It shows that the state of the franchise value of banks—as defined in Section II—at the inception of the debt crisis was a central element in determining whether the authorities in each of the countries followed a disciplined set of policies in managing the banking problems.

The main conclusions derived from this section are obtained by grouping the sample countries according to the strength of their banking franchise at the inception of the debt crisis and by making relative comparisons among those countries. In summary, the analysis will show that, because the banking systems in Chile and Colombia had relatively strong franchises, bank supervisors and bankers were able to respond to the crisis with a credible program to restore confidence in the banking system. Incentives were put into place to enable bankers and their shareholders to gain from salvaging value from bad credits. The programs in both these countries required a substantial increase in credit, but because credit creation was associated with a program to restore stability, it was noninflationary.

In contrast, banking regulators in Argentina, Mexico, and Peru, in their attempts to solve the crisis, removed authority from bankers and substituted the credit judgment of the central bank or the government directly. These policies also eventually led to credit expansion, which proved to be highly inflationary because investors did not believe the credit created would be repaid in real terms.

## Evaluating Banks' Strength at the Onset of the Debt Crisis

Following a period that started in the late 1970s characterized by large inflows of foreign capital,[23] by the end of 1982 and continuing during 1983–84, all five countries under consideration experienced large outflows of capital. These outflows reflected residents' and foreigners' deteriorated perceptions regarding the creditworthiness of borrowers in these economies.[24] The turnaround of voluntary capital inflows experienced by each country since 1982 was accompanied by a negative overall balance of payments (Chart 1). The loss of international creditworthiness experienced by these economies called for a domestic policy response—each country had to either put into place policies that restored the confidence of the international financial community or generate sufficient cash flow on its trade account to compensate for the outflow of capital.[25]

[20]For a review of the issues and experiences in a number of developing countries that faced banking crises in the early 1980s, see Sundararajan and Baliño (1991).

[21]This issue is discussed further in Baliño (1991).

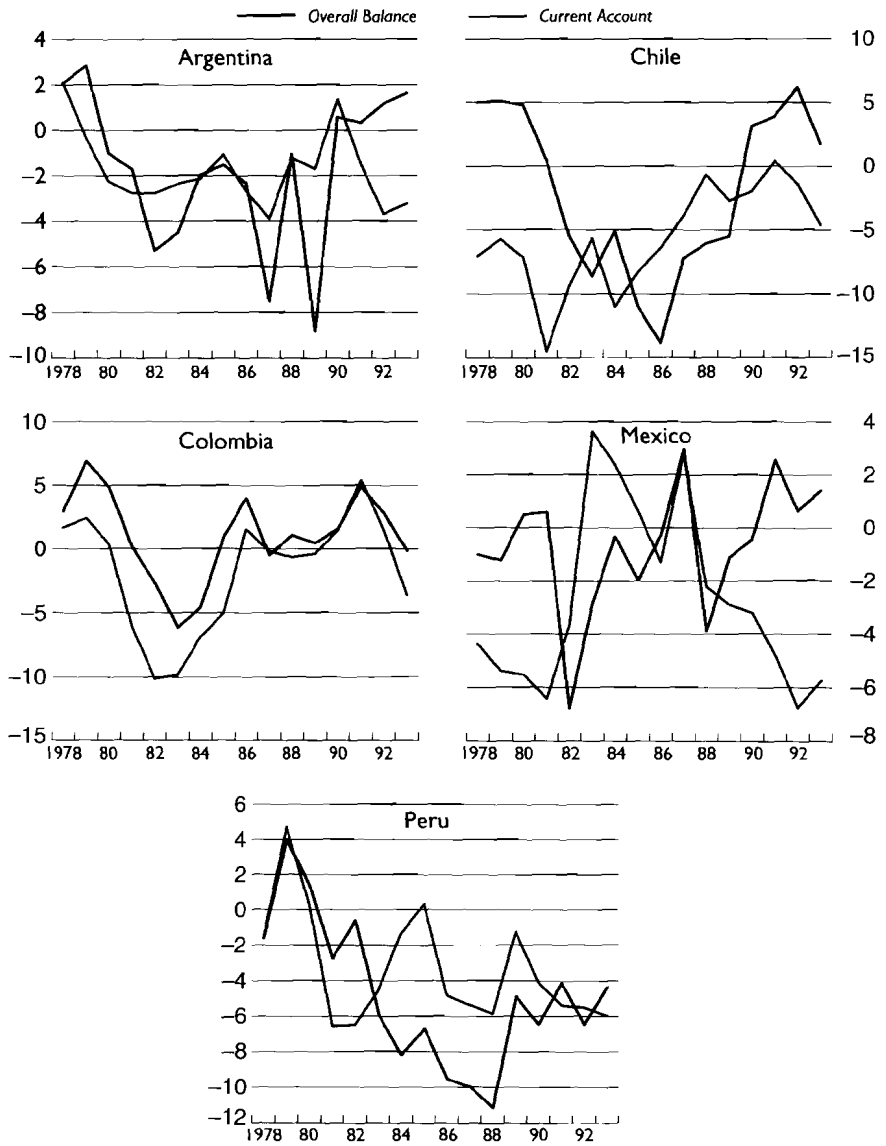
[22]As the discussion below will show, the diversity of experiences across these countries is enough to guarantee an appropriate representation of the banking difficulties in Latin America.

[23]For a discussion of the factors that explain the evolution of foreign capital flows before and during the debt crisis in several Latin American countries, see Rojas-Suárez (1991). A comparison between the capital inflows problem in the 1970s and early 1990s is presented in Calvo, Leiderman, and Reinhart (1992).

[24]A detailed analysis of the capital flight problem experienced by Latin American countries during this period is contained in Rojas-Suárez (1991).

[25]Confidence of the international community in the financial performance of most Latin American countries was not restored during most of the 1980s. Indeed, the large capital flight that followed the onset of the debt crisis, as well as the deceleration of external loans, was accompanied by a sharp increase in the resource balance—defined as net exports of goods and nonfactor services—during 1983–86; that is, for the Latin American countries, net transfers of resources abroad were a direct cost associated with their severely reduced access to external credit. Further discussion of these issues appears in Rojas-Suárez (1991).

**Chart 1. Balance of Payments: Current Account and Overall Balance**
*(Percent of GDP)*




Source: IMF, *World Economic Outlook.*

The lack of confidence in borrowers' ability to repay their loans had an adverse impact on the banking systems in these five countries—albeit in different proportions. In accordance with the discussion in Section II, banking systems in which the loan-to-asset ratio is relatively high and the cash-to-deposit ratio is relatively low—that is, banking systems where the franchise value is high—have the greatest experience in establishing credible loan workout programs in periods of systemic bank crises. In banking systems where the franchise is low, the tendency in a crisis is to provide new credit to borrowers

**Table 6. Indicators of Bank Franchise Value, 1982**
*(Percent)*

| Country | Cash Assets to Deposits | Loans to Assets |
|---|---|---|
| Argentina | 76.19 | 48.57 |
| Chile | 21.13 | 63.42 |
| Colombia | 20.96 | 58.66 |
| Mexico | 65.13 | 45.53 |
| Peru | 55.32 | 45.82[1] |

Sources: Central Bank of Argentina; Chile, Superintendencia de Bancos e Instituciones Financieras, *Información Financiera*; Colombia, Banco de la República; Mexico, Comisión Nacional Bancaria; Peru, Superintendencia de Banca y Seguros; and IMF staff estimates.

[1]Data correspond to 1981.

in arrears on their payments, without establishing adequate controls, in the expectation that these borrowers will be able to salvage a bad business with the new funds. Such credit expansion has often led to greater credit problems in the near future.

At the end of 1982, the banking systems of the five countries fell into two distinct groups. The first group, consisting of Argentina, Mexico, and Peru, had comparatively weak franchises, and the second group, consisting of Chile and Colombia, had comparatively strong franchises as measured by the ratios described above. The first group had cash-to-deposit ratios ranging from 55 percent in Peru and 65 percent in Mexico to over 75 percent in Argentina. In contrast, in Chile and Colombia, the ratio was about 21 percent. Although confirming the classification of countries described above, the differences in the loan-to-asset ratios between the two groups were not quite as extreme. In the first group of countries, the ratio was about 45 percent. In Chile, it was 63 percent and in Colombia about 59 percent (Table 6).

Incentives to monitor the liquidity of bank borrowers—as measured by the above ratios—determine the quality of bank supervision as well. In banking systems where borrower liquidity determines the liquidity of the banking system, the central bank must monitor bank lending decisions because it may often be called upon for liquidity assistance. To provide this assistance without undermining the franchise value of the banking system, it must be familiar with how its member banks make their lending decisions and how they monitor their borrowers.

A well-known example of how the behavior of a lender of last resort can contribute to the undermining of a bank franchise is the U.S. savings and loan crisis. U.S. savings and loans offer government-insured deposits, mostly to consumers, similar to those offered by banks. In contrast to commercial banks, which hold a portfolio of short-term loans, savings and loans hold mostly long-term home mortgages, which, until the late 1980s, were illiquid securities.

In the 1970s, the deposits offered by savings and loans were short term and subject to interest rate ceilings. When market interest rates rose substantially above the ceilings in an inflationary environment, consumers began to withdraw their deposits. Savings and loans could not sell their mortgage assets, which were fixed-interest-rate securities, because the market was limited. Even if they had been able to sell, however, the losses sustained from the increase in interest rates would have wiped out the capital of many institutions.

During this phase of the savings and loan crisis, policymakers tried to nurse failing savings and loans along with marginal extensions of credit through the Federal Home Loan Bank Board, a kind of central bank for savings and loans, and through regulatory forbearance on accounting issues. Deposit interest rates were deregulated, which stopped the outflow of deposits but did not improve the profit situation as interest expenses exceeded interest income. The asset powers of savings and loans were also liberalized. For example, federally chartered savings and loans were permitted to make direct investments in real estate as well as to hold mortgages. Giving the savings and loans the right to bid for insured deposits paying market interest rates and liberalized powers resulted in increased risk taking, and, with the decline in the property market in the late 1980s, the savings and loan industry was in critical condition.

At the end of the 1980s, marginal aid policies were abandoned, and large sums of public money were committed. The commitment of public money came with a new policy that made shareholders partners with a government agency to rescue the industry. The government agency, the Resolution Trust Company, took over the assets of failing savings and loans. It then sold the assets through a bidding process. Thus, prospective buyers bid on the assets based on their calculations about future movements in the market as well as on their ability to manage defaulted loans back to profitability. The previous policy of providing distressed savings and loans access to lender-of-last-resort funding on a continuous basis often committed regulators to lend money to institutions that had no capital. Thus, owners had no incentive to use the new money wisely because they

**Table 7. Fiscal Balance and Inflation**

| | Argentina | | Chile | | Colombia | | Mexico | | Peru | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | Fiscal balance[1] | Inflation | Fiscal balance | Inflation | Fiscal balance[2] | Inflation | Fiscal balance[3] | Inflation | Fiscal balance | Inflation |
| 1980 | –8.0 | 100.8 | — | 35.1 | –2.4 | 26.5 | –7.6 | 26.4 | –6.4 | 59.1 |
| 1981 | –16.7 | 104.5 | 0.8 | 19.7 | –5.9 | 27.5 | –14.6 | 27.9 | –8.4 | 75.4 |
| 1982 | –18.0 | 164.8 | –3.4 | 9.9 | –7.6 | 24.5 | –17.8 | 58.9 | –9.1 | 64.4 |
| 1983 | –17.9 | 343.8 | –3.0 | 27.3 | –7.6 | 19.8 | –8.5 | 101.8 | –11.8 | 111.2 |
| 1984 | –7.6 | 626.7 | –4.3 | 19.9 | –6.3 | 16.1 | –6.4 | 65.5 | –8.2 | 110.2 |
| 1985 | –5.1 | 672.1 | –2.6 | 30.7 | –3.6 | 24.0 | –8.7 | 57.7 | –4.3 | 163.4 |
| 1986 | –2.5 | 90.1 | –1.9 | 19.5 | –0.3 | 18.9 | –14.8 | 86.2 | –5.9 | 77.9 |
| 1987 | –5.6 | 131.3 | –0.4 | 19.9 | –2.0 | 23.3 | –15.0 | 131.8 | –7.9 | 85.8 |
| 1988 | –3.0 | 343.0 | 2.5 | 14.7 | –1.8 | 28.1 | –11.6 | 114.2 | –9.2 | 667.0 |
| 1989 | –7.3 | 3,079.8 | 5.3 | 17.0 | –2.0 | 25.8 | –5.2 | 20.0 | –7.9 | 3,398.7 |
| 1990 | –2.4 | 2,314.0 | 3.8 | 26.0 | –0.7 | 29.1 | –3.6 | 26.7 | –5.4 | 7,481.7 |
| 1991 | –1.3 | 171.7 | 2.3 | 21.8 | –1.0 | 30.4 | –0.4 | 22.7 | –2.6 | 409.5 |
| 1992 | 0.5 | 24.9 | 3.2 | 15.4 | –0.9 | 27.0 | 1.5 | 15.5 | –0.3 | 73.5 |

Sources: Argentina, Ministry of Economy, and Central Bank of Argentina; Central Bank of Chile; Colombia, Banco de la República; Bank of Mexico; Central Reserve Bank of Peru; and International Monetary Fund, *International Financial Statistics*, various issues.

Note: Fiscal balance (overall surplus (+) or deficit (–) of the nonfinancial public sector) data are expressed as a percentage of GDP; inflation figures are shown in percentages. Inflation is calculated using the following formula: $((P[t] - P[t-1])/P[t-1]) * 100$, where $P$ is the consumer price index (CPI) (IFS line item 64). The CPI is calculated based on the average price prevailing in the economy during the year.

[1]Includes quasi-fiscal operations of the central bank.

[2]Refers to the overall surplus (+) or deficit (–) of the consolidated public sector.

[3]From 1984 onward, the data represent the economic balance; that is, financial intermediation is not included.

had nothing at risk. In contrast, the new policy committed government money immediately and then turned the assets over to new owners, who were required to supply new capital to the project. The new capital commitment was large enough to give the new owners an incentive to manage the assets back to profitability.

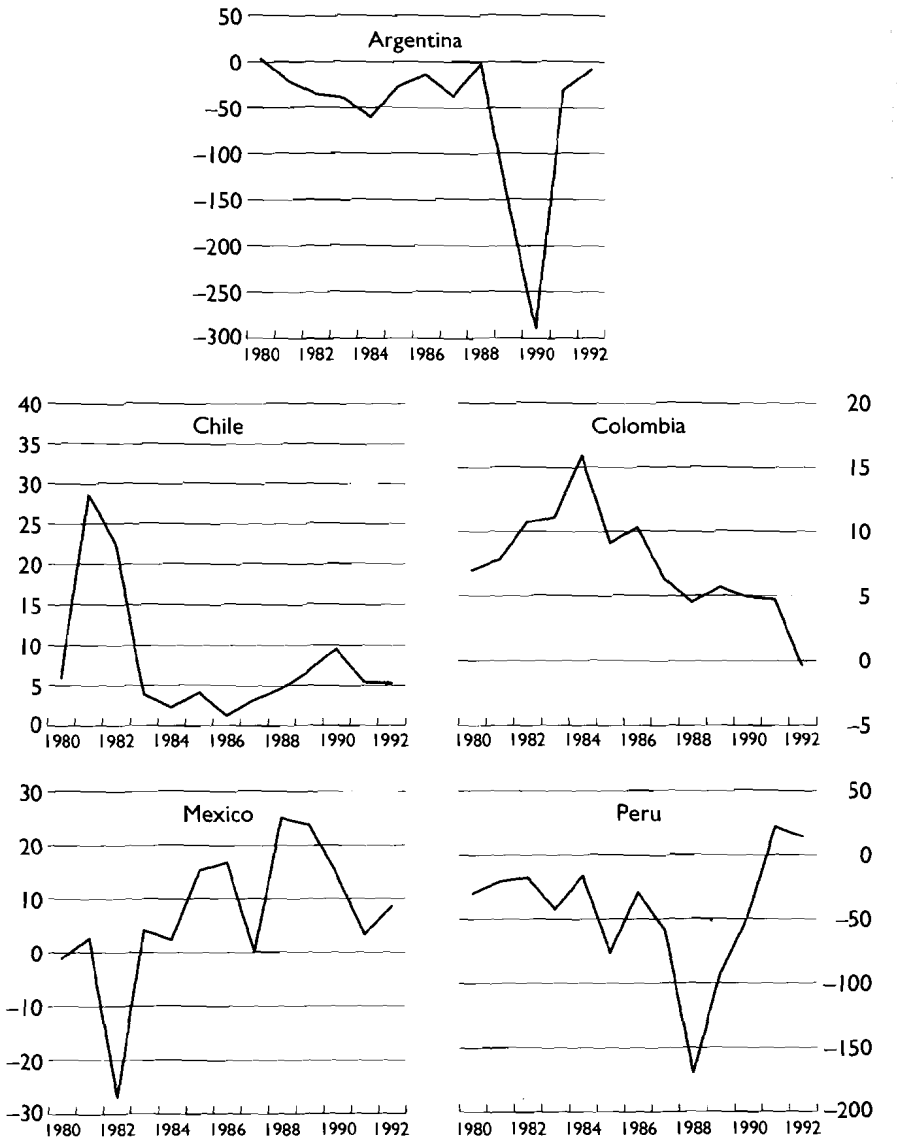
Successful bailout programs of banking systems in Latin America paralleled the second phase of the U.S. savings and loans crisis, while unsuccessful bailouts paralleled events in the first stage. That is, bailout programs of banking systems in Latin America were successful only when the supply of central bank credit to distressed institutions was made conditional on a realistic appraisal of the loan portfolio. Under such programs, only borrowers with a reasonable possibility of returning to solvency could be eligible for additional loans.

## Macroeconomic Environment and the Franchise Value of Banking Systems

Closely related to the ability of the central bank to promote discipline in financial markets is the state of the overall macroeconomic environment. It is therefore natural to question whether the ordering of the five countries according to the strength of their banking franchise matched the relative soundness of their macroeconomic systems in the period immediate before the debt crisis.

Based on the fiscal policy stance and the level of inflation, Chile had the strongest macroeconomic environment among the countries under consideration in the early 1980s (Table 7). Consistent with having the strongest fiscal stance, Chile's average rate of inflation was the lowest among the countries in the sample. Colombia followed Chile in the ordering of countries. With this criterion in mind, Argentina had the weakest macroeconomic condition among the countries in the group: even two years before the outbreak of the debt crisis, the average inflation rate was running at more than 100 percent. Although the rate of inflation in Mexico did not accelerate until 1982—and was similar to that experienced in Colombia in 1980–81—the fiscal deficits (as ratios of GDP) in Mexico during the early 1980s resembled those in Argentina. Finally, Peru's fiscal deficit and inflation, although less severe than in Argentina, deteriorated during the early 1980s. Indeed, by 1981, the Peruvian inflation rate was closer to Argentina's inflation rate than to that of any of the other countries in the sample.

**Chart 2. Real Interest Rates**
*(Annual average, in percent)*




Sources: Argentina, Ministry of Economy, and Central Bank of Argentina; Central Bank of Chile; Colombia, Banco de la República; Bank of Mexico; Central Reserve Bank of Peru; and IMF staff estimates.

Thus, the ordering of countries in terms of their fiscal stances and inflation performances during the early 1980s matched closely the ordering of the franchise value in these countries. Moreover, in Argentina, Mexico, and Peru, ex post real interest rates on bank deposits were mostly negative in the early 1980s, reflecting interest rate ceilings imposed by the authorities[26] (Chart 2). To a large extent, these

[26]Although interest rates were liberalized in Argentina in 1978, controls on bank deposits were reimposed in 1981. See the discussion in the next subsection.

controls, which weakened the franchise value of banks, were not present in Chile and Colombia, and, as a result, ex post real interest rates remained positive throughout the 1980s.[27]

It is not surprising to find out that, using the two alternative criteria, the ordering of countries matches. After all, a stable macroeconomic environment and a stable financial system are complementary.

## How the Systems Responded to Immediate Crisis: 1982–85

This subsection considers whether the banking systems in the countries classified as having the highest franchise value among the countries in the sample coped with banking crises in a more disciplined manner than those countries classified as having the lowest franchise value. At the beginning of the international debt crisis in 1982, the banking systems in Argentina and Mexico were already deeply mired in a credit crisis. In Chile and Colombia, the banking systems were about to face the consequences of lender concerns that borrowers could not make good on their debts. In Peru, the crisis was delayed until the middle of the decade, but when it arrived, it was a crisis of major proportions.

In *Argentina*, the banking system, which had been subject to interest rate ceilings, high reserve requirements, and prescribed lending policies, was rapidly deregulated in 1978. Without appropriate supervision of credit and with bankers lacking the experience to price risks properly, the banking system expanded excessively and, by the early 1980s, suffered from severe credit problems. The central bank responded to the crisis by reimposing stiff reserve requirements and interest rate ceilings on deposits. Real interest rates on deposits became negative (see Chart 2), and reserves in the central bank increased to over 70 percent of deposits in 1982, compared with 12 percent in 1981.

The central bank followed two basic policies: it subjected deposit interest rates to a ceiling that permitted banks to reduce interest rates to borrowers to a manageable level, and it increased reserve requirements, which, in turn, provided the central bank with resources to lend to the most troubled institutions. In 1982, central bank credit to the financial system equaled over 21 percent of GDP (see Table A1).

[27]In Chile, during the late 1970s and early 1980s, ex post real interest rates increased drastically and were accompanied by a significant widening of the spread between domestic interest rates (adjusted for exchange rate changes) and comparable foreign interest rates. The review of the Chilean experience suggests that these high domestic rates emerged when the domestic financial system was liberalized in conjunction with the opening of the capital account (see Mathieson and Rojas-Suárez, 1993).

The central bank response can be said to have solved the crisis by placing as little strain as possible on defaulting borrowers and the most troubled banks. Banks with relatively clean loan portfolios were forced to aid in the bailout of troubled banks by holding high reserves so that the central bank could obtain resources to lend. Depositors were forced to accept a depreciation of their deposits in real terms. Because responsibility was not placed on the shoulders of the parties responsible for the crisis, crisis resolution weakened the franchise value of the banking system.

In contrast to this view, the central bank reaction to reregulate suggests that the authorities believed that the banking crisis was caused by deregulation in the late 1970s—that is, by the reduction of reserve requirements and the resulting increase in bank loans. Although it is probably true that the rapid deregulation of a banking system run by inexperienced bankers invited the banking crisis, the resolution of the crisis did nothing to educate bankers in how to deal with credit crises, which was the real problem facing the Argentine banking system. As such, reregulation was a step backward that was to lead to much greater trouble later on than that caused by deregulation.

An additional problem confronting the Argentine banking system was the explosion of credit to the central government in the early 1980s, most of which was lent through the central bank and, again, financed by high reserve requirements on the banks. This expansion of credit had two debilitating effects on the banking system. First, it ensured that high reserve requirements would persist beyond the immediate banking crisis and, second, it placed the central bank in the role of direct lender to the government. As a direct lender and a supervisor, the central bank was faced with a conflict of interest that undermined sound bank supervision.

In *Mexico*, the banking crisis in 1982 occurred in an environment of sharply deteriorating economic conditions (see Table 7). The crisis could not be blamed on rapid credit expansion following a decline in reserve requirements, because the ratio of cash assets to deposits was extremely high in Mexico before the onset of the crisis. However, because the central bank had used the high reserve requirements to lend to the government, it had few resources to lend to troubled banks (see Table A2).

The lack of resources could have led to a disciplined approach to resolving the banking crisis. Instead, the central bank and the government engaged in a policy of reducing the real burden of borrower debt and forcing depositors to absorb some of these losses through a reduction in the real value of deposits. The latter action was achieved through a combination of policies: forced conversion of foreign-currency-denominated deposits at unfavorable

exchange rates and negative real interest rates on peso-denominated deposits. The real value of loans was reduced through the conversion of foreign currency loans to pesos at an exchange rate that overstated the value of the peso relative to the dollar. Thus, as in Argentina, one of the parties responsible for the crisis, the borrower, was given a subsidy, and the party with less responsibility, the depositor, was forced to accept a loss.

In addition, the banks were nationalized, which, if properly managed, could have had a beneficial effect on franchise value because stockholders were forced to absorb losses. Such a policy, however, would have been beneficial to the franchise only if the new owners, whether the government or private entities, had purchased the banks after the assets had been properly evaluated. In addition, new owners should have been required to place substantial new equity into the system with a clear statement of policy that the equity would be lost if the new managers could not successfully manage the assets after reevaluation. That this was not done is suggested by the fact that the capital-to-asset ratio of Mexican banks remained very low until the late 1980s (see Chart 3).

The methods used by the Mexican banking authorities to resolve the banking crisis required fewer uses of public funds than in Argentina. These methods, however, were philosophically similar: they were designed to spread the losses in an acceptable manner rather than to improve the franchise. Thus, the responses of the authorities in these two countries parallel those of the U.S. authorities in the first phase of the savings and loan crisis.

In contrast to Argentina and Mexico, *Peru* did not experience a major banking crisis in the early 1980s.[28] Peru had an extremely high ratio of cash to deposits in 1982 and, in contrast to Argentina, had not experimented with reserve requirement reductions in the 1970s. As a result, bank loans to the private sector were small relative to GDP (Table A3), and, in 1982, that ratio was the lowest among the five countries under consideration.

Not extending bank loans may appear to be a very attractive way to prevent a banking crisis; if bank lending is limited, few loans can become nonperforming. Banks that were extending only a few loans, however, lost their credit evaluation skills, and, in the late 1980s, when the central bank expanded credit to finance compounding fiscal deficits, they were unable to respond in a disciplined manner. This generated a crisis of major proportions that will be discussed in the next subsection.

In 1982, the banking authorities eliminated marginal reserve requirements on domestic currency deposits, although average reserve requirements remained extraordinarily high—at more than 50 percent of total deposits. They also simplified the interest ceilings imposed on domestic currency deposits. One of the primary motivations of the authorities in reducing reserve requirements was to expand domestic bank lending activity. A central bank policy of paying attractive interest rates on reserves, however, encouraged banks to continue to hold high ratios of cash to deposits despite the reduction in reserve requirements. Moreover, banks were further encouraged to hold high reserves at the central bank because the uncertain macroeconomic environment increased the risk of lending.

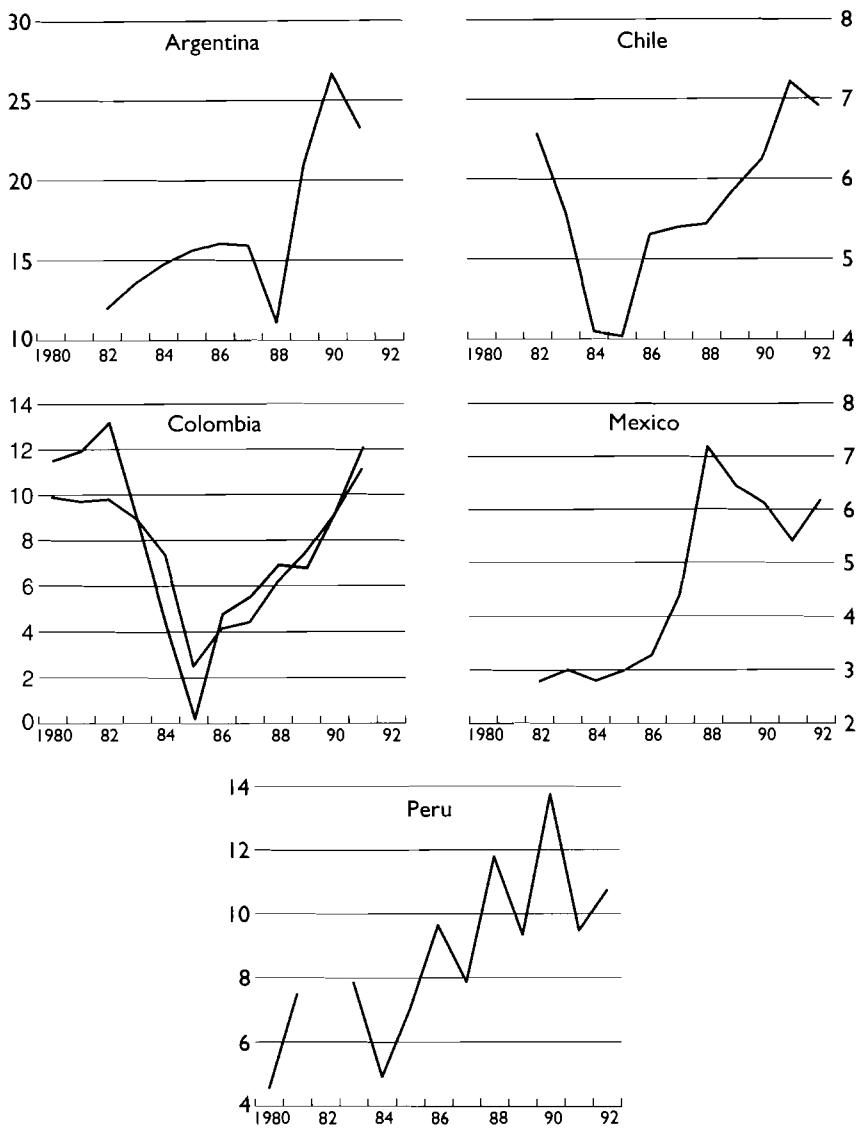
The reforms, however, did not lead to a substantial increase in domestic currency deposits. In fact, as real interest rates on domestic currency deposits were substantially negative in the early 1980s (see Chart 2), foreign currency deposits increased from 46 percent of bank deposits in 1982 to 61 percent by 1984. Because these deposits had high reserve requirements, an increasing share of resources ended up in the hands of the central bank. The central bank lent some of these funds to the government-owned development banks but, in 1984, invested them primarily in foreign reserve assets (see Table A3). The large amount of liquid assets in the banking system and the central bank precluded a major banking crisis in the early 1980s, but crisis loomed on the horizon as a government came to power that was willing to spend these resources. In fact, the unwillingness of the authorities to encourage banks to create domestic credit may have contributed to the support of a new government willing to spend resources domestically. The problem was that this spending was funneled through a financial system without a franchise value, generating a crisis. This crisis is discussed in the next subsection.

Chile and Colombia also experienced banking crises in 1982, but, in contrast to Argentina and Mexico, the central bank authorities attempted to focus responsibility for problems on the shareholders of the most distressed banks rather than on the system as a whole.

In *Chile*, the rescue effort got off to a somewhat unpromising start. The central bank made extensive credit available to the banking system and to defaulted borrowers without putting proper controls in place. Net domestic credit of the financial system increased from 54 percent of GDP in 1982 to more than 73 percent of GDP in 1983 (Table A4). Much of this increase was due to central bank lending to financial

[28]The crisis was confined to the collapse of two banks in early 1983. This made remaining banks very cautious in extending new loans. The impact of bank failures and bank loan loss problems on bank balance sheet quality is difficult to discern from capital-to-asset ratios because the accounting data appear unreliable. Thus, the large fluctuations in the capital-to-asset ratios during 1980–90 shown in Chart 3 largely reflect accounting procedures rather than true changes in real capital.

**Chart 3. Capital to Assets**
*(Percent)*




Sources: Central Bank of Argentina; Chile, Superintendencia de Bancos e Instituciones Financieras, *Información Financiera*; Colombia, Banco de la República; Mexico, Comisión Nacional Bancaria; Peru, Superintendencia de Banco y Seguros; and IMF staff estimates.

intermediaries, which rose from less than 7 percent of GDP in 1982 to more than 16 percent of GDP in 1983. In addition, the central bank purchased nonperforming loans outright from the banks.[29]

[29]For a thorough description of the bailout procedures in Chile, see Morris and others (1990) and Velasco (1991).

In rescheduling nonperforming foreign currency loans, the central bank offered borrowers favorable exchange rates, which created severe losses at the central bank. Borrowers presented pesos to the central bank to repay their loans, and the central bank exchanged these at a dollar exchange rate that was lower than that prevailing in the open market. In

fact, the losses became so severe that the government had to recapitalize the central bank.

The authorities quickly put in place policies that attempted to provide incentives for banks to work with defaulting borrowers to improve loan quality. In 1984, the central bank bought the banks' nonperforming foreign currency assets with cash. The banks had to use this cash to repay the central bank for credit drawn on the lines made available in 1982. As a result of this transaction, central bank loans to the banking system declined (Table A4).

Under the initial agreement of 1984, the banks were forced to buy back the bad loan portfolio over a ten-year period at the original face value of the loan plus accumulated unpaid interest, rather than at a value determined by how the loan was performing. The repayment would be made through a provision item in the income statement that flowed into an account on the liability side of the balance sheet, referred to as "a subordinated obligation to the central bank." The banks, however, were not paying market interest rates on their obligations to repay the central bank.[30]

As an important component of the original agreement, the banks were placed in charge of administering the loan portfolio they had sold to the central bank, which meant that they had responsibility for collecting loan payments and encouraging borrowers to remain current on their payments. Banks had an incentive to perform this task well, because, under the original terms of their agreement with the central bank, they had to buy loans back at the original face value. With this policy, the central bank attempted to play the role of supervisor of banks rather than of manager of nonperforming loans to the private sector.

The authorities encouraged banks to index the principal of domestic currency loans to inflation to reduce the cash-flow burden on borrowers during the relatively high inflation experienced in the mid-1980s. During high inflation, the real principal of nonindexed debt contracts declines. The high nominal interest rate compensates the lender for this loss, but it also forces the borrower to pay off real principal more rapidly than in a noninflationary environment. To offer an indexed loan contract, banks had to find liability holders who were willing to hold deposits with indexed principal. During the first few years of the program, private liability holders were reluctant to supply such a contract. Hence, the authorities provided banks with a line of credit with indexed principal.

Not all banks could be rescued by the above mechanisms, however. The portfolio condition of some banks had deteriorated so much that they had to be recapitalized before they could sell loans to the central bank. The government took over the distressed banks, writing down the value of stockholder equity by marking assets to market, as manifested in the sharp drop in equity-to-asset ratios in 1984 (see Chart 3).[31] But, unlike in Mexico, the central bank offered the distressed banks for sale to the private sector.[32] Deals were structured so that the new owners contributed sufficient capital to give them an incentive to manage the assets prudently. With new ownership in place, the resolved banks were permitted to participate in the central bank's distressed loan program. The new stockholders together with the central bank became de facto preferred shareholders: dividends had to be paid to them before dividends could accrue to the original stockholders. This policy had two beneficial effects: it demonstrated to an identified group of shareholders that if banks fail, equity holders lose money. It also put a new management in place with capital to lose, giving them the appropriate incentives to manage loan portfolios.

Despite the merits of the initial rescue plan, a number of banks were unable to maintain their scheduled repayments to the central bank. Therefore, in 1989, the ten-year payback period was extended indefinitely. Under the new agreement, banks are required to repurchase the subordinated debt with their flow of profits (if any) minus the dividends paid out to preferred private stockholders until their debt obligations are fulfilled.[33] For some banks, which have not been able to cover even accrued interest, this has resulted in negative amortization of their debts to the central bank. By the end of 1993, the banking system's obligation to the central bank is estimated to have reached about US$4 billion, or 10 percent of GDP.

[30]Because reserve requirements in Chile were so low, the central bank had very few funds with which to aid the banks. Most of its resources came from an expansion of borrowing from overseas, which increased from less than 2 percent of GDP in 1982 to more than 27 percent by 1985. Much of this increase was due to the depreciation of the Chilean peso; however, in U.S. dollar terms, foreign borrowing by the financial system increased from almost $6 billion in 1982 to almost $10 billion in 1985. The additional funds were made available through rescheduling agreements with foreign lenders.

[31]Marked to market means that assets are valued at current market prices rather than at book values. In contrast, in Argentina capital-to-asset ratios actually increased during the banking crisis, indicating either that shareholders gained from the rescue package or that nonperforming loans were not marked at market values.

[32]The central bank had to provide monetary enhancements to these deals (tax exemptions were also granted). This is similar, however, to the experiences of bank regulators in a number of industrial countries when dealing with resolution of banking crises.

[33]These are the new shareholders, the so-called *capitalistas populares*, who bought shares when banks were recapitalized in the mid-1980s.

During the 1970s and early 1980s, economic conditions in *Colombia* remained heavily dependent on coffee exports. To a large extent, the banking crisis of the early 1980s was triggered by the sudden end of the coffee boom of the late 1970s and the related deterioration of the fiscal position. As the coffee boom ended, Colombia experienced capital flight as economic agents adjusted their portfolios to the adverse external shock. The capital flight resulted in only a mild banking crisis because much of the foreign borrowing was concentrated directly on the balance sheet of the government rather than on the balance sheets of financial institutions. The government was able to cover the flight by borrowing foreign reserves from the central bank, as net central bank credit to public authorities increased from 4.2 percent of GDP in 1982 to over 9 percent of GDP in 1984, causing central bank foreign reserves to decline to 3.4 percent of GDP (see Table A5).

Because of the accumulation of foreign exchange reserves during the coffee boom, the Colombian central bank had a larger amount of funds available to aid troubled banks in the early 1980s than was available in Chile. In 1982, its net international reserves equaled more than 10 percent of GDP compared with about 5.5 percent at the Chilean central bank (see Tables A4 and A5). The impact of capital flight on the banking system is evident from the increased central bank lending to banks, which increased from –3.3 percent of GDP in 1982 to –1 percent of GDP in 1984.[34] A few small banks failed, and banks' capital-to-asset ratios dropped sharply, indicating that shareholders were forced to sustain losses from nonperforming credits. The full severity of the crisis was not felt until the mid-1980s, and its resolution will be discussed in the next subsection. Nonetheless, unlike in Argentina, Mexico, and Peru, real interest rates in Colombia remained positive in the early 1980s, indicating that losses were focused on the stockholders of failed institutions.

## Crisis Resolution: 1985–90

By the middle of the decade, Chilean banks were recovering, whereas Colombian banks were experiencing a more severe crisis in 1985 and 1986 than in the early 1980s. Nevertheless, the second Colombian banking crisis was quickly resolved. By the end of the decade, capital-to-asset ratios at the banks in both countries had recovered to their precrisis level, and the central banks' role as lender to the banking system was declining.

[34]The negative asset position indicates that the banks were net creditors of the central bank.

In contrast, the banks in Argentina and Peru faced severe competition from the central bank as direct lender and from government-related development banks. In Mexico, by the middle of the decade, banks were lending most of their funds to the government and government-related enterprises. In all three countries, the banks were not able to exercise their monitoring function over borrower liquidity, and the central bank could not function as an arm's-length regulator. This lack of independence of central banks from expansionary fiscal policies led to high inflation by the end of the decade.

### Chile and Colombia

In *Chile*, by 1989, the central bank's medium- and long-term foreign liabilities had declined from almost 28 percent of GDP in 1985 to 10.5 percent of GDP, and central bank net domestic credit had fallen from 32 percent of GDP to 3.5 percent. Net international reserves were growing strongly relative to GDP (see Table A4).

After 1985, bank capital ratios also recovered—rising from 4 percent of assets to about 6 percent of assets by 1989, implying that bank earnings were growing (see Chart 3). Further indication that the franchise value of banks was improving was the increase in the loan-to-asset ratio, which had fallen when the central bank removed bad loans from the banks' balance sheets. In assessing the effectiveness of the Chilean solution to the banking crisis of the early 1980s, it is necessary to take into account both the costs and the benefits of the procedures chosen. On the negative side, because the interest rate on banks' debt has remained below that paid on central bank paper, the central bank has sustained losses throughout the mid-1980s and early 1990s. On the positive side, however, the problem was managed in an orderly way and did not result in a sustained deterioration of the fiscal stance or a rapid and sustained acceleration of inflation.[35] In addition, only depositors in the failed institutions were forced to absorb some of the losses of those institutions. In contrast, depositors of both good and bad banks in Argentina and Mexico were forced to absorb losses under policies encouraging negative real interest rates. In Chile, real interest rates remained positive, and there was a relatively clear policy that only those connected with a failed institution would bear the burden of the failure (see Chart 2).

Indeed, to a large extent, the management of the banking crisis in Chile resembles that in several industrial countries. Even in countries where a banking

[35]It needs to be recognized, however, that the sustained losses of the central bank have acted as a constraint to reduce the Chilean inflation rate to industrial country levels.

crisis came to an end relatively quickly, such as in Sweden in the early 1990s, the resolution of the financial difficulties involved large costs to the taxpayers.[36] In the United States, with the resolution of the savings and loan crisis, the accumulated loss suffered by U.S. taxpayers has, to date, amounted to about 3 percent of GDP.

In 1992, banks with debt outstanding to the central bank had net income before dividends and payments to the central bank of about CH$110 billion, which, discounted at the cost of banks' liabilities, equaled about CH$800 billion.[37] With total subordinated debt outstanding amounting to about CH$1.5 trillion, this simple approximation suggests that, using 1992 data, about 45 percent of the subordinated debt is uncollectible. This portion represented about 5 percent of 1992 GDP.[38] This figure suggests that the cost of the Chilean banking crisis relative to GDP is higher than the cost to GDP of the U.S. savings and loan crisis; however, it is lower than the cost incurred in resolving the banking crisis in Sweden.

Although the cost of resolving the banking crisis in Chile is a substantial burden, it must be noted that, relative to the original magnitude of the banking crisis, during which central bank net domestic credit swelled to 30 percent of GDP, the debt hangover is moderate. Thus, despite the costs currently borne by the central bank, the resolution of the banking crisis in Chile minimized economic dislocations relative to those suffered by other countries in the sample considered in this paper. In addition, as a result of the experiences during the crisis, the Chilean bank supervisory framework is now among the best in Latin America.

In *Colombia*, in 1985, the central bank began reducing net domestic credit and accumulating net international reserves. In the same year, its net credit position toward banks declined, indicating that it had reduced lending to the banks. This event did not, however, signal the resolution of the banking crisis as it did in Chile; in fact, nonperforming loans at commercial banks equaled 500 percent of capital and 268 percent of capital at all financial institutions in 1985.[39] Capital-to-asset ratios at commercial banks and finance companies fell sharply (see Chart 3). Rather, the reduction in central bank lending to banks signaled a new method for dealing with distressed banks.

The Colombian authorities established a deposit insurance fund to lend to banks with distressed loan portfolios and to resolve banks that had failed. The insurance system received its funding largely from the government and from extraordinary revenues made available by a sharp rise in coffee prices in the mid-1980s. The insurance fund ultimately purchased the largest banks in the banking system but originally had problems selling them, because it could not find buyers that met the legal criteria established to prevent industrial or financial conglomerates from developing.[40] The purpose of the legislation was to prevent concentration of credit to single borrowers and to ensure arm's-length credit decisions. Many of the bank failures in the 1980s were blamed on such abuses.

In early 1994, the insurance fund successfully sold the largest bank—Banco de Colombia—to an industrial conglomerate. This sale raises the question of the abuses that the legislation was designed to curb. Strong supervision (such as restrictions on loans to related companies and limits on credit exposure to single borrowers), however, can alleviate many of these potential problems. If the Colombian authorities successfully complete the sale of the remaining resolved major bank—the Banco Cafetero—and effectively strengthen the supervisory process to avoid abuses, the Colombian rescue efforts will have reinforced the franchise value of the banking system.[41]

### Argentina, Mexico, and Peru

The banking systems in the three countries with relatively weak franchises all experienced an expansion of credit to government-related institutions relative to credit provided to the private sector through private financial institutions in the mid- to late 1980s. Although the details of how this credit was directed to the public sector differed by country, the outcome was the same in all countries. The projects financed through money creation did not generate a corresponding expansion in economic activity. As a result, severe inflation followed, and holders of assets denominated in domestic currency experienced a loss in their real wealth. In all three countries, the central bank failed to act as a bank supervisor because it had a conflict of interest as a direct lender, and the banks lent funds to government institutions

[36]In Sweden, by the end of 1992, capital injections and government guarantees to support troubled banks amounted to 6.4 percent of GDP.

[37]The assumed discount factor equals 13.5 percent, which is the average nominal cost of liabilities of the national banks in 1992.

[38]Actual payments to the central bank were CH$78 billion in 1992 because only a proportion of banks' net income was required to be used as payments to the central bank. However, in calculating the amount of debt that is potentially serviceable, it is appropriate to consider the entire cash flow available for debt service. Using the lower figure would imply that the unserviceable debt equals about 6 percent of GDP.

[39]The Colombian banking system is made up of commercial banks, savings banks, development finance companies, and trade finance companies.

[40]The sale of the Banco de Bogotá was criticized as providing a large subsidy to purchasers.

[41]The Banco Central Hipotecario was sold to the Social Security Institute. The state will retain the ownership of the Banco Popular.

that were too powerful to be monitored by normal bank credit policies. Thus, the checks and balances that restrain risk taking in well-supervised banking systems did not exist.

In *Argentina*, starting in 1986, central bank credit to the central government expanded faster than commercial bank credit to the private sector (see Chart 4). The credit expansion was caused primarily by a lack of confidence in the government's ability to repay the central bank, which forced up interest rates, requiring further borrowing to service the debt. At the same time, central bank funding to the banks also expanded more rapidly than commercial bank credit to the private sector. In 1989, the net domestic assets of the financial system relative to GDP exploded, increasing from less than 40 percent of GDP in 1988 to more than 50 percent.

The credit explosion resulted in hyperinflation and a deterioration in the exchange rate (Chart 5). The rapid depreciation of the currency reflected investors' perceptions that the credit created by the central bank, both directly and through the banks, could not be paid off in real terms.

Extreme negative real interest rates on domestic currency deposits accompanied hyperinflation (see Chart 2). In addition, the central bank effectively confiscated domestic currency time deposits by forcing depositors to exchange their deposits for dollar bonds worth about half the market exchange rate value of the original deposits. The reduction in interest expenses on bank liabilities permitted banks to renegotiate credit terms to lenders and provided funds to pay off loans from the central bank. As indicated in Chart 3, the central bank's policy caused banks' capital-to-asset ratios to increase because, by confiscating deposits, the central bank effectively wrote down the value of liabilities to solve banks' credit problems. In well-functioning accounting systems, the improvement in capital-to-asset ratios signals an increase in the market value of assets relative to liabilities. Because this was not the case in Argentina, investors could not use the capital-to-asset ratio as a reliable guide to bank soundness.

The Argentine experience indicates that the financial system lost its ability to enforce discipline on borrowers in the mid-1980s. This was a direct result of the loss of an arm's-length relationship between the central bank and the ultimate borrowers in the economy, which resulted from the inability to deal with the banking crisis in the early 1980s in a manner that would restore the credibility of the banks.

In *Mexico*, as in Argentina by the mid-1980s, the government had taken an increasing share of total credit. In contrast to Argentina, however, the increased flow of credit to the government occurred on the balance sheets of the nationalized commercial banks (see Table A2). By 1986, over 60 percent of net domestic bank credit flowed to the government, compared with 35 percent in 1982.

Net domestic credit of the financial system expanded rapidly beginning in 1986, when it increased to over 70 percent of GDP from 52 percent the previous year (see Chart 4). As in Argentina, much of the increase in financial system credit relative to GDP during 1986–87 was accompanied by a deterioration in the exchange rate and high inflation rates, which peaked in 1987 and 1988 (Chart 5). Real interest rates on bank deposits became negative in 1987, reducing the government's real burden in paying off its bank loans, which declined substantially relative to GDP in 1988 (see Table A2).

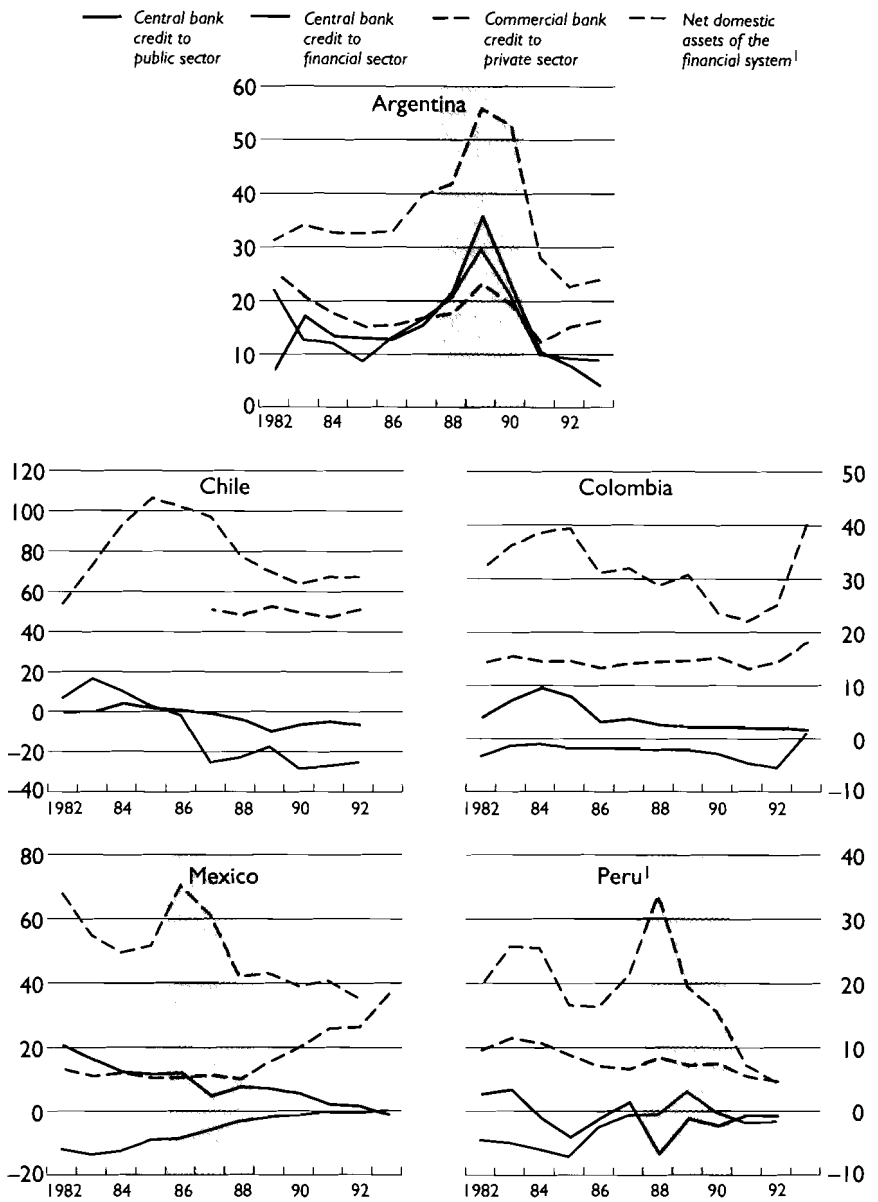
In *Peru*, net domestic credit of commercial banks relative to GDP remained low in the early part of the decade because of very high reserve requirements. This policy, however, was abandoned in the mid-1980s when the central bank expanded credit sharply—partly financed with bank reserves held at the central bank. Net credit of the central bank expanded from –4.7 percent of GDP in 1985 to 1.4 percent of GDP in 1986, and a large amount of foreign exchange reserves was lost. The central bank continued to expand credit in 1987 and 1988, primarily financed from arrears on foreign debt and increased liabilities to the private sector (Table A3). In 1988, central bank credit equaled over 40 percent of net domestic credit, compared with less than 10 percent in 1986. Most of the credit went to the public sector, especially the agricultural banks.

The impact of the credit expansion followed a familiar pattern. In 1988, inflation turned into hyperinflation, which was accompanied by extremely negative real interest rates on domestic currency bank deposits (see Chart 2). In addition, there was large disintermediation in domestic currency deposits.[42]

Unlike Argentina and Mexico, Peru experienced only one major crisis because the high reserves at commercial banks precluded an earlier one. When the crisis erupted, however, it was the sole result of central bank mismanagement. The high reserves

[42]Although a large number of transactions were performed using the U.S. dollar, bank deposits denominated in foreign currency—which had been allowed since December 1977—decreased significantly during August 1985–December 1990, when fully convertible foreign currency deposits were prohibited. In particular, foreign currency deposits could be converted into intis (the domestic currency at the time) only at the official exchange rate (measured as the number of intis per U.S. dollar), which fell sharply below the rate in the parallel (black) market. Large disintermediation from the banking system followed, and, rather than declining, U.S. dollar transactions intensified through the development of informal real and financial markets. Indeed, two forms of holding U.S. dollars were clearly identified by Peruvian residents: U.S. currency notes that could be obtained in the well-established domestic black market for U.S. dollars and deposits in foreign banks reflecting capital flight. Fully convertible foreign currency deposits were reestablished at the beginning of 1991.

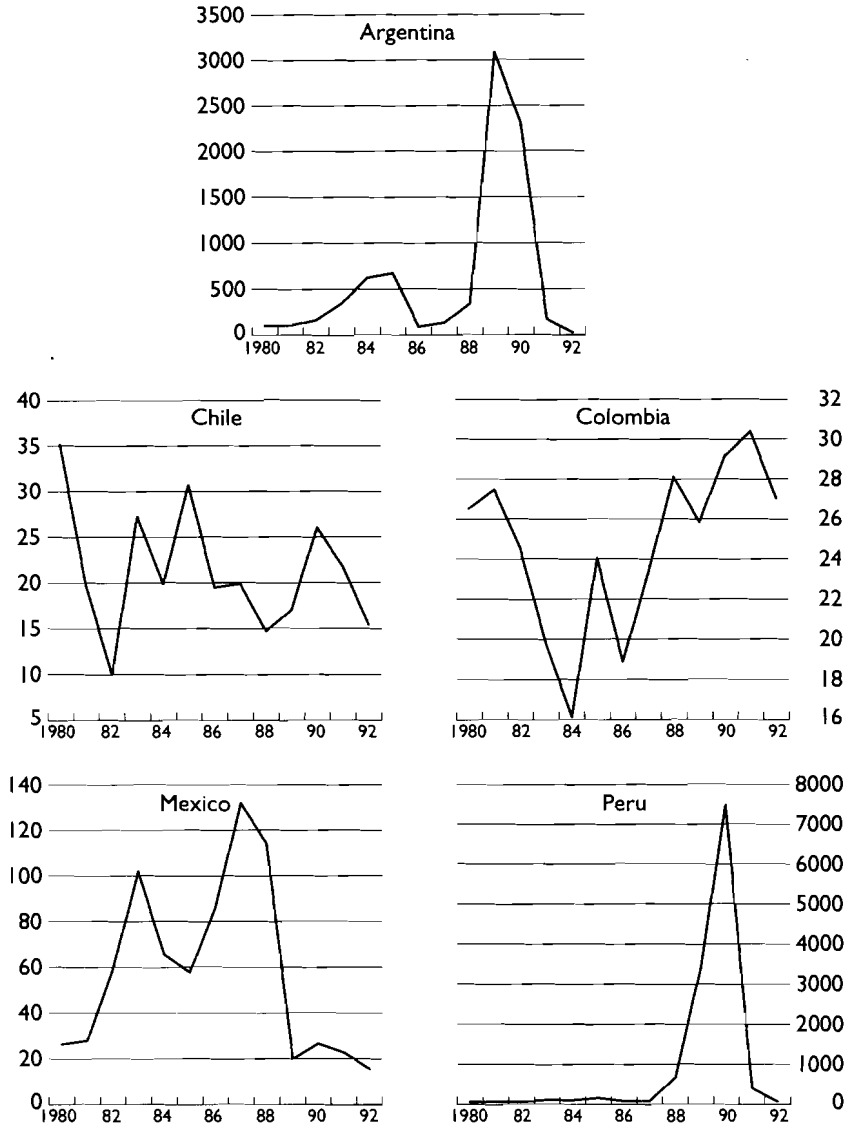
**Chart 4. Selected Financial Indicators**
*(Percent of GDP)*




Sources: Argentina, Ministry of Economy, and Central Bank of Argentina; Central Bank of Chile; Colombia, Banco de la República; Bank of Mexico; Central Reserve Bank of Peru; and IMF staff estimates.
Note: The shaded areas in Argentina, Mexico, and Peru, correspond to the high-inflation periods.
[1]Net domestic assets of the consolidated banking system for Peru.

placed considerable resources in the hands of the central bank, which lent them without regard to sound lending practices. Thus, the Peruvian financial crisis is a classic example of a central bank abandoning its traditional role of examiner of bank credit decisions for a role of undisciplined primary lender.

**Chart 5. Inflation**
*(Percent)*

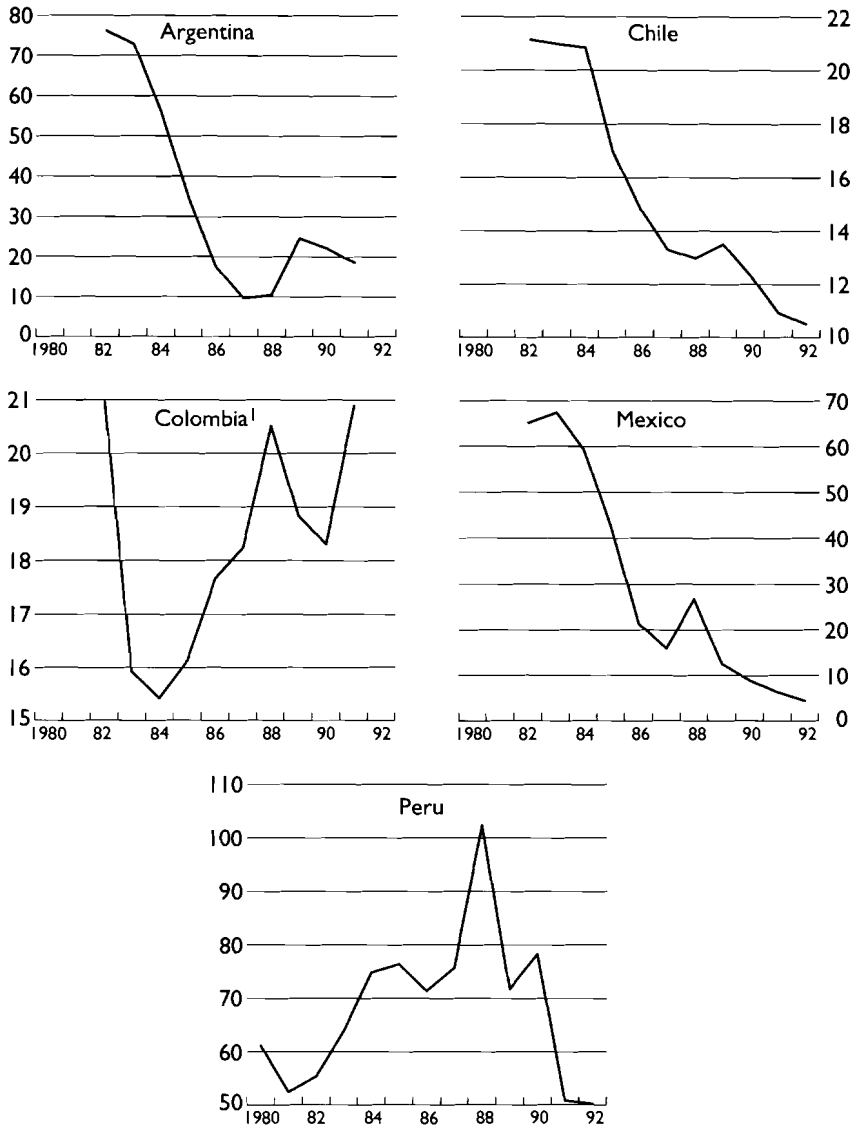



Source: IMF, *International Financial Statistics*, various issues.

## State of the Banking Systems at the Beginning of the 1990s

By the early 1990s, the banking crises in the countries under consideration had largely come to an end. How does the strength of the banking franchise in each of the five countries at the beginning of the 1990s compare with their strength in the early 1980s? The early 1990s is an important time to evaluate the strength of the franchise for two reasons: first, both bankers and regulators have absorbed the lessons from the crisis and, second, the banking systems are facing new challenges to their lending skills in the form of renewed capital inflows from overseas.

**Chart 6. Cash Assets to Deposits**
*(Percent)*



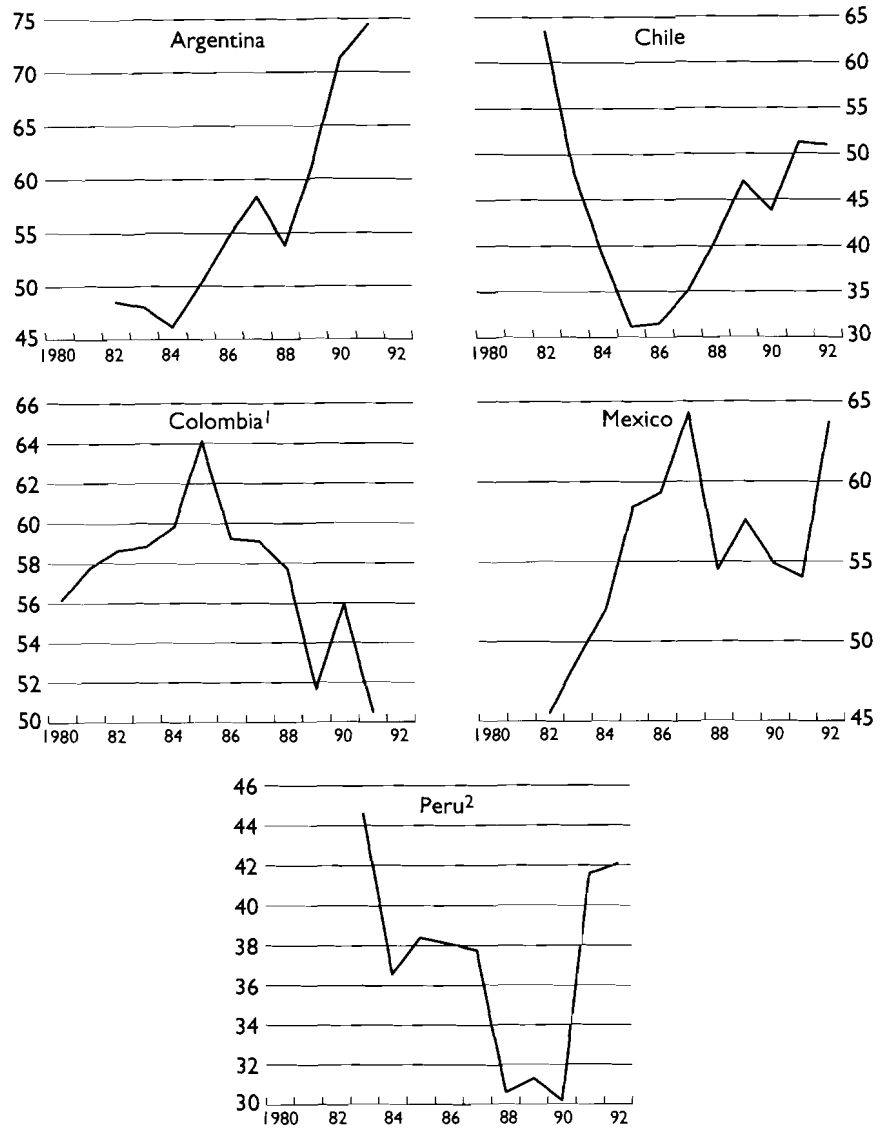

Sources: Argentina, Superintendencia de Entidades Financieras y Cambiarias, *Estados Contables de las Entidades Financieras*, various issues, and Central Bank of Argentina; Chile, Superintendencia de Bancos e Instituciones Financieras, *Información Financiera;* Colombia, Banco de la República; Mexico, Comisión Nacional Bancaria; Peru, Superintendencia de Banca y Seguros; and IMF staff estimates.

[1]Estimate for the entire banking system (including commercial banks, finance corporations, and savings and loan corporations).

In addition to evaluating the franchise value of banks based on the two ratios considered at the beginning of this section, the discussion that follows examines the franchise value from the perspective of financial investors—that is, the willingness of the public to keep financial funds in the domestic banking sector, as measured by the ratio of deposits to GDP.[43]

[43]As discussed in Section II, ratios of nonperforming loans to total loans do not provide a good indicator of bank soundness in

**Chart 7. Loans to Assets**
*(Percent)*




Sources: Chile, Superintendencia de Bancos e Instituciones Financieras, Información Financiera; Colombia, Banco de la República, *Revista del Banco de la Republica;* Mexico, Comisión Nacional Bancaria; and Peru, Superintendencia de Banca y Seguros.

[1]Commercial banks only.

[2]Data for total assets held by commercial banks are not available for 1982.

developing countries because banks could be rolling over problem loans. In this connection, recent restructurings of the banking system that have forced banks to recognize problem loans as such in the accounting procedures may lead to the misleading conclusion that bank difficulties have increased.

The behavior of the franchise ratios—cash to deposits and loans to assets—during the crisis period and the early 1990s is displayed in Charts 6 and 7, respectively. Overall, the ratios indicate an

improvement of the franchise value of the banking systems at the beginning of the 1990s relative to the early 1980s. During the crisis, however, the ratios, affected by the policies used to resolve the banking difficulties, fluctuated significantly in most countries.

In Argentina, Chile, and Mexico, the cash-to-deposit ratio declined significantly during most of the 1980s and into the early 1990s (Chart 6). In Mexico, the decline in cash assets resulted from a major decline in the ratio of required reserves to deposits, ultimately falling to zero in the early 1990s. In Argentina, the decline in cash assets to deposits also resulted from a decrease in reserve requirements, which, in 1982, were 100 percent on new deposits.

In Colombia, cash assets fell relative to deposits in the mid-1980s as banks divested themselves of cash assets to cover nonperforming loans. Although by 1991 this ratio had returned to its 1982 level, reductions in reserve requirements in early 1993 suggest that the ratio may have declined again. In Peru, cash assets increased relative to deposits throughout the 1980s. The large increase in 1988 occurred because banks held excess reserves on which they earned interest. By the early 1990s, Peru had reduced reserve requirements on both domestic and foreign currency deposits, but they remained substantially higher than those of any other sample country. Moreover, by early 1994 a portion of reserve requirements on foreign currency deposits still earned interest.

The loan-to-asset ratios in Argentina and Mexico improved substantially during the 1980s (Chart 7). Mexico experienced an interruption in the improvement in this ratio in the late 1980s owing to heavy bank investment in government securities, which was the result of a government program that allocated a significant component of banks' assets.

In Chile, the loan-to-asset ratio declined during 1982–86 following the central bank program to rescue banks, which, as discussed above, involved replacing nonperforming loans with central bank liabilities and removing troubled loans and liabilities from bank balance sheets. After 1986, as faith was restored in the banking system, the loan-to-asset ratio again began to improve. It remained below its 1982 level, however. In Peru, as in Chile, the loan-to-asset ratio did not materially improve between 1982 and 1992, and it remained the lowest of the five countries. It fell substantially in the mid- to late 1980s as the cash-to-deposit ratio increased. By the early 1990s, the loan-to-asset ratio had deteriorated moderately in Colombia relative to its position in 1982. The temporary increase in the loan-to-asset ratio in the mid-1980s reflected the decline in the ratio of cash to deposits during that period.

In the three countries with weak franchises, as measured by the ratios in 1982, there was considerable financial disintermediation during the crisis. In Argentina, the deposit-to-GDP ratio fell from about 19 percent in the early 1980s to less than 10 percent during the early 1990s. The pattern in Peru was similar. The ratio fell from about 15 percent in the early 1980s to 10 percent in 1992. In Mexico, the ratio fell to less than 10 percent in 1988 from almost 30 percent in the early 1980s (Chart 8).[44]

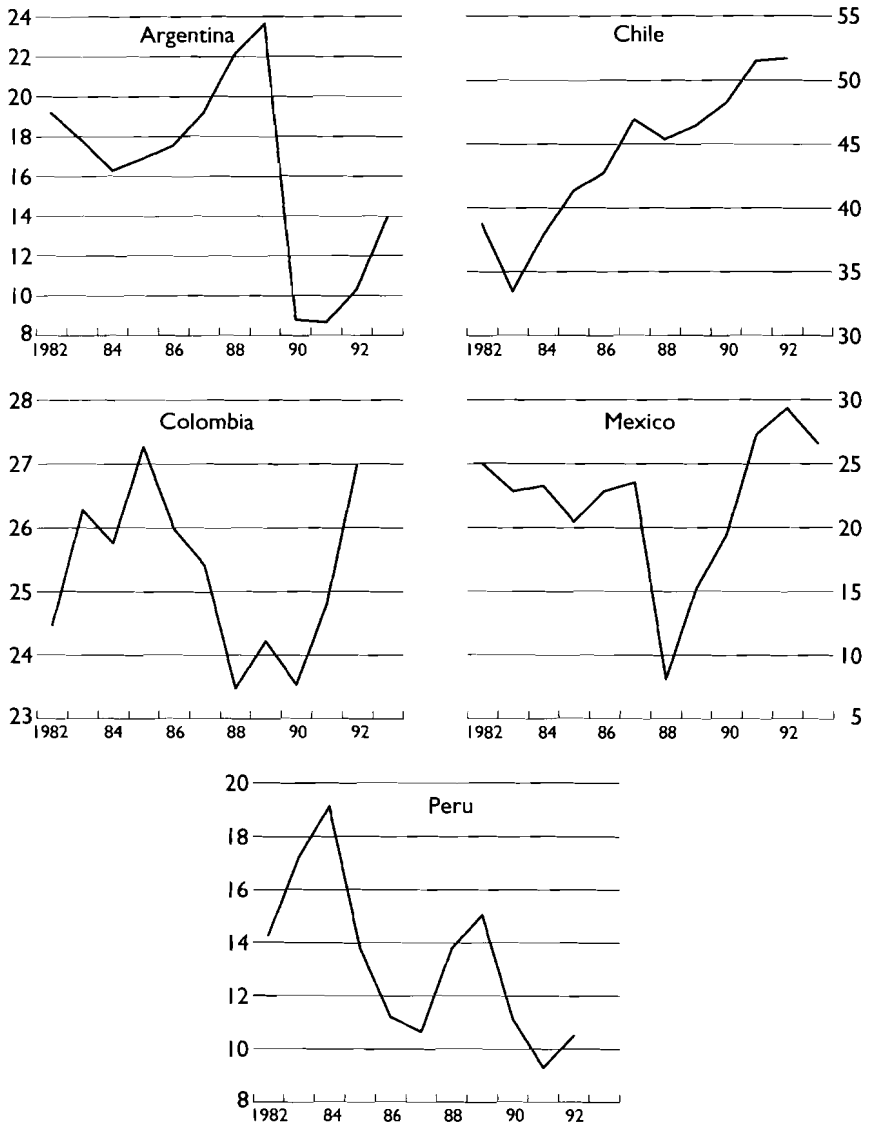
Because of the extreme disintermediation in the countries with weak franchises, means of transacting had to be found outside the usual deposit channels. In Argentina and Peru, informal payments markets developed. Trade credit between firms increased dramatically. In contrast, Mexico developed the liquidity of the short-term government bills (CETES) market. Banks purchased these bills from securities firms under repurchase agreements, making them very liquid instruments that could substitute for bank deposits.

The deposit-to-GDP ratio in Mexico recovered in the early 1990s, exceeding its 1982 level by 1991, which is consistent with the finding that the franchise ratios improved. In the early 1990s, banks were privatized and supervision has recently been strengthened. Banks experienced some credit problems after privatization, which they have dealt with by increasing provisions for nonperforming loans and slowing lending growth. In addition, between 1991 and 1992 the capital-to-assets ratio strengthened after a fall during the early years of privatization (Chart 3). Investors are apparently satisfied that the banking system is fairly well managed. Based on this confidence, Mexico, alone among the weak franchise systems in 1982, joined the relatively strong franchise group by the early 1990s.

In contrast, by 1992, investors in Argentina had not yet recovered confidence in the banking system despite the improvement in the ratios. This may have had several causes: the banking crisis in Argentina was much deeper than in Mexico, and, unlike in Mexico, bank ownership is in the same hands as during the crisis. A large segment of the banking system is still in provincial hands, and these banks have, in the past, made loans based more on politics than on sound banking principles.

[44]The sharp decline in the deposit-to-GDP ratio in Mexico in 1988 (Chart 8) is somewhat overstated because of a bank liability, called banker's acceptances, that had many of the characteristics of a bank deposit but was not classified as such. In 1988, banker's acceptances, unlike bank deposits, were not subject to interest rate ceilings, and, in that year, the rules guiding their issuance were liberalized.

**Chart 8. Total Deposits**
*(Percent of GDP)*




Sources: IMF, *International Financial Statistics*, various issues, and *World Economic Outlook*, various issues; Central Bank of Argentina; Chile, Superintendencia de Bancos e Instituciones Financieras, *Información Financiera*; Colombia, Banco de la República; Mexico, Comisión Nacional Bancaria; Peru, Superintendencia de Banca y Seguros; and IMF staff estimates.

## Appendix Tables

**Table A1. Argentina: Summary Accounts of the Financial System**
*(Percent of GDP)*

| Balance Sheet Item | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Consolidated financial system | | | | | | | | | | | |
| Net foreign assets | (10.16) | (12.52) | (12.13) | (16.02) | (14.72) | (19.03) | (18.45) | (36.69) | (39.93) | (18.20) | (9.89) |
| Net domestic assets | 31.31 | 34.09 | 32.64 | 32.61 | 33.05 | 39.56 | 41.85 | 55.78 | 52.58 | 28.03 | 22.59 |
| Credit to public sector | 11.79 | 19.35 | 15.09 | 13.01 | 14.12 | 19.29 | 25.38 | 44.46 | 33.21 | 14.61 | 10.44 |
| Credit to private sector | 28.49 | 23.65 | 19.34 | 16.02 | 15.93 | 18.47 | 18.18 | 23.61 | 19.63 | 12.59 | 15.54 |
| Liabilities to private sector | 21.15 | 21.57 | 20.51 | 16.78 | 18.23 | 20.57 | 23.40 | 19.09 | 12.65 | 9.84 | 12.70 |
| Central Bank | | | | | | | | | | | |
| Net international reserves | (3.70) | (6.14) | (7.08) | (9.43) | (9.52) | (13.03) | (12.15) | (30.57) | (33.01) | (15.38) | (7.26) |
| Assets | 2.65 | 2.57 | 2.26 | 5.26 | 4.05 | 2.77 | 3.92 | 4.46 | 10.40 | 5.00 | 4.85 |
| Liabilities | 4.68 | 6.70 | 7.21 | 12.25 | 11.60 | 13.85 | 14.75 | 28.70 | 36.22 | 14.85 | 8.36 |
| Treasury liabilities[2] | 1.66 | 2.01 | 2.12 | 2.56 | 2.01 | 2.04 | 1.53 | 6.33 | 7.19 | 5.53 | 4.00 |
| Net domestic assets | 23.48 | 24.19 | 20.75 | 26.01 | 24.64 | 27.47 | 29.61 | 41.95 | 38.26 | 19.70 | 12.12 |
| Credit to public sector | 7.31 | 17.38 | 13.49 | 13.20 | 13.02 | 15.69 | 21.78 | 35.95 | 22.93 | 10.59 | 8.00 |
| Credit to financial system | 21.84 | 12.73 | 12.02 | 8.67 | 13.12 | 16.46[3] | 20.61 | 29.62 | 21.06 | 9.91 | 9.22 |
| Liabilities to financial system | 15.17 | 13.36 | 9.50 | 12.44 | 10.92 | 10.46 | 13.50 | 5.77 | 1.97 | 1.44 | 1.47 |
| Liabilities to private sector | 3.94 | 4.16 | 3.93 | 3.96 | 4.61 | 3.99 | 3.87 | 5.60 | 3.27 | 2.88 | 3.39 |
| Commercial banks | | | | | | | | | | | |
| Net foreign assets | (6.46) | (6.38) | (5.05) | (6.41) | (5.21) | (5.53) | (6.21) | (5.92) | (6.93) | (2.80) | (2.59) |
| Net domestic assets | 24.46 | 16.46 | 24.89 | 14.33 | 16.03 | 10.89 | 11.79 | 40.21 | 28.93 | 18.19 | 19.47 |
| Credit to public sector | 4.36 | 1.90 | 1.56 | (0.19) | 1.00 | 3.43 | 3.60 | 8.53 | 10.23 | 3.99 | 2.42 |
| Credit to private sector | 25.34 | 20.94 | 17.75 | 15.46 | 15.62 | 17.06 | 17.82 | 23.33 | 19.55 | 12.47 | 15.35 |
| Reserves[4] | 14.57 | 13.01 | 9.39 | 12.44 | 11.12 | 10.50 | 13.41 | 11.79 | 1.95 | 1.60 | 1.54 |
| Liabilities to Central Bank | 16.56 | 6.79 | 13.22 | 7.92 | 8.21 | —[3] | — | 28.45 | 14.63 | 10.11 | 9.23 |
| Liabilities to private sector | 16.00 | 16.30 | 16.01 | 12.44 | 13.82 | 15.81 | 18.99 | 13.05 | 9.32 | 6.88 | 9.19 |

Sources: Central Bank of Argentina; Ministry of Economy; IMF, *International Financial Statistics*, various issues; and IMF staff estimates.

[1]Preliminary data.

[2]Foreign currency bonds (BONEX, BOTE, BOTESO, and BOCON). The item also encompasses the adjustment for BONEX included in the BCRA's reserve assets.

[3]The decomposition of central bank credit by financial institutions is not available.

[4]Includes bonds and frozen deposits in the central bank.

## Table A2. Mexico: Summary Accounts of the Financial System
*(Percent of GDP)*

| Balance Sheet Item | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Financial system | | | | | | | | | | | | |
| Net foreign assets | −1.09 | 3.64 | 4.66 | 3.88 | 4.49 | 12.51 | 1.89 | 1.28 | 1.76 | 3.16 | 3.26 | 3.92 |
| Net domestic credit | 67.84 | 54.76 | 49.58 | 51.76 | 70.35 | 61.21 | 42.21 | 43.15 | 39.10 | 40.82 | 35.48 | 40.79 |
| Credit to public sector[2] | 50.85 | 44.20 | 36.67 | 38.45 | 55.43 | 48.45 | 30.85 | 27.51 | 21.15 | 16.52 | 11.58 | 5.42 |
| Credit to private sector | 16.01 | 14.78 | 16.08 | 14.42 | 15.05 | 15.70 | 13.98 | 19.14 | 23.10 | 28.99 | 29.34 | 38.74 |
| Other foreign liabilities[3] | 32.83 | 27.55 | 22.53 | 27.16 | 42.42 | 42.89 | 21.70 | 19.70 | 14.38 | 13.19 | 11.59 | 12.83 |
| Other liabilities[4] | 2.72 | 1.89 | 2.33 | 2.12 | 2.62 | 2.56 | 2.26 | 2.30 | 1.81 | 1.91 | 1.75 | 2.12 |
| Money and quasi money | 31.20 | 28.96 | 29.37 | 26.35 | 29.80 | 28.26 | 20.14 | 22.43 | 24.66 | 28.87 | 25.39 | 29.75 |
| Bank of Mexico | | | | | | | | | | | | |
| Net foreign assets | −1.93 | 2.82 | 4.24 | 2.38 | 2.27 | 9.76 | 1.05 | 0.40 | 1.77 | 4.16 | 3.92 | 4.98 |
| Assets | 1.64 | 4.13 | 5.85 | 4.78 | 8.11 | 15.73 | 3.86 | 3.82 | 4.64 | 6.61 | 5.98 | 6.42 |
| Liabilities[5] | −3.57 | −1.31 | −1.61 | −2.39 | −5.84 | −5.97 | −2.81 | −3.42 | −2.87 | −2.45 | −2.05 | −1.44 |
| Net domestic credit | 7.07 | 0.97 | −0.43 | 1.27 | 1.59 | −5.97 | 2.32 | 3.15 | 1.82 | −0.41 | −1.00 | −2.20 |
| Credit to public sector | 21.01 | 16.65 | 12.71 | 12.10 | 12.45 | 5.10 | 8.06 | 7.50 | 5.84 | 2.48 | 2.02 | −0.86 |
| Net credit to fin. inst.[6] | −11.96 | −13.59 | −12.40 | −9.02 | −8.57 | −5.82 | −3.12 | −1.87 | −1.30 | −0.22 | −0.51 | 0.80 |
| Net credit to banks[7] | −12.84 | −13.55 | −12.14 | −8.12 | −6.62 | −3.57 | −1.71 | −0.95 | −0.86 | −0.71 | −0.43 | −0.22 |
| Credit to private sector | 0.18 | 0.16 | 0.15 | 0.19 | 0.30 | 0.30 | 0.15 | 0.14 | 0.12 | 0.12 | 0.12 | 0.12 |
| Currency in circulation | 5.14 | 3.79 | 3.80 | 3.65 | 3.86 | 3.79 | 3.37 | 3.55 | 3.58 | 3.75 | 2.92 | 2.78 |
| Commercial banks[8] | | | | | | | | | | | | |
| Net foreign assets | 0.77 | 0.62 | 0.31 | 1.21 | 1.71 | 2.32 | 0.62 | 0.67 | −0.16 | −1.22 | −0.93 | −1.27 |
| Net claims on Bank of Mexico | 12.85 | 13.85 | 12.61 | 8.02 | 6.50 | 3.44 | 1.70 | 0.81 | 0.80 | 0.73 | 0.48 | 0.32 |
| Net domestic credit | 22.25 | 18.73 | 18.82 | 20.15 | 28.16 | 27.87 | 19.72 | 23.76 | 26.25 | 30.94 | 27.21 | 31.52 |
| Credit to public sector | 7.82 | 7.39 | 7.01 | 9.99 | 17.10 | 16.15 | 9.65 | 8.73 | 7.76 | 7.90 | 4.29 | 1.29 |
| Credit to private sector | 13.77 | 11.37 | 12.44 | 10.90 | 11.04 | 11.68 | 10.57 | 16.07 | 20.63 | 26.43 | 26.67 | 34.53 |
| Other foreign liabilities[3,9] | 10.00 | 8.77 | 6.80 | 7.36 | 10.82 | 8.96 | 5.21 | 5.69 | 5.38 | 5.02 | 4.42 | 4.59 |
| Other liabilities[10] | 2.37 | 2.22 | 2.15 | 1.93 | 2.36 | 2.27 | 1.93 | 2.02 | 1.68 | 1.72 | 1.58 | 1.88 |
| Money and quasi money[11] | 23.49 | 22.21 | 22.78 | 20.09 | 23.20 | 22.41 | 14.91 | 17.52 | 19.83 | 23.71 | 20.77 | 24.10 |
| Government development banks | | | | | | | | | | | | |
| Net foreign assets | 0.08 | 0.17 | 0.11 | 0.29 | 0.50 | 0.42 | 0.21 | 0.21 | 0.14 | 0.22 | 0.26 | 0.21 |
| Net claims on Bank of Mexico | −0.31 | −0.05 | −0.17 | −0.18 | −0.28 | 0.13 | 0.01 | 0.13 | 0.06 | −0.02 | −0.05 | −0.10 |
| Net domestic credit | 25.98 | 21.32 | 18.34 | 22.50 | 34.37 | 35.73 | 18.45 | 15.29 | 10.16 | 9.58 | 8.83 | 11.26 |
| Credit to public sector | 22.01 | 20.87 | 17.36 | 16.36 | 25.87 | 27.20 | 13.15 | 11.28 | 7.55 | 6.14 | 5.27 | 4.98 |
| Credit to private sector | 2.07 | 2.54 | 3.26 | 3.33 | 3.71 | 3.72 | 3.25 | 2.92 | 2.34 | 2.44 | 2.55 | 4.09 |
| Other foreign liabilities[3,9] | 22.82 | 18.65 | 15.48 | 19.80 | 31.60 | 33.93 | 16.49 | 14.01 | 9.00 | 8.18 | 7.17 | 8.24 |
| Other liabilities[4] | 0.35 | 0.21 | 0.14 | 0.19 | 0.25 | 0.29 | 0.33 | 0.28 | 0.13 | 0.19 | 0.17 | 0.24 |
| Money and quasi money[11] | 2.57 | 2.58 | 2.66 | 2.61 | 2.74 | 2.06 | 1.86 | 1.35 | 1.24 | 1.42 | 1.71 | 2.88 |

Sources: Bank of Mexico; IMF, *International Financial Statistics*, various issues; and IMF staff estimates.

[1]September 1993 data.

[2]Net credit to federal government plus net credit to other public sector.

[3]Sum of medium- and long-term liabilities plus money and quasi money in foreign currency.

[4]Liabilities to nonbank financial public sector (which excludes liabilities to official trust funds of the Bank of Mexico); it also includes capital and surplus for 1982–84.

[5]For 1982, balance of payments support loan from Bank for International Settlements (BIS) was included as a foreign reserve liability of the monetary authorities and only a portion appears as credit to the federal government.

[6]The sum of the following categories: net credit to official trust funds of Bank of Mexico, net claims on other government-related financial corporations, net credit to commercial banks, and net credit to government development banks.

[7]Sum of net credit to commercial banks plus net credit to government development banks.

[8]Data for 1985–92 are significantly revised in late 1980s, and hence the 1981–83 data are not strictly consistent with the 1985–92 data.

[9]Medium- and long-term liabilities item included in this category also include net disbursements under Commodity Credit Corporation (CCC) loans in 1983, 1984, and 1985.

[10]Liabilities to nonbank financing public sector (which excludes liabilities to official trust funds of the Bank of Mexico) for 1985–92; it also includes liabilities to the rest of the banking system for 1983 and 1984 and capital and surplus for 1982.

[11]Excludes public sector deposits incorrectly classified as private sector deposits.

**Table A3. Peru: Summary Accounts of the Financial System**
*(Percent of GDP)*

| Balance Sheet Item | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Consolidated banking system | | | | | | | | | | | |
| Net international reserves | 4.43 | 0.34 | 2.62 | 6.74 | 1.86 | −2.21 | −10.98 | −0.28 | 0.13 | 4.05 | 3.50 |
| Medium- and long-term foreign assets | −1.73 | −1.88 | −1.29 | −1.19 | −0.29 | −0.02 | 0.44 | 0.81 | 1.82 | 0.47 | 0.37 |
| Net domestic assets | 19.40 | 25.72 | 25.46 | 16.64 | 16.27 | 21.19 | 33.69 | 19.53 | 15.55 | 7.21 | 4.51 |
| Nonfinancial public sector | 5.26 | 8.33 | 4.06 | −1.33 | 1.52 | 4.85 | 1.55 | 3.82 | 4.30 | 0.44 | −0.34 |
| Private sector | 18.17 | 20.50 | 20.77 | 15.56 | 13.58 | 13.45 | 14.25 | 11.06 | 11.36 | 7.70 | 6.40 |
| Liabilities to private sector | 22.11 | 24.18 | 26.79 | 22.19 | 17.84 | 18.96 | 23.15 | 20.05 | 17.51 | 11.72 | 8.39 |
| Central Reserve Bank | | | | | | | | | | | |
| Net international reserves | 5.23 | 3.90 | 6.40 | 10.42 | 3.83 | −0.46 | −6.45 | 0.37 | 1.44 | 3.22 | 2.98 |
| Assets | 9.49 | 11.64 | 15.10 | 16.68 | 7.35 | 4.51 | 10.18 | 6.01 | 11.53 | 6.79 | 5.26 |
| Liabilities | 4.26 | 7.74 | 8.70 | 6.27 | 3.52 | 4.97 | 16.63 | 5.63 | 10.08 | 3.57 | 2.28 |
| Medium- and long-term foreign assets | −0.40 | 0.26 | 0.27 | −0.92 | −0.26 | −0.08 | 0.05 | 0.46 | 1.19 | 0.30 | 0.23 |
| Net domestic assets | −1.02 | −0.35 | −2.62 | −4.66 | 1.37 | 6.80 | 14.38 | 5.11 | 2.68 | −1.24 | −1.65 |
| Nonfinancial public sector | 2.89 | 3.58 | −0.90 | −3.91 | −0.94 | 1.51 | −6.50 | −0.99 | −2.14 | −0.47 | −0.62 |
| Banking system | −4.58 | −5.01 | −6.02 | −7.14 | −2.54 | −0.72 | −0.57 | 3.07 | −0.29 | −1.89 | −1.64 |
| Private sector | 0.24 | 0.36 | 0.26 | 0.07 | 0.05 | 0.03 | 0.05 | 0.04 | 0.03 | 0.02 | 0.01 |
| Liabilities to private sector | 3.81 | 3.82 | 4.05 | 4.84 | 4.95 | 6.26 | 7.98 | 5.94 | 5.31 | 2.29 | 1.56 |
| National Bank | | | | | | | | | | | |
| Net international reserves | −0.19 | −2.91 | −2.67 | −2.08 | −1.09 | −1.07 | −3.61 | −1.47 | −1.95 | 0.32 | 0.15 |
| Medium- and long-term foreign assets | −0.75 | −0.86 | −0.27 | −0.13 | 0.05 | 0.08 | 0.22 | 0.21 | 0.37 | 0.04 | 0.04 |
| Net domestic assets | 1.74 | 4.78 | 4.35 | 3.83 | 1.99 | 1.92 | 5.42 | 2.18 | 2.73 | −0.06 | 0.02 |
| Nonfinancial public sector | 1.09 | 3.52 | 4.33 | 1.71 | 2.20 | 2.81 | 6.58 | 3.57 | 6.15 | 0.84 | 0.30 |
| Banking system | 0.69 | 1.44 | 0.95 | 3.14 | 1.07 | 1.33 | 0.39 | −0.37 | −0.56 | −0.07 | 0.32 |
| Private sector | 0.69 | 0.65 | 0.59 | 0.48 | 0.27 | 0.30 | 0.37 | 0.30 | 0.38 | 0.29 | 0.27 |
| Liabilities to private sector | 0.80 | 1.02 | 1.42 | 1.62 | 0.95 | 0.92 | 2.04 | 0.92 | 1.15 | 0.31 | 0.22 |
| Commercial banks | | | | | | | | | | | |
| Net international reserves | 0.42 | −0.87 | −1.16 | −1.62 | −0.71 | −0.62 | −0.55 | 0.87 | 0.92 | 0.72 | 0.52 |
| Medium- and long-term foreign assets | 0.06 | 0.18 | 0.27 | 0.25 | 0.11 | 0.18 | 0.52 | 0.28 | 0.51 | 0.20 | 0.16 |
| Net domestic assets | 14.13 | 17.10 | 19.35 | 14.83 | 11.11 | 10.54 | 11.89 | 10.65 | 8.75 | 7.72 | 5.65 |
| Nonfinancial public sector | 0.29 | 0.84 | 0.41 | 0.42 | −0.08 | 0.33 | 0.35 | 0.84 | −0.03 | −0.13 | −0.15 |
| Banking system | 4.93 | 5.52 | 7.78 | 5.73 | 3.99 | 3.21 | 3.00 | 0.91 | 2.34 | 2.09 | 1.53 |
| Private sector | 9.79 | 11.68 | 10.94 | 8.86 | 7.27 | 6.84 | 8.57 | 7.41 | 7.68 | 5.57 | 4.85 |
| Liabilities to private sector | 14.61 | 16.41 | 18.46 | 13.46 | 10.52 | 10.10 | 11.86 | 11.80 | 10.17 | 8.64 | 6.34 |
| Development banks | | | | | | | | | | | |
| Net international reserves | −0.34 | 0.22 | 0.04 | 0.02 | −0.18 | −0.06 | −0.37 | −0.06 | −0.28 | −0.21 | −0.16 |
| Medium- and long-term foreign assets | −1.32 | −1.46 | −1.56 | −0.39 | −0.20 | −0.21 | −0.35 | −0.14 | −0.24 | −0.08 | −0.06 |
| Net domestic assets | 4.54 | 4.18 | 4.37 | 2.65 | 1.79 | 1.93 | 1.99 | 1.58 | 1.39 | 0.78 | 0.49 |
| Nonfinancial public sector | 0.99 | 0.37 | 0.21 | 0.45 | 0.34 | 0.20 | 1.11 | 0.39 | 0.32 | 0.20 | 0.14 |
| Banking system | −1.22 | −2.36 | −3.03 | −1.84 | −2.55 | −3.13 | −3.16 | −3.65 | −1.62 | −0.21 | −0.22 |
| Private sector | 7.56 | 8.87 | 8.98 | 6.15 | 5.99 | 6.27 | 5.25 | 3.31 | 3.28 | 1.82 | 1.27 |
| Liabilities to private sector | 2.88 | 2.93 | 2.86 | 2.27 | 1.42 | 1.67 | 1.27 | 1.38 | 0.87 | 0.49 | 0.28 |

Sources: Central Reserve Bank of Peru; IMF, *International Financial Statistics*, various issues; and IMF staff estimates.
[1]June 1992 data.

## Table A4. Chile: Summary Accounts of the Financial System
*(Percent of GDP)*

| Balance Sheet Items | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Financial system | | | | | | | | | | | |
| Net international reserves | 1.81 | 2.36 | 7.02 | 5.83 | 4.81 | 1.63 | 4.88 | 4.73 | 14.74 | 17.50 | 16.60 |
| Net domestic assets | 54.00 | 73.44 | 93.10 | 106.50 | 101.97 | 96.94 | 77.80 | 69.98 | 63.88 | 67.45 | 67.21 |
| Nonfinancial public sector | −1.99 | 3.39 | 5.61 | 3.09 | 1.29 | 2.32 | −5.39 | −10.61 | −7.94 | −6.32 | −8.30 |
| Private sector | 66.69 | 77.75 | 86.20 | 82.51 | 79.87 | 53.22 | 51.39 | 57.08 | 56.12 | 60.00 | 63.22 |
| Net medium- and long-term foreign liabilities | 18.09 | 40.38 | 61.81 | 69.26 | 60.59 | 49.48 | 31.35 | 17.64 | 14.05 | 9.99 | 7.81 |
| Liabilities to the private sector | 37.71 | 35.42 | 38.30 | 43.07 | 46.18 | 49.10 | 51.33 | 57.06 | 64.57 | 74.95 | 76.00 |
| Central Bank | | | | | | | | | | | |
| Net international reserves | 5.65 | 6.87 | 7.49 | 7.68 | 7.36 | 5.50 | 9.21 | 10.21 | 20.11 | 20.98 | 23.69 |
| Assets | 6.28 | 11.97 | 16.00 | 17.54 | 15.60 | 14.94 | 15.31 | 15.52 | 24.96 | 24.25 | 25.70 |
| Liabilities | 0.63 | 5.10 | 8.51 | 9.87 | 8.24 | 9.44 | 6.10 | 5.31 | 4.84 | 3.28 | 2.01 |
| Net domestic assets | 0.64 | 11.81 | 21.67 | 30.56 | 31.85 | 24.00 | 12.15 | 3.68 | −7.81 | −10.47 | −14.65 |
| Net credit to nonfinancial public sector[2] | 0.16 | 0.48 | 4.77 | 2.24 | 1.15 | −0.42 | −3.28 | −9.42 | −5.83 | −4.34 | −6.14 |
| Net credit to financial intermediaries | 6.80 | 16.47 | 10.42 | 2.76 | −1.93 | −25.53 | −23.07 | −17.61 | −28.40 | −27.33 | −25.50 |
| Credit to private sector | 0.22 | 0.98 | 0.83 | 0.70 | 0.82 | 0.22 | 0.18 | 0.09 | 0.08 | 0.06 | 0.03 |
| Net medium- and long-term foreign liabilities | 1.95 | 11.60 | 21.73 | 27.87 | 27.34 | 26.23 | 18.00 | 10.62 | 8.95 | 7.14 | 5.55 |
| Liabilities to private sector | 4.33 | 7.08 | 7.44 | 10.37 | 11.87 | 3.26 | 3.35 | 3.27 | 3.35 | 3.36 | 3.49 |
| Bank and nonbank financial intermediaries | | | | | | | | | | | |
| Net international reserves | ... | ... | ... | ... | ... | −3.87 | −4.33 | −5.49 | −5.37 | −3.48 | −7.09 |
| Net domestic assets | ... | ... | ... | ... | ... | 57.40 | 49.17 | 46.61 | 45.14 | 43.38 | 47.32 |
| Nonfinancial public sector | ... | ... | ... | ... | ... | 0.93 | −3.00 | −1.87 | −2.53 | −2.30 | −2.43 |
| Net credit to financial intermediaries | ... | ... | ... | ... | ... | 14.59 | 11.77 | 4.51 | 8.98 | 6.71 | 6.40 |
| Credit to private sector | ... | ... | ... | ... | ... | 51.63 | 48.82 | 53.21 | 50.09 | 47.88 | 51.53 |
| Net medium- and long-term foreign liabilities[3] | ... | ... | ... | ... | ... | 23.24 | 13.35 | 7.03 | 5.10 | 2.85 | 2.25 |
| Liabilities to private sector | ... | ... | ... | ... | ... | 30.29 | 31.50 | 34.10 | 34.66 | 37.05 | 37.98 |
| Pension funds | | | | | | | | | | | |
| Net international reserves | ... | ... | ... | ... | ... | — | — | — | — | — | — |
| Net domestic assets | ... | ... | ... | ... | ... | 15.54 | 16.48 | 19.69 | 26.55 | 34.54 | 34.53 |
| Nonfinancial public sector | ... | ... | ... | ... | ... | 1.81 | 0.89 | 0.68 | 0.42 | 0.32 | 0.26 |
| Net credit to financial interm. | ... | ... | ... | ... | ... | 12.30 | 13.19 | 15.23 | 20.68 | 22.61 | 22.98 |
| Credit to private sector | ... | ... | ... | ... | ... | 1.37 | 2.39 | 3.78 | 5.96 | 12.07 | 11.66 |
| Net medium- and long-term foreign liabilities | ... | ... | ... | ... | ... | — | — | — | — | — | — |
| Liabilities to private sector | ... | ... | ... | ... | ... | 15.54 | 16.48 | 19.69 | 26.55 | 34.54 | 34.53 |

Sources: Central Bank of Chile; and IMF staff estimates.

[1]Preliminary data.

[2]Excludes holdings of treasury notes on account of the 1983–86 capitalization of the central bank, which are included in other net domestic assets.

[3]Includes foreign liabilities on account of deposits placed by the corporate sector in the Central Bank in the context of the 1983–85 rescheduling agreements with foreign commercial banks.

## Table A5. Colombia: Summary Accounts of the Financial System
*(Percent of GDP)*

| Balance Sheet Item | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Financial system | | | | | | | | | | | |
| Net international reserves | 7.36 | 3.29 | 0.88 | 2.01 | 7.60 | 7.28 | 8.58 | 8.68 | 9.40 | 15.09 | 15.05 |
| Net domestic assets | 31.57 | 36.15 | 38.56 | 39.42 | 31.08 | 31.98 | 28.81 | 30.74 | 23.78 | 22.00 | 25.12 |
| Public sector (net)[1] | 4.01 | 7.61 | 10.59 | 8.84 | 3.94 | 4.99 | 4.70 | 4.75 | 4.07 | 3.82 | 3.60 |
| Private sector | 33.79 | 36.28 | 36.24 | 37.01 | 34.18 | 35.17 | 34.59 | 36.26 | 30.78 | 27.85 | 30.11 |
| Liabilities to private sector | 38.93 | 39.44 | 39.44 | 41.43 | 38.68 | 39.26 | 37.39 | 39.42 | 33.19 | 37.09 | 40.17 |
| Banco de la República[2] | | | | | | | | | | | |
| Net international reserves | 10.88 | 6.71 | 3.40 | 5.58 | 9.57 | 9.10 | 10.99 | 10.95 | 12.21 | 16.30 | 17.65 |
| Assets | 10.88 | 6.92 | 3.54 | 6.27 | 9.66 | 9.19 | 11.11 | 11.32 | 12.46 | 16.49 | 17.67 |
| Liabilities | 0.00 | 0.21 | 0.13 | 0.69 | 0.09 | 0.08 | 0.12 | 0.37 | 0.26 | 0.20 | 0.02 |
| Net domestic credit | 2.34 | 6.88 | 9.36 | 7.71 | 1.93 | 2.77 | 1.28 | 1.50 | –0.66 | –1.59 | –1.87 |
| Public sector (net)[3] | 4.21 | 7.43 | 9.77 | 8.14 | 3.34 | 3.95 | 2.87 | 2.44 | 2.34 | 2.22 | 2.20 |
| Net credit to banks[4] | –3.32 | –1.35 | –0.97 | –1.80 | –1.85 | –1.86 | –2.09 | –2.18 | –2.83 | –4.55 | –5.56 |
| Credit to private sector | 0.47 | 0.46 | 0.34 | 0.78 | 0.31 | 0.45 | 0.67 | 1.30 | 0.02 | 0.01 | 0.01 |
| Adjustment account[5] | 3.79 | 4.98 | 4.44 | 4.00 | 2.70 | 2.92 | 3.36 | 3.31 | 3.73 | 4.43 | 4.83 |
| Medium- and long-term foreign liabilities | 0.79 | 0.76 | 0.68 | 1.00 | 1.28 | 1.35 | 1.45 | 1.53 | 1.66 | 1.52 | 1.36 |
| Liabilities to private sector | 8.63 | 7.85 | 7.65 | 8.30 | 7.52 | 7.61 | 7.46 | 7.62 | 6.16 | 8.75 | 9.59 |
| Commercial banks[6] | | | | | | | | | | | |
| Net international reserves | –2.78 | –2.81 | –2.21 | –3.05 | –1.58 | –1.48 | –1.99 | –1.66 | –1.56 | –0.64 | –1.25 |
| Net domestic assets | 19.97 | 20.16 | 18.60 | 19.81 | 18.37 | 18.93 | 18.24 | 18.53 | 15.31 | 14.21 | 16.63 |
| Public sector (net) | 1.34 | 1.29 | 1.55 | 0.91 | 0.79 | 0.83 | 0.79 | 0.94 | –0.47 | –1.08 | –1.77 |
| Net credit to financial instr. | 0.01 | 0.11 | –0.15 | –0.19 | –0.63 | –0.62 | –0.73 | –0.82 | –1.18 | –1.99 | –1.58 |
| Credit to private sector | 14.46 | 15.69 | 14.73 | 14.79 | 13.55 | 14.35 | 14.71 | 14.93 | 15.53 | 13.33 | 14.75 |
| Adjustment account | 0.00 | –0.00 | –0.02 | 0.08 | 0.05 | 0.02 | 0.00 | 0.00 | –0.03 | 0.02 | 0.02 |
| Medium- and long-term foreign liabilities | 0.00 | 0.00 | 0.00 | 0.00 | 0.67 | 0.66 | 0.89 | 0.72 | 0.39 | 0.19 | 0.02 |
| Liabilities to private sector | 17.19 | 17.35 | 16.41 | 16.68 | 16.06 | 16.76 | 15.36 | 16.15 | 13.39 | 13.36 | 15.34 |
| Specialized banks[7] | | | | | | | | | | | |
| Net international reserves | –0.74 | –0.61 | –0.32 | –0.52 | –0.38 | –0.34 | –0.42 | –0.61 | –1.24 | –0.57 | –1.35 |
| Net domestic assets | 14.48 | 15.39 | 16.33 | 18.21 | 16.62 | 16.72 | 16.92 | 18.55 | 17.28 | 18.34 | 19.37 |
| Public sector (net) | –1.52 | –1.11 | –0.73 | –0.21 | –0.19 | 0.21 | 1.04 | 1.38 | 2.20 | 2.67 | 3.17 |
| Net credit to financial instr. | –0.05 | –0.03 | 0.46 | 0.62 | 0.98 | 1.09 | 1.03 | 1.14 | 0.08 | 1.80 | 1.79 |
| Credit to private sector | 18.86 | 20.13 | 21.18 | 21.44 | 20.32 | 20.38 | 19.22 | 20.03 | 15.22 | 14.51 | 15.35 |
| Adjustment account | 0.27 | 0.22 | 0.00 | 0.46 | –0.01 | 0.30 | 0.20 | 0.01 | –0.01 | –0.00 | –0.02 |
| Medium- and long-term foreign liabilities | 0.37 | 0.33 | 0.63 | 0.78 | 1.15 | 1.19 | 1.72 | 2.28 | 2.40 | 2.80 | 2.79 |
| Liabilities to private sector | 13.11 | 14.23 | 15.38 | 16.45 | 15.10 | 14.89 | 14.58 | 15.65 | 13.64 | 14.98 | 15.24 |

Sources: Banco de la República; and IMF staff estimates.

[1]Central administration plus rest of public sector.

[2]Banco de la República accounts were revised in December 1989 to improve the account sectorization between the private and public sectors. Because of this revision, the series of credit flows to the private and public sectors before and after these dates are not strictly comparable.

[3]The category central administration excludes assumption of debt for Col$5,174 million (capitalization of Banco del Estado) and for Col$9,691 million (capitalization of National Electric Finance (FEN) Company) in 1982.

[4]For commercial banks plus specialized banks.

[5]Includes adjustment for exchange rate valuation account before end 1989. Includes capital of Banco de la República and Special Exchange Account.

[6]A new reporting system was introduced for financial system accounts starting in December 1989 and was adjusted in December 1990. Thus, data for end-1989 and end-1990 are not comparable to earlier data.

[7]Comprises development finance corporations, trade finance companies, savings and loan companies, cooperative institutions, and development banks (BANCOLDEX, FINAGRO, FINDETER). A new reporting system for financial system accounts was introduced at end-1990. Data for 1990 are therefore not strictly comparable to earlier data. Data for 1990 exclude PROEXPRO.

# IV New Banking Crisis in Latin America: 1994–95

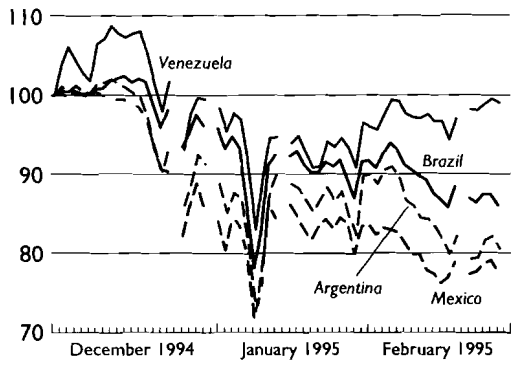
After several years of tight monetary policy in the context of a managed exchange rate system, in 1993 and 1994, the Central Bank of Mexico expanded credit to the banking system at an accelerating pace, increasing by 30 percent in 1993 and by 40 percent on an annualized basis for the first nine months of 1994, compared with an 11 percent increase in 1992. The rapid expansion of domestic credit to the banking system resulted in a loss of international reserves beginning in February 1994. As international investors became skeptical that Mexico could service its large stock of foreign debt, capital inflows, which had characterized the early 1990s, reversed, accelerating the loss in international reserves. Authorities did not respond promptly to these losses by contracting domestic credit; consequently, pressures on the exchange rate became so severe that a major devaluation was unavoidable in December 1994.

Despite a sharp devaluation of the peso and the establishment of an economic program to restore confidence, investors remained uncertain that Mexico had achieved a sustainable solution to its problems; hence, interest rates remained extraordinarily high.

The effect of the Mexican crisis was felt in a number of other Latin American countries, as reflected in the market for Brady bonds and in the prices of equities issued by Latin American firms (see Charts 9 and 10). Argentina, with a strong commitment to a fixed exchange rate, was especially vulnerable to attack. Like Mexico, Argentina had a growing current account deficit and a large stock of foreign debt. Concerns that these factors would lead to a devaluation and a default on foreign debt resulted in a large drop in bank deposits and Brady bond and equity prices.

As a result of the sharp rise in interest rates caused by the exchange rate crisis, severe problems developed in the banking systems of Argentina and Mexico as it became apparent that many borrowers could not meet the interest and principal payments on their debts. Consequently, investors became skeptical about the solvency of banks despite the improvement in the franchise value of banks over the previous few years (see Section III). As the magnitude of the crisis unfolded, policies were put into place to restructure the banking systems.

**Chart 9. Indexes of Brady Bond Prices**
*(December 1, 1994 = 100)*

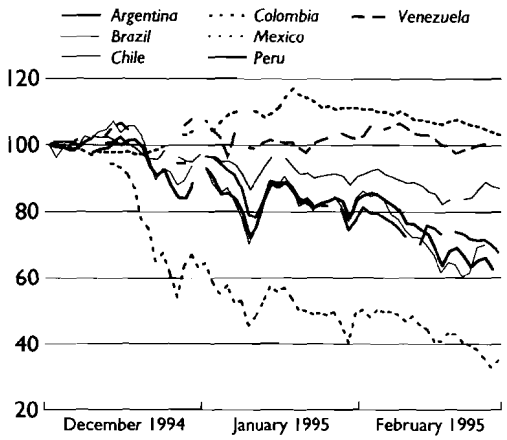



Source: Bloomberg Business News.

As discussed in the previous section, the evidence from the 1980s strongly suggests that the quality of the franchise going into a crisis is an important determinant of the success of bank restructuring programs. To assess the prospects of recovery in the Mexican and Argentine banking systems, this section provides a detailed look at the banking franchises in these two markets on the eve of the 1994–95 crisis. Specifically, it considers whether the following elements are present to facilitate an effective workout process: accurate accounting standards that make it possible for supervisors to evaluate the quality of banks; the presence of a number of well-managed institutions that can absorb banks with poor management; and evidence that bankers and investors perceive that they will suffer losses if banks fail.

It is shown that the overall quality of the banking systems in these markets improved in the early 1990s, as evidenced by the accounting information

**Chart 10. Equity Price Indexes, U.S. Dollar Terms**
*(December 1994 = 100)*




Source: Bloomberg Business News.

available to investors and supervisors for assessing the quality of individual banks. Nevertheless, in retrospect, pockets of weakness have persisted in each system, and, despite the increased reliability of banking data, the authorities permitted weak institutions to expand their balance sheets. As interest rates increased, the weak banks were the first to suffer, and investor skepticism about their soundness exacerbated the crisis.

## Mexico

To assess the strength of the banking franchise in Mexico prior to the 1994 financial crisis, banks are divided into two categories: large banks, which primarily serve corporate customers, and small, retail-oriented banks. At the end of the third quarter of 1994, large banks held about 40 percent of the assets of the Mexican banking system.[45]

[45]The chief characteristic that distinguishes wholesale and retail banks in Mexico is their deposit mix: in 1994, 36 percent of deposits at Mexican wholesale banks were demand deposits, compared with 19 percent at small banks. In contrast, in the United States, wholesale banks have fewer demand deposits as a percentage of deposits than retail banks. Large U.S. corporations hold repurchase agreements for short-term liquidity whereas in Mexico large corporations hold demand deposits. However, Mexican households use cash for liquidity much more frequently than U.S. households.

### Evaluating the Banking Franchise

The first step in evaluating the franchise strength of the Mexican banking system is to determine whether accounting standards permit one to distinguish the relative riskiness of the two classes of banks. Perhaps the most prominent accounting measure of bank soundness is the ratio of capital to risk-weighted assets. The Bank for International Settlements has established a minimum acceptable standard of 8 percent, of which half must be equity capital. According to this standard, risky assets, such as loans, are given a 100 percent risk weighting, which means that each dollar of a loan must be covered by 8 cents worth of capital. The risk weighting of other assets varies according to perceived risk. For example, government securities denominated in home country currency are usually given a zero risk weighting. Hence, they do not require any capital at all.

As a proxy for the ratio of capital to risk-weighted assets, the average loan-to-capital ratio is used. In 1992, this ratio was 13.3 percent for large banks and 10.6 percent for small banks, providing an accounting indication that the retail banks had a riskier portfolio than wholesale banks (see Table 8). The question is whether investors relied on this information in determining where and at what interest rate they placed their funds and whether supervisors used this information to constrain the growth of credit in risky institutions.

During 1992, the assets of large banks grew by 18 percent, and small bank assets grew by 20 percent (Table 8). Thus, it appears that neither the market nor regulators constrained the growth of small banks relative to large banks. An analysis of the funding sources and the interest rates at which each group of banks was able to raise funds, however, makes it clear that the market distinguished between these two types of banks.

As indicated in Chart 11, in late 1992, time deposit interest rates were substantially below the interest rates offered on repurchase agreements collateralized by government securities.[46] Usually, the interest rate on repurchase agreements should be slightly below deposit interest rates because the former is a collateralized loan to a bank whereas the deposit is not collateralized. This was not the case in Mexico in 1992, however, because posted deposit and repurchase agreement interest rates were affected by the riskiness of the institutions raising funds through each instrument.

[46]A repurchase agreement is the sale of a security with an agreement to repurchase at a specified date at a specified price. Thus, for the seller, this agreement is a way to fund a securities portfolio; that is, the agreement is a liability. Hence, banks can use repurchase agreements rather than deposits as a means to fund their securities.

**Table 8. Selected Mexican Banking Data**
*(Percent)*

| Balance Sheet Item | 1992 | 1993 | September 1994 |
|---|---|---|---|
| Capital-to-loans | | | |
| Total banking system | 11.9 | 12.1 | 12.2 |
| Large banks | 13.3 | 13.7 | 13.7 |
| Small banks | 10.6 | 10.7 | 11.1 |
| Asset growth | | | |
| Total banking system | 19.4 | 26.2 | 20.5 |
| Large banks | 18.3 | 11.1 | 14.5 |
| Small banks | 20.4 | 39.7 | 24.8 |
| Loan growth | | | |
| Total banking system | 37.2 | 22.1 | 15.0 |
| Large banks | 34.2 | 6.0 | 7.9 |
| Small banks | 40.3 | 37.8 | 20.4 |
| Deposit growth | | | |
| Total banking system | 17.3 | 18.7 | 13.4 |
| Large banks | 21.6 | 2.1 | 4.7 |
| Small banks | 13.1 | 35.9 | 20.1 |
| Repurchase agreement growth | | | |
| Total banking system | 31.9 | 58.2 | 27.7 |
| Large banks | –8.0 | 65.5 | 41.3 |
| Small banks | 61.6 | 55.1 | 21.5 |

Source: Mexico, Comisión Nacional Bancaria, *Estadística de la Banca Múltiple* (1994).

In 1992, as indicated in Table 8, small banks raised funds primarily through repurchase agreements whereas large banks raised funds primarily by issuing deposits. Deposits at large banks grew by 22 percent during 1992, compared with only 13 percent at small banks. In contrast, repurchase agreements grew by over 60 percent at small banks, compared with negative growth of 8 percent at large banks. The high interest rates in the repurchase market reflected the rates that risky banks had to post to raise funds, whereas the low rates in the deposit market reflected the rates at which safe banks were able to raise funds. The difference in the cost of raising funds in these two markets indicates that investors were well aware of quality differences across banks.

Because investors were willing to supply funds to large banks at relatively low cost, the average cost of funding to average assets at large banks in 1992 was 11.76 percent. This compares with 14.51 percent at small banks.

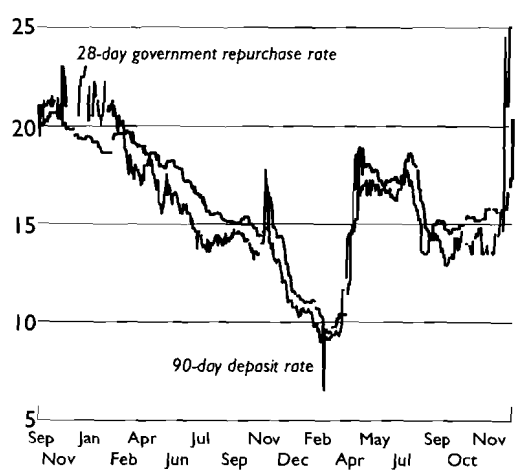
In 1993, the situation changed from that described above. As investors gained confidence in the Mexican economy, interest rates in general declined, and investors became more willing to offer funds to safe and risky banks on similar terms. As indicated in Chart 11, interest rates on repurchase agreements dropped below deposit interest rates, and small banks were active in raising funds in both markets, with their deposits growing by 35 percent and repurchase agreements growing by 55 percent (Table 8).

However, large banks were very cautious about expanding their balance sheets during this mood of increasing confidence. Assets of large banks grew by 11 percent during 1993, compared with almost 40 percent at small banks, and deposits at large banks grew by only 2 percent (Table 8). Large bank restraint was especially remarkable given the expansion in credit to the banks supplied by the central bank in that year.

In addition, large banks strengthened their capital position between the end of 1992 and the end of 1993 relative to small banks: the ratio of capital to average loans at large banks increased from 13.3 percent to 13.7 percent, whereas, for small banks, the ratio increased by only 1/10 of 1 percent, to 10.7 percent.

During the first nine months of 1994, investors perceived increased risk in the Mexican financial environment, and interest rates rose by 800 basis points. Investors, however, showed continued willingness to place funds with small, risky banks, as these banks' assets grew by 25 percent, compared with 14 percent at large banks. An indicator of increased risk taking by small banks is that their loan

**Chart 11. Mexico: Deposit and Repurchase Agreement Rates, Sep. 92–Dec. 94**
*(Percent)*




Source: Mexico, Comisión Nacional Bancaria (1994).

portfolio grew by 20 percent during this period, compared with 8 percent at large banks.[47] As a result, the ratio of loan loss reserves to average loans fell behind the ratio at large banks. At year-end 1993, this ratio stood at 3.7 percent for large banks and 3.9 percent for small banks. By September 1994, it stood at 4.5 percent for large banks and 4.1 percent for small banks.

The fact that relatively risky banks were able to grow rapidly during 1993 and the first nine months of 1994 demonstrates that, in periods of rising economic confidence, the role of the regulator becomes crucial. In 1992, investors restrained riskier banks by demanding premiums on the funds they supplied to these institutions, whereas in 1993 and the first nine months of 1994, this restraint disappeared. Bank supervision was not strong enough to offset the weakened market discipline that permitted small, riskier banks to expand rapidly. While weak supervision did not lead to banking problems during 1993, when prosperity was evident, it became a crucial factor in magnifying the banking problems associated with the crisis in 1994, as will be described below.

During the fourth quarter of 1994, as the crisis unfolded, depositors began to show some preference for quality. As indicated in Chart 11, by the end of the fourth quarter, deposit rates were some 20 percentage points below interest rates on open market paper. Under these conditions, large banks experienced deposit growth of over 17 percent, compared with a 10 percent growth rate at small banks. Assets at the two sets of institutions grew by about 18 percent during the quarter. Unlike 1992, however, small banks could not access the repurchase agreement market for funds to make up for limited access to the deposit market. Instead, asset growth at small banks was financed by credit from the central bank, which grew by over 110 percent at small banks compared with less than 60 percent at large banks.

An evaluation of regulatory and supervisory efforts over the last few years yields mixed results. The authorities have substantially improved accounting standards, thereby allowing investors to evaluate the riskiness of banks. The differences in interest rates among banks at which investors placed deposits indicate that the market distinguished among banks by their quality. Thus, the crisis presents an opportunity to demonstrate that bankers and large depositors taking undue risk will bear the consequences of their actions. Regulators must ensure that those that pay a premium suffer some losses.

At the same time, however, the authorities permitted an excessive expansion of the weakest banks, signaling some deficiencies in supervisory practices. In fact, in late 1994, the authorities actually funded the expansion of weak institutions, rather than placing institutions that could not access the market under strict supervisory control.

### Restructuring the Banking System

The Mexican banking authorities are currently in the process of restructuring their banking system, which has suffered substantial losses. To effect this rescue, they have established a program to recapitalize the banks and a program to restructure nonperforming loans, similar to that used by Chile in the 1980s.

The recapitalization program, known as Programa de Capitalización Temporal, or PROCAPTE, provides for the insurance fund, Fondo Bancario de Protección al Ahorro (FOBAPROA), to lend funds to the banks in the form of subordinated debt that will count as capital. In five years, this debt will be converted to equity. FOBAPROA can exercise conversion rights before the end of the five years if bank capital (excluding the subordinated debt) falls to less than 2 percent of assets or if the regulators believe that the solvency of the bank is impaired.

In the loan restructuring program, the government will issue zero coupon bonds, paying interest indexed to inflation, to a trust fund established for the purpose of holding banks' nonperforming loans. To fund the government bonds, the trust fund will issue liabilities to the government. The trust fund will then exchange the government bonds for nonperforming loans currently held on banks' balance sheets. As a result of these transactions, the trust fund's assets will be nonperforming loans, funded by liablities issued to the government.

Although the loans are held in a trust fund, the banks will remain in charge of managing these loans back to health. The interest on the government bond will be paid from the portfolio of nonperforming loans. The authorities recognize that this program may create liquidity shortages. The zero coupon bond has no cash flow whereas bank deposit liabilities are relatively liquid. If depositors withdraw their funds and accumulated interest, banks will not have the cash flow from their assets to meet these demands. If the liquidity shortage is in U.S. dollars, FOBAPROA will provide liquidity assistance; if it is in pesos, the central bank will provide a facility to purchase securities from banks under short-term repurchase agreements.

[47]Despite the rapid growth in the assets of small banks during the first nine months of 1994, the ratio of capital to average loans at these banks increased from 10.7 percent at the end of 1993 to 11.1 percent at the end of September 1994, indicating some effort to improve their balance sheet quality (Table 8).

To reduce the interest burden on borrowers, the principal of the nonperforming loans will be indexed to inflation.[48] This will also aid the banks in restructuring nonperforming loans because it will give them time to work with borrowers without forcing them into bankruptcy. For this indexation policy to be viable, the principal of liabilities issued by the trust fund to the government must also be indexed.

If the nonperforming loan portfolio cannot earn enough income to pay off the zero coupon bond, the banks must cover the interest and principal on the bond from their own capital account. If this causes a bank's capital account to fall to less than 2 percent, FOBAPROA will have the right to close the bank and sell the assets. If a bank has enough funds to pay off the government bonds but not enough to buy back the subordinated debt of FOBAPROA, the insurance agency maintains a claim on bank income as an equity shareholder at the end of five years.

To reduce the interest rate burden on solvent borrowers, banks will be encouraged to index the principal of their loans to inflation. The success of this program depends on depositors' willingness to accept an indexed principal contract as well. Otherwise, banks will have a liability with a much greater cash-flow payment than they receive on their assets. To overcome this problem, the Banco de México has announced that the principal of its outstanding loans to banks will be indexed to inflation.

With the central bank supplying indexed credit to the banking system, the size of its balance sheet will increase at the rate of indexation. The authorities recognize that, if the central bank funds its balance sheet with nonindexed liabilities, it will face large deficits for several years to come, which could cause the fiscal situation in Mexico to deteriorate. To mitigate this problem, the authorities are using inflation to control a priority in the design of their economic program.

If restructuring actually forces the riskiest banks out of business, future growth will be more disciplined throughout the banking system. The data indicate that, as the Mexican authorities restructure their banking system in the current crisis, they have several well-managed banks that can take the lead in establishing loan workout programs and can also acquire riskier banks whose loan portfolios will never be able to cover the cost of the government bond.

[48]During inflation, the principal of loan contracts with fixed nominal value depreciates in real terms. Lenders are compensated for this with high interest rates; however, borrowers must pay off real principal at a faster rate than in noninflationary times, which increases their cash-flow burden.

## Argentina

In the years preceding the current crisis, the Argentine banking situation differed from that of Mexico. As mentioned in Section III, the experiences of depositors during the hyperinflation of the late 1980s had a severe effect on their willingness to hold deposits in the domestic banking system. Despite the adoption of a strong economic program in 1991 that brought inflation down sharply, by 1992, Argentine investors were not as confident as their Mexican counterparts in the quality of their banking system because the deposit-to-GDP ratio remained substantially below its level of the early 1980s. In 1993, deposits rose sharply relative to GDP, to 14 percent from 10 percent, indicating improved confidence in the economy and the banking system (Chart 8). This ratio, however, was among the lowest in Latin American countries. Reintermediation into the banking system continued during most of 1994. As in Mexico, it is important to determine whether this increase in confidence was based on tangible improvements in the quality of the banking system.

### Evaluating Banks

To make this assessment, the banking system is divided into classes of banks to determine whether accounting data risk classifications correspond to investor perceptions of risk. The analysis is based on a comparison of March 1993 and November 1994 balance sheets for four categories of banks: national public, provincial, private, and foreign.[49] National public banks, dominated by Banco Nación, are owned by the central government. Provincial banks are owned by the provincial governments. In 1994, national public banks accounted for 26 percent of large bank assets, municipal and private banks accounted for 29 percent each, and foreign banks accounted for 16 percent of large bank assets. The sample for each category of banks is limited to the largest banks in each group, which together accounted for about 70 percent of the deposits in the banking system at the end of 1993.

Compared with the Mexican banking system, in 1993 all segments of the Argentine banking system appeared to be strongly capitalized. Capital-to-loan ratios were more than 20 percent for all categories of banks with the exception of foreign banks, where the ratio stood at about 16 percent (see Table 9). Hence, the relative quality of banks cannot be ascertained from capital ratios. As will be demonstrated below, however, the behavior of investors indicates that

[49]Owing to differences in reporting periods across banks, data for the private banks cover the first half of 1994 as well as 1993.

**Table 9. Selected Argentine Banking Data**
*(Percent, unless otherwise indicated)*

| | 1993 | 1994 | Growth Rates |
|---|---|---|---|
| Public banks | | | |
| Capital-to-loan ratio | 35.4 | 27.0 | |
| Gross interbank dollar borrowings (in millions of U.S. dollars) | 1,579.1 | 2,006.5 | 27.1 |
| Dollar deposits (in millions of U.S. dollars) | 1,600.2 | 3,046.0 | 90.4 |
| Provincial banks | | | |
| Capital-to-loan ratio | 22.6 | 20.4 | |
| Gross interbank borrowings (in millions of U.S. dollars) | 1,690.3 | 1,514.8 | –10.4 |
| Dollar deposits (in millions of U.S. dollars) | 1,945.7 | 3,041.5 | 56.3 |
| Private banks | | | |
| Capital-to-loan ratio | 23.1 | 21.0 | |
| Gross interbank borrowings (in millions of U.S. dollars) | 965.9 | 1,478.4 | 53.1 |
| Dollar deposits (in millions of U.S. dollars) | 2,668.8 | 4,927.6 | 84.6 |
| Foreign banks | | | |
| Capital-to-loan ratio | 15.8 | 12.2 | |
| Gross interbank borrowings (in millions of U.S. dollars) | 653.5 | 1,265.3 | 93.6 |
| Dollar deposits (in millions of U.S. dollars) | 1,695.1 | 2,958.2 | 74.5 |
| Total banking system | | | |
| Capital-to-loan ratio | 25.0 | 20.9 | |
| Gross interbank borrowings (in millions of U.S. dollars) | 4,888.8 | 6,265.0 | 28.2 |
| Dollar deposits (in millions of U.S. dollars) | 7,909.8 | 13,946.3 | 76.3 |

Source: Argentina, Superintendencia de Entidades Financieras.
Note: Data are for March 1993 and November 1994.

they did not accept high capital ratios as evidence that all banks were safe.

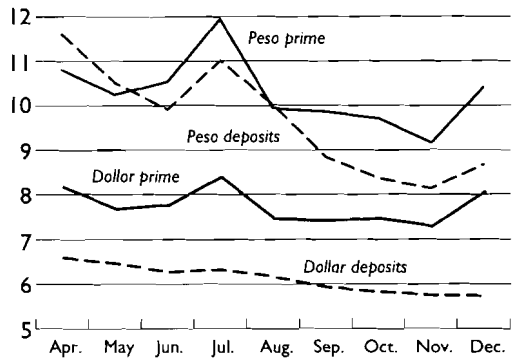
Unlike Mexican banks, Argentine banks have a large portion of their assets and liabilities denominated in U.S. dollars.[50] They have two primary sources of dollar funds: interbank borrowings and deposits accepted from the public. In 1994, provincial banks began having difficulty raising dollar funds. Dollar interbank funds declined by 10 percent at provincial banks, compared with a 28 percent expansion rate for all banks, a 53 percent expansion rate at private banks, and a 94 percent expansion rate at foreign banks. This suggests that banks lending dollars in the interbank market had grown skeptical of the quality of provincial banks.

To finance dollar assets, provincial banks had to turn to the deposit market, and, between March 1993 and November 1994, they increased their dollar deposits by 55 percent (Table 9). This increase, however, was substantially less than the 76 percent increase in dollar deposits experienced by the system as a whole. Although depositors were less discriminatory in their choice of banks than interbank lenders, they required a relative increase in the interest rate on dollar deposits to supply these funds. In April 1993, dollar deposits were paying 500 basis points less than peso deposits of similar maturity (see Chart 12). By December, the spread was less than 300 basis points.

In contrast to the dollar market, in the peso market there is not enough evidence to determine whether investors distinguished between the quality of banks. Peso deposits at provincial banks expanded by 31 percent, faster than the 25 percent increase experienced by the system as a whole but slower than the 68 percent and 50 percent increases at private banks and foreign banks, respectively. Peso deposits declined at Banco Nación, and most of these deposits flowed into private and foreign banks rather than provincial banks. But most of these deposits were probably in the Buenos Aires metropolitan area, and it would have been difficult for outlying provincial banks to capture them.

[50]Argentina permits domestic investors to hold dollar deposits in the domestic banking system on the same terms that they are permitted to hold domestic currency deposits. In 1992, Argentine banks borrowed substantial amounts of dollars from foreign banks as dollar loans exceeded dollar deposits. In addition, they financed a portion of their dollar assets with peso deposits.

**Chart 12. Argentina: Peso and Dollar Interest Rates on Bank Deposits and Loans, 1993**
*(Percent)*




Source: Argentina, Superintendencia de Entidades Financieras (Buenos Aires, 1994).

### Rescuing Banks

The spillover effects from the Mexican crisis caused heavy deposit withdrawals from the provincial banks and many smaller commercial banks. To aid these institutions, the Argentine government established a "safety net" fund, supported by large banks and managed by Banco Nación, which was used to provide liquidity assistance to banks losing funds. The central bank also provided liquidity assistance to banks through swap arrangements. Under these programs, the central bank has lent foreign exchange to banks, collateralized by banks' highest- quality paper sold to the central bank under repurchase agreements. The scope of this program has been limited because regulations are in place that severely restrict the central bank's authority to act as lender of last resort.

In recognition that many banks face problems greater than can be managed by providing liquidity facilities, the government has instituted policies to restore investor confidence in banking. The philosophy underlying these policy measures is to use the crisis as an opportunity to strengthen the banking system by closing badly managed banks. The authorities will encourage sound banks, whether of domestic or foreign ownership, to purchase closed banks. The authorities have demonstrated their strong commitment to establishing a sound banking system by placing no restrictions on the degree of foreign ownership of their banking system that may result from the restructuring.

The government has established a trust fund to recapitalize banks. The fund will be partially financed by the proceeds of US$2 billion in government bonds with a three-year maturity paying a below-market floating interest rate sold to domestic private investors and foreign financial institutions.[51] The remainder of the trust fund will be financed by international multilateral agencies. The fund will purchase subordinated debt in banks with a maturity of three years, which will be converted to equity if a bank fails to repay interest and principal. An important feature of the program is that recapitalization will be available only to those banks that can be managed back to solvency. A significant portion of the resources from the fund will be used to finance mergers and acquisitions.

To further restore investor confidence in the banking system, the government also established a deposit insurance system. This system will be funded through a levy of between .03 percent and .06 percent on average daily deposit balances each month. The fund will expand until it covers 5 percent of the deposit base or Arg$2 billion. Banks will not be able to bid aggressively for insured deposits because interest rates payable on these deposits will be capped to a reference rate.

Although the Argentine restructuring program contains crucial elements to improve the quality of the domestic banking system, some risks remain. An important one is that the scale of the bad loan problem at banks might exceed the funds available in the trust account and through the deposit insurance scheme. If this were the case, short-term pressures on the fiscal situation could be avoided only if the authorities were able to mobilize additional funds from the private sector.

## Comparison of Franchise Value in Mexico and Argentina on the Eve of the Crisis

In both markets on the eve of the crisis, it was apparent that investors attempted to distinguish banks by the quality of their portfolios. In Argentina, portfolio quality was reflected in the rapid growth of U.S. dollar interbank borrowing at large private and foreign banks relative to provincial banks. In Mexico, it was reflected in the interest rates that small banks had to pay for funds to maintain a growth rate substantially higher than that of large banks.

The difference in the two markets is that in Mexico, accounting information was a more useful guide

[51]The government has been able to raise funds at below-market interest rates by appealing to private investors' stake in the success of economic reforms.

to evaluating bank quality than in Argentina. This is an important distinction because in Argentina, while investors avoided a group of highly specialized banks—those owned by provinces—their decision was based not on specific information about these banks but on the financial situation of the provinces. Without reliable accounting standards, it is much more difficult to judge the performance of individual banks engaged in lending to the private sector. For example, are low loan loss reserve ratios of many private banks a reflection of good loan quality or underprovisioning? Are high capital ratios derived from marking up the value of fixed assets, or are they based on a solid stream of retained earnings from a performing loan portfolio?

Thus, it appears that the availability of information in Mexico will help the authorities determine the ability of individual banks to generate cash flow from their loan portfolios. This can make it easier for them to determine which banks ought to be forced into bankruptcy. It also permits them to better determine which banks are the best candidates to take over failed institutions.

An important similarity between the financial markets in Mexico and Argentina is that the authorities in both countries permitted banks deemed relatively weak and risky to expand. In Mexico, these were small banks; in Argentina, they were provincial banks. A major conclusion that emerges from this analysis, therefore, is that, although the reversal of capital flows triggered banking problems, more stringent controls on the activities of weak banks before the crisis would have reduced the magnitude of the bad loan problem and the cost of bailing out banks in both Mexico and Argentina.

If the lessons from the 1980s have been well learned, the current banking crises will have a much shorter and less devastating effect on the region's economy than the earlier crises. The current difficulties provide an opportunity for Latin American authorities to dispose of poorly run institutions that have become insolvent, thereby permitting their banking systems to emerge from the crisis on a sounder footing. If they take advantage of this opportunity, the prospects for returning to the growth path of the early 1990s look promising.

# V Long-Term Challenges to Franchise Value of Banks

With the Mexican and Argentine financial crises fresh in their minds, policymakers are acutely aware that capital inflows are transitory.[52] The experiences of the crises of the 1980s and the recent banking difficulties of 1994–95 have demonstrated that a sound precrisis banking system and experienced and skilled bank supervisors are important to the prompt success of crisis recovery programs. Therefore, in assessing the ability of Latin American countries to deal with future adverse shocks leading to capital flight, it is necessary to consider the long-term challenges to the franchise value of banks in these markets.

Two of the policymakers' major concerns, which have been confirmed by events in Mexico and Argentina, are associated with the expansion of domestic credit that follows large, unsterilized capital inflows. The first is that the inflows may lead to an unsustainable appreciation in the real exchange rate. The second is that the expanded bank loans may not be sound enough to stand a reversal of the inflows. A financial crisis may then follow a reversal of the capital inflows. This section focuses on the latter concern, and issues related to the sustainability of the exchange rate regime are addressed in Section VI.

Before the Mexican financial crisis at the end of 1994, the authorities in several countries resorted to a policy of sterilization to ameliorate the impact of a possible reversal of the capital inflows. Sterilization was used as a tool to control the domestic credit expansion effects of capital inflows. The degree to which a country sterilizes can be measured by the ratio of foreign reserves to the supply of money. This measure captures the intent of sterilization, which is to control the growth of credit by controlling the growth of the supply of money as foreign currency assets are purchased by the central bank.[53] A historical series on the ratio of foreign reserve assets to a narrow definition of money supply—currency plus transaction deposits—covering the period of capital inflows is presented in Chart 13 for the sample countries.[54] The chart shows Chile to be the most aggressive sterilizer between 1990 and 1993, followed by Colombia and Peru. Mexico shows a very erratic pattern of sterilization, and Argentina, showing a downward trend in the ratio, can be characterized as the least active sterilizer.

The evidence for the sample countries analyzed in this paper suggests that the experience with sterilization during the period of capital inflows of the early 1990s has been mixed. For example, in 1992, Chile, which was an active sterilizer, had the highest ratio of deposits to GDP among the five countries in the sample (see Chart 8). In contrast, Argentina, the least active sterilizer, had among the lowest ratios. Since Chile has one of the strongest banking franchises in the group, this indicator suggests that the quality of the banking franchise is a more important determinant of the ratio of deposits to GDP than the sterilization policy chosen by the central bank.

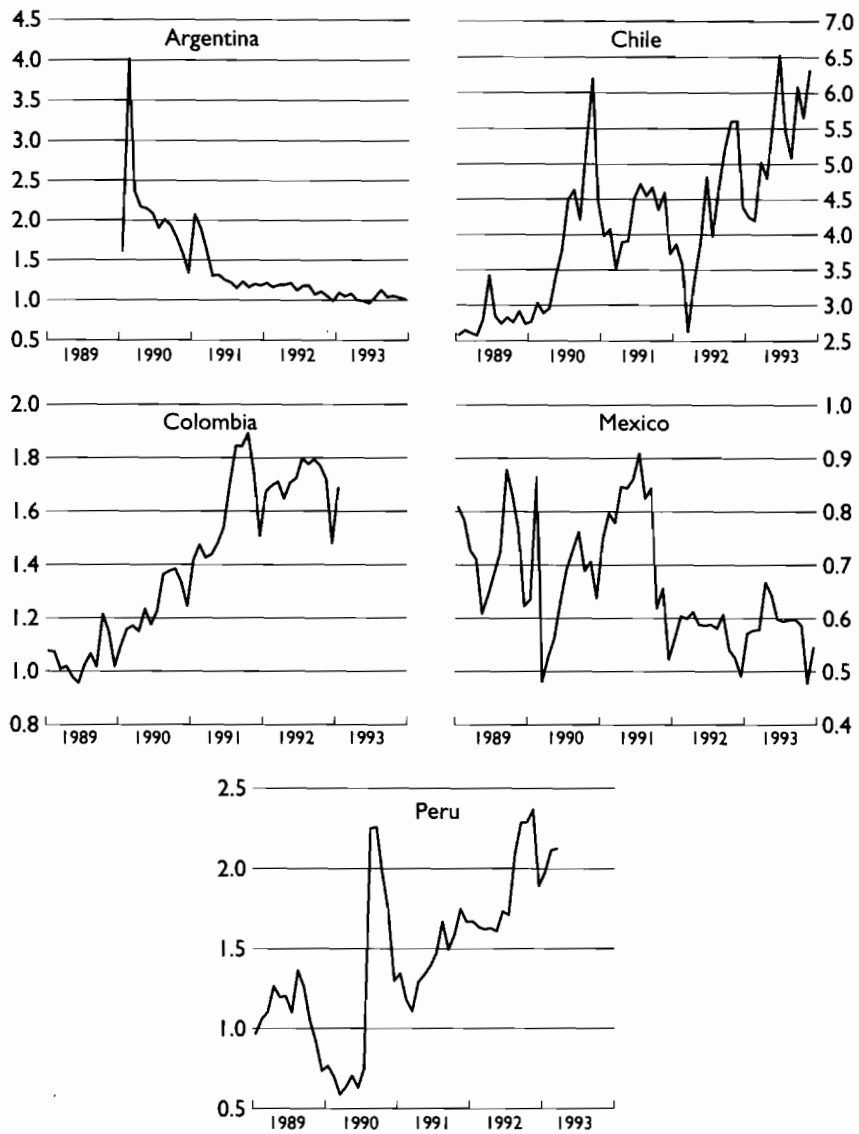
Consistent with the mixed evidence, there is no consensus among policymakers and analysts on whether and under what circumstances sterilization is a useful tool to manage capital inflows. While supporters of sterilization stress the risks associated with an expansion of domestic credit, critics of sterilization emphasize the costs and limitations associated

[52]Comprehensive analyses of the recent episodes of capital inflows in Latin America are included in Calvo, Leiderman, and Reinhart (1993a, 1993b), Corbo and Hernandez (1993), and Claessens and Gooptu (1993).

[53]If the central bank controls growth by imposing high reserve requirements on deposits, the growth of the narrow money supply relative to foreign currency assets on the balance sheet of the central bank is controlled directly. If the central bank issues liabilities to the nonbank public, that is, it sterilizes through open market operations, it controls the growth of the money supply indirectly because it does not create bank reserve deposits around which banks can increase their issuance of transaction accounts.

[54]An indicator of sterilization is constructed by using the ratio of foreign reserve assets to M1 rather than to the monetary base because the latter ratio would be affected by how the sterilization policy is carried out. If sterilization is carried out through imposition of high reserve requirements, which are part of the monetary base, the ratio would be biased downward compared with a situation in which the policy is carried out through the issuance directly to the public of central bank liabilities that are not part of the monetary base. The choice of an indicator of sterilization using M1 or any other monetary aggregate in the denominator, however, seems arbitrary.

**Chart 13. Ratio of International Reserves to Narrow Money Supply**




Source: International Monetary Fund, *International Financial Statistics*, various issues.

with that policy.[55] The debate also expands beyond the desirability of sterilization to the benefits and costs associated with different sterilization methods.

Sterilization is carried out through the balance sheet of the central bank. In the classic case of unsterilized intervention, the central bank buys the foreign currency inflow, for example, U.S. dollars, by issuing its own liability to the party selling the dollars.[56] If

[55]Sterilization conducted through open market operations may lead to central bank losses because the central bank liabilities used for sterilization usually pay higher interest rates than the central bank returns from holding foreign exchange assets (e.g., Calvo, 1991). Moreover, as sterilization through open market operations tends to raise domestic interest rates, capital inflows may increase further.

[56]If the economy is dollarized, a significant component of the foreign currency inflow may remain outside the central bank because the increase in the demand for domestic currency may be less than the inflow.

this liability is issued to a domestic commercial bank in the form of a reserve deposit in the central bank, the commercial bank would use this deposit to expand domestic credit until the required or desired ratio of domestic credit to reserve deposits in the central bank is restored. The central bank can conduct sterilization either by increasing reserve requirements on commercial bank liabilities or by issuing liabilities to nonbanks, which do not have the authority or the public confidence to use the central bank liability as a vehicle to expand domestic credit.

What role does the state of the franchise value of the banking system play in the policy decision to sterilize or not and in the choice of alternative sterilization methods? Clearly, if the financial system has strong mechanisms in place to control the quality of credit, some of the dangers of credit expansion would seem to be reduced. First, sound banks would have incentives to evaluate properly the risks associated with extending loans, and, second—and perhaps even more important—central banks would stand ready to deal with financial difficulties by using emergency loan assistance as an incentive for banks to establish credible loan workout programs.[57]

Turning to the choice of sterilization method, the discussions in Sections II and III highlight the tradeoff of carrying out a sterilization policy through the imposition of high reserve requirements on bank deposits: although high reserve requirements are effective in preventing the expansion of domestic credit, they reduce bankers' opportunity to learn how to build a strong banking franchise by preventing them from making loans. Based on their experiences in the 1980s, policymakers have begun to recognize the dangers of forcing the banks to bear the burden of a sterilization policy through high reserve requirements. An important question is whether these costs of a sterilization program can be avoided; that is, can the central bank find a way to sterilize without inhibiting the development of the franchise value of the banking system?

The first part of this section considers alternative policy options to sterilize. The second part discusses how the state of the banking franchise might affect authorities' policy choice of whether and how to sterilize. The third part considers some recent empirical evidence on the relationship between the quality of the bank franchise and the quality of capital flows through the equity market. Finally, the last part turns to another challenge that banking systems in some Latin American countries are currently facing: the securitization of financial instruments. Specifically, this part analyzes how the recent developments in domestic capital markets and the increased access to world capital markets affect the franchise value of Latin American banking systems.

## Sterilization and Franchise Value of Banking System

In carrying out a sterilization policy using reserve requirements on bank deposits, the central bank constrains the expansion of bank credit following a capital inflow by directing banks to hold a high portion of the funds collected through the issuance of deposits in the form of reserves held as vault cash or deposits at the central bank rather than as loans. If the reserve ratios against deposits specified by the central bank are a binding requirement, this ratio must be greater than that which banks would voluntarily hold at the interest rate the central bank offers on reserve deposits that banks hold with the central bank.[58]

If banks are subject to a binding reserve requirement, the spread between the interest earned on loans and the interest paid on deposits will be greater than in the absence of the requirement. This will act as a tax on bank intermediation, reducing both the quantity of deposits and the quantity of loans relative to the situation in which the banks are not subject to reserve requirements. Thus, the policy will directly affect the quantity of credit. Because it is the purpose of a sterilization policy to reduce domestic credit, this aspect of a high reserve requirement is beneficial to the overall policy objective.[59] As indicated in Section III, however, reserve requirements induce both central bankers and commercial bankers to accept lax credit standards.

Is there a way that the central bank can achieve the perceived benefits of credit reduction while preventing a deterioration in the franchise value of the banks through a binding reserve requirement policy? For example, are the deleterious effects of the above policy reduced if the central bank sterilizes through

[57]If the franchise value of the banking system is strong, even the adverse impact on banks of a sudden reversal of the real exchange appreciation would be minimized. Sound banks would take into account the probability of such an occurrence when extending credit to economic agents whose real net income is largely dependent on revenues from the nontradables sector of the economy. Therefore, either credit to the riskier sectors would be limited or the risk would be properly reflected in an accumulation of capital. Indeed, the discussion in Section III made it evident that the methods used by central banks in some Latin American countries played a major role in the extent and duration of the crisis in the 1980s.

[58]Banks hold reserves for settling transactions among individual banks. The demand for reserves depends on the overall liquidity of an economy's money markets and the lending policies of the central bank. See Garber and Weisbrod (1992), Chap. 13.

[59]Moreover, because reserve requirements tend to lower the interest rate paid on deposits, they would constrain additional inflows of capital.

a voluntary rather than a required reserve program? If the banks are to hold reserves voluntarily, they must be compensated through interest payment on reserve balances held with the central bank.[60] The reserve tax would no longer be a tax because, by definition, reserves pay whatever it takes for banks to voluntarily hold them. Thus, the central bank would have to pay an interest rate on bank reserve deposits that would result in the same amount of domestic credit that is created under the reserve requirement policy. Since, by assumption, the amount of domestic credit is the same as before, the interest rate on loans is the same as under the reserve requirement policy. Depositors, however, obtain a higher yield because the banks now earn interest on reserve deposits at the central bank.[61] Hence, the tax cost of the sterilization policy is shifted from depositors to the central bank.

Central banks also have the option of duplicating the above policy results by issuing central bank liabilities paying market rates of return that are not held in the banking system, as in Chile and Colombia. Instead of imposing reserve "requirements" on banks that pay market rates of return, the central bank could issue an equivalent amount of liabilities to nonbanks to equal the amount of liabilities it had originally held in the form of reserve deposits of banks.

The central bank liabilities issued to nonbanks would compete with bank deposits for investor funds—as some investors would shift from bank deposits to the liabilities of the central bank. This would increase bank funding costs and loan rates and would reduce bank credit.[62] Hence, the central bank can choose a quantity of liabilities issued to the nonbank public that reduces bank credit to the same level as that achieved through a policy of either imposing reserve requirements or paying interest on reserves.

When the central bank chooses a policy that relies on investors' voluntarily holding its liabilities, the interest rate it must pay depends on how investors—whether banks or the general public—evaluate the risk of lending to the central bank. If the central bank holds foreign reserve assets, such as U.S. dollar treasury bills or bank deposits earning an almost risk-free interest rate, it would run losses if investors believed that liabilities issued by the domestic central bank were riskier than liabilities issued by the U.S. government or U.S. chartered banks.[63]

The central bank could cover these losses in several ways. First, it might attempt to roll the losses over by issuing additional liabilities. This policy would be unsustainable, however, if the central bank continued paying market interest rates on its liabilities; it would only lead to higher and higher liability costs. Alternatively, the central bank might have access to subsidized funding from the government budget, but this approach would only transfer losses from the central bank to the fiscal authority. If this source of funding were closed, the central bank would have to fund its losses on bank reserve deposits through its seigniorage earnings on currency issue, which does not pay interest. If these earnings were the central bank's only source of revenue, the losses the central bank could absorb would be limited by its willingness to tolerate inflation.

If the central bank must minimize its losses and control inflation, its options are few: it must limit its role of direct lending to domestic borrowers to demonstrate to the market that it is serious about controlling inflation, and it must strengthen its supervisory procedures to control bank risks before a banking crisis occurs. It follows, therefore, that only central banks with strong franchises should risk paying interest on liabilities.

## Strength of the Franchise and the Impact of Sterilization

The strength of the banking franchise affects the costs and benefits of a sterilization policy in more ways than just the direct costs to the central bank, however. This subsection considers the costs and benefits of sterilization under four different scenarios—where both the central bank and the banks have a strong franchise, where the central bank is strong but the banks are weak, where the banks are strong but the central bank is weak, and where both the central bank and the banks have a weak franchise value.

If both the banks and the central bank have strong franchises, bank credit decisions are basically sound, and the central bank is well equipped to restore confidence in banks if a systemic crisis occurs. If the central bank should choose to engage in some sterilization to build up a war chest relative to domestic credit to use in the event of a systemic crisis, it can do so at relatively low cost. There would, however,

[60]They would, however, be willing to hold some reserves without being compensated with interest payments because the reserves are necessary for payments clearing purposes.

[61]In contrast to a reserve requirement policy, a policy of paying interest on bank reserves, by raising the yield on bank deposits, may create incentives for further capital inflows.

[62]Like a policy that pays interest rates on reserves, sterilization through open market operations may also attract further inflows of capital.

[63]Central bank losses in Chile and Colombia—two active sterilizers—reached 2.2 percent and 0.8 percent of GDP in 1991, respectively. By 1992, these ratios had declined to 1.1 percent and 0.5 percent of GDP, respectively. However, these losses cannot be fully attributed to sterilization practices.

seem to be little need to engage in sterilization to limit domestic credit growth resulting from capital inflows because bankers will not take undue risks. If the capital inflow exceeds the availability of safe domestic loans, domestic savers will be induced to reduce their supply of domestic savings. For example, if bankers believe that there is an excess supply of capital that cannot be invested at an expected return commensurate with the risk, they have two alternatives: they can invest the excess funds in foreign assets or they can reduce the interest rate paid on deposits, which reduces loanable funds in the domestic market. In either case, the domestic supply of savings declines, and the expected return on loans increases for a given level of risk.

If the central bank has a strong franchise, but the banks are weak, the central bank must be concerned about overexpansion of bank credit. If it chooses a policy of sterilization, it can do so at relatively low cost because investors perceive that central bank credit decisions both in normal times and in a systemic crisis will be sound. The central bank must, however, design policies that build the franchise value of banks. To this end, it is probably preferable for the central bank to sterilize by issuing liabilities directly to the public to give investors a safe haven from risky banks rather than imposing high reserve requirements, which, as shown by the experience of the 1980s, does not encourage bankers to improve the franchise value.

If the banks are strong and the central bank is weak, resources should be kept out of the hands of the central bank. Bank credit expansion is a lesser risk than the accumulation of foreign reserve assets on the central bank's balance sheet that can be used later to expand central bank domestic credit. Even without sterilization, however, a capital inflow has the potential to increase the balance sheet of the central bank as long as the resulting foreign currency inflow is purchased by the central bank.[64] In this case, dollarization—by which residents are freely permitted to hold dollar-denominated deposits—may help to safeguard the franchise value of banks. If low reserve requirements on foreign currency deposits are imposed, a significant proportion of the capital inflow will not end up on the balance sheet of the central bank.

If the franchise values of both the banks and the central bank are weak, policy options are very few. It is certainly wise to control the expansion of bank credit, but it is unwise to put resources under the control of the central bank. Whether policymakers in this situation choose sterilization or not, the most important policy objective is to begin building the franchise. The place to begin is probably with central bank policies on supervision and lending because this is most directly in the control of policymakers.

[64]Unsterilized intervention results in an expansion of the central bank's balance sheet.

## Capital Inflow Challenge and Franchise Value of Banks: Some Empirical Evidence

Capital can flow into an economy through channels other than directly through the banking system.[65] For example, in many Latin American countries, equity markets have attracted the interest of foreign and domestic investors in the early 1990s. The fact that investors have alternatives to banks is also a source of concern for policymakers in countries receiving large inflows of capital. After all, even if regulators know that banks are making sound credit decisions, they may not have knowledge about how firms are using funds that they have raised in the stock market.[66] If an adverse shock occurs, the authorities may face pressures to protect the real value of share prices. These concerns have sometimes added to arguments advanced by those supporting sterilization policies. This subsection examines the relationship between the quality of the bank franchise and the quality of capital flows through the equity market to determine whether the banking franchise affects how funds raised in the equity market are invested.

In Section II, it was argued that the banking franchise plays a very important role in Latin American economies because banks monitor and control borrower liquidity. In the highly uncertain economic environment of a developing economy, a good bank ensures that its borrowing customers invest their funds in projects with immediate cash-flow benefits. Banks have tools at their disposal, such as the ability to demand immediate payment of principal rather than to roll over a loan, that give them power to force borrowers to abandon unprofitable activities. To use these tools, banks analyze short-term cash-flow data and the day-to-day activities of the firm. In sharp contrast to bank loans, equity contracts encourage firms to invest in projects that do not have immediate cash-flow benefits because they permit corporations to raise funds at a low cost relative to current earnings. Equity contracts do not require the repayment of principal; nor do they require the borrower to promise the investor a fixed stream of interest or dividend payments.

[65]When foreign investors purchase equity, they must exchange a hard currency deposit for a local deposit to pay for their purchase. As a result, the local bank obtains hard currency funds that can result in an expansion in the local banking system.

[66]The role of credit extended through the equity markets in a speculative attack on the exchange rate is discussed in Section VI.

In Section III, evidence was presented that, in economies where central bank policies encouraged banks to perform their role of monitoring firms' cash flow, that is, in those countries with a relatively strong franchise value of banks, the adjustment to large capital outflows associated with the debt crisis, while difficult, did not lead to the extreme levels of inflation that occurred where the banking franchise was weakest. In weak franchise markets, inflation was used as a device to spread the cost of credit problems throughout the economy because neither central banks nor commercial banks had the means to resolve credit problems by working with troubled borrowers to resolve their cash-flow problems. Because equity contracts do not encourage investors to monitor cash flow, investments made through these contracts create many of the same risks as loans made by banks with weak franchises: lenders have no means of resolving cash-flow problems in the event of renewed capital flight.

This potential weakness of the equity contract creates a monitoring role for short-term lenders. Although corporations can raise funds through equity contracts, even in markets like the United States, they rarely have the freedom to depend completely on equity contracts to fund their investment projects. Other lenders, whether bondholders, commercial paper holders, or banks, issue contracts that require borrowers to pay principal and interest on a timely basis. In Latin America, these other lenders are primarily banks. Thus, it is important to investigate whether, in those markets where the banking franchise is relatively strong, banks play an important role in maintaining the liquidity of firms even when they issue equity contracts.

If banks monitor and manage corporate liquidity, firms will not be able to disregard the demand for current cash flow, even though they rely heavily on equity markets. Banks will insist that borrowers meet stringent payment schedules, or they will resort to bankruptcy procedures. In contrast, where the franchise is weak, loan covenants will not be enforced, and firms' investment decisions will be determined largely by the demands of equity investors for capital gains rather than by current cash flow.[67] As a result, in an economic downturn, firms that must satisfy the demands of strong franchise banks will be in a position to cut costs to absorb the shock of reduced revenues, whereas firms monitored by weak franchise banks will not. For example, in strong bank franchise markets, a larger portion of firms' costs will be variable than in weak franchise markets. Hence, corporate profit streams should be more volatile in weak franchise markets, which should lead to greater volatility in stock prices.

Price-earnings ratios should also, on average, be higher in weak franchise markets because expected future earnings should be high relative to current earnings. Of course, stock market variability should also make price-earnings ratios more variable in weak franchise markets than in strong ones.

Evidence on stock market volatility, covering the period of capital inflows, is presented in Charts 14 and 15. Volatility is measured in terms of local market indexes in local currency and in U.S. dollars. All of these measures indicate that, through the end of 1994, on average variability has been highest—albeit declining—in Argentina, Colombia, and Peru and lowest in Chile and Mexico. This pattern fits investor perceptions of the franchise ranking of the banking systems in the early 1990s, as measured by the deposit-to-GDP ratios (see Section III). Investors in Chile and Mexico perceive these banking franchises to be stronger than those in Argentina and Peru.

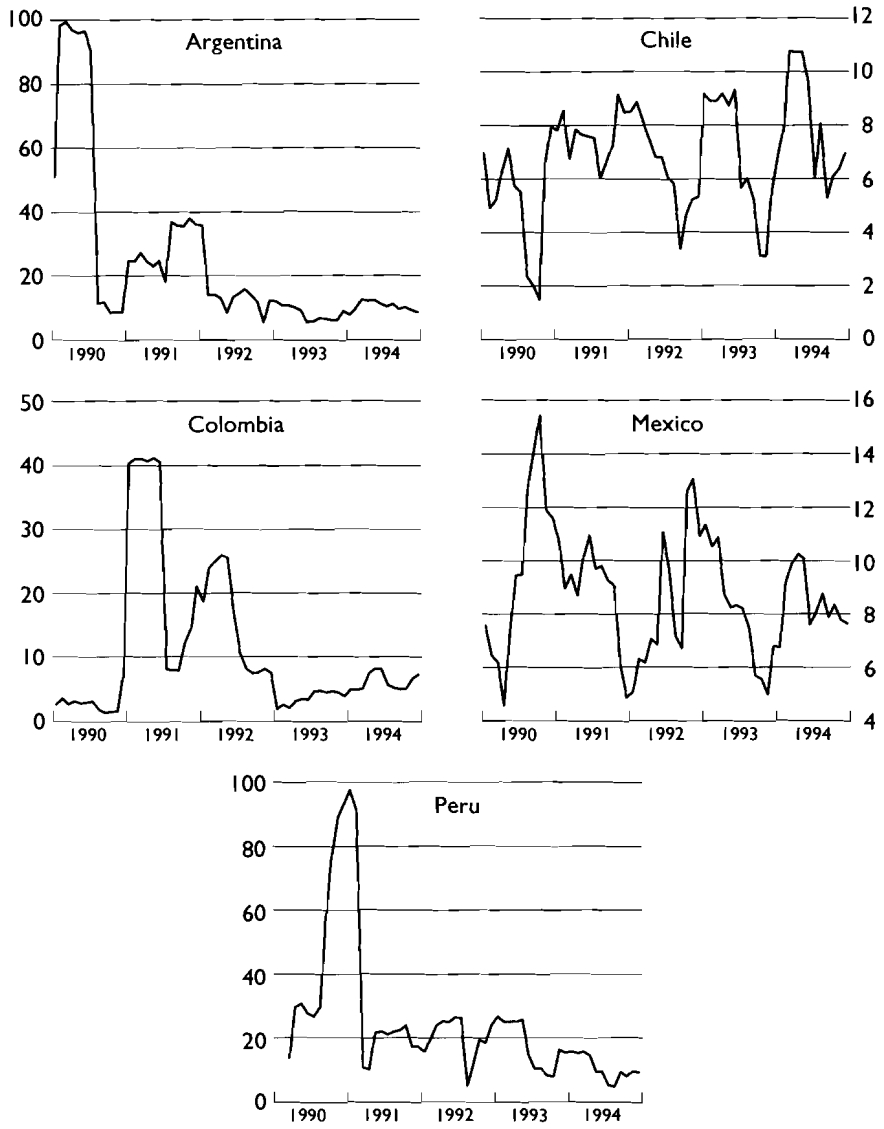
Data on price earnings ratios in the two relatively weak franchise systems are not available over the entire period, so inferences from this evidence cannot be as conclusive as the volatility evidence. Nevertheless, as indicated in Chart 16, Argentine price-earnings ratios have been, on average, substantially higher than those of Chile and Mexico. Colombian price-earnings ratios have also been, on average, above those of the two countries where the franchise is perceived to be strong. Price-earnings ratios for Peru are available only for the third and fourth quarters of 1993 and are not presented in a chart. However, for the third quarter of 1993, the Peruvian price-earnings ratio was 34.95, compared with 39.27 for Argentina, 18.05 for Colombia, 16.89 for Chile, and 14.11 for Mexico. In the fourth quarter, the price-earnings ratio was 39.19 for Peru, 24.47 for Argentina, 24.90 for Colombia, 20.04 for Chile, and 19.70 for Mexico. Thus, the meager evidence available for Peru suggests that price-earnings ratios are also higher in that market than in the strong franchise markets.

Thus, it appears that the quality of the bank franchise affects how funds are invested outside the banking system. Where the franchise is strong, firms invest in projects that place more priority on current cash flow than where the franchise is weak. To the extent that an environment in which firm cash flow—and hence economic value—is uncertain, speculators may be attracted to that market. A strong banking franchise may therefore reduce speculative capital inflows that enter outside the banking system.[68]

[67]For evidence on this point from several East Asian economies, see Weisbrod and Lee (1993).

[68]In this regard, it should be noted that Mexico did not experience a rapid increase in stock prices in the months before the crisis. In fact, the Mexican Bolsa Index stood at 2600 on December 1, 1994, the same level as of January 1, 1994.

**Chart 14. Volatility of Local Equity Market Index[1]**
*(Percent, first quarter to first quarter)*

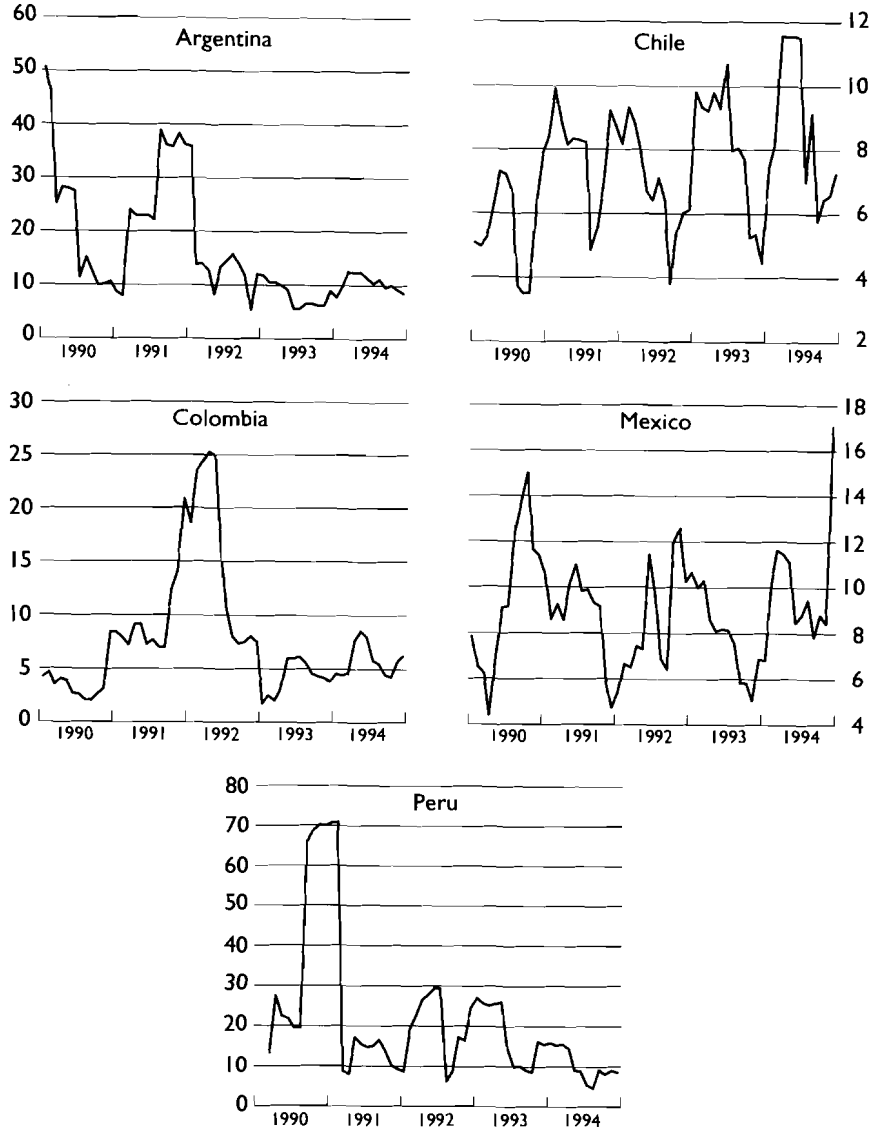



Source: International Finance Corporation, Emerging Markets Database.
[1]Defined as a six-month moving average of the standard deviations of the monthly percent changes in the index.

## Capital Market Threat to Banking Franchise Value

In addition to the policy dilemma imposed by sterilization, before the financial crisis at the end of 1994, the banking systems in several Latin American countries had started to face a challenge well known in major industrial countries: the securitization of many financial instruments that heretofore had appeared mostly on bank balance sheets. In Latin America, capital markets alternatives to bank loans had begun to be available on a fairly wide scale, most notably the corporate bond market in Chile, money markets in Mexico, and equity markets in a

**Chart 15. Volatility of Local Equity Market Index, U.S. Dollars[1]**
*(Percent; first quarter to first quarter)*

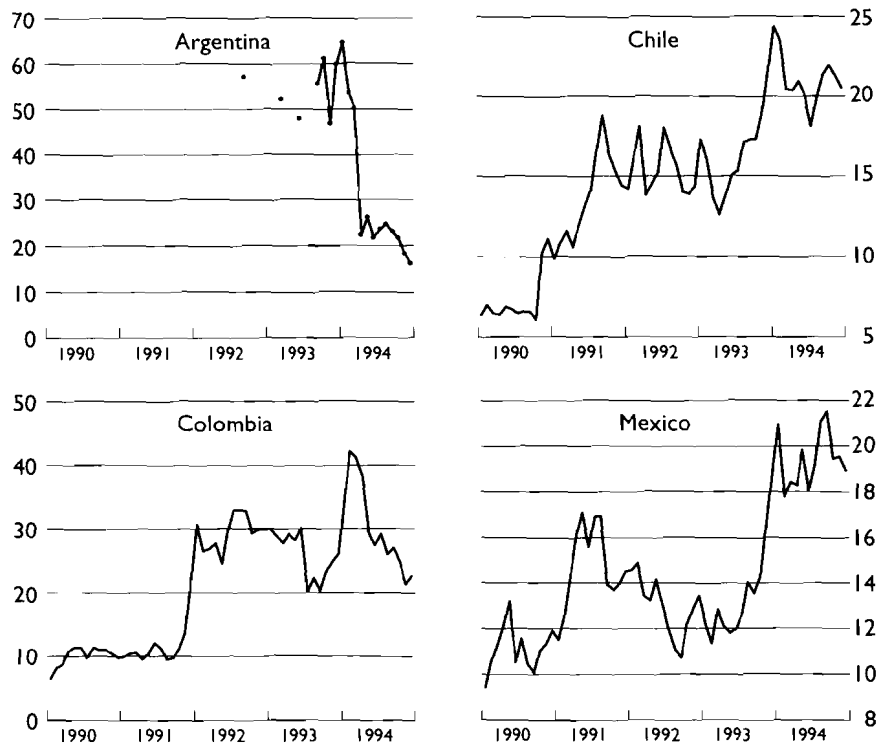



Source: International Finance Corporation, Emerging Markets Database.
[1]Defined as a six-month moving average of the standard deviations of the monthly percent changes in the index.

number of other countries. By and large, the most internationally well-known firms were able to raise capital in the U.S. and Euromarkets. This raised concerns that the franchise value of the banking system may have weakened in Latin America.

To a large extent, the present crisis has severely curtailed the access of Latin American countries to international capital markets and has hampered the further development of several domestic securities markets. Notwithstanding recent developments, however, the significant changes in domestic capital markets that occurred in the early 1990s cannot be ignored, and the question still remains as to whether, once current banking difficulties are resolved, do-

**Chart 16. Price Earnings Ratios**
*(First quarter to first quarter)*




Source: International Finance Corporation, Emerging Markets Database.

mestic securities markets will pose a permanent threat to the franchise value of banks. This section evaluates such a potential threat.

As suggested by the evidence in the previous subsection as well as by the discussion on the nature of the bank franchise value in Section II, a strong banking franchise can improve the performance of bond and equity markets because banks are in a better position than equity holders to monitor corporate liquidity; thus, a capital market and a strong banking system can be complementary rather than competitive.

In highly developed capital markets, such as the United States, short-term money market instruments, primarily the commercial paper market, have replaced bank loans as the primary source of short-term credit to corporations. Despite this development, banks continue to play the role of liquidity monitor. Commercial paper issuers obtain a credit line from banks to ensure investors that they can meet their commitments to deliver interest and principal on time. In addition, if there should be an operational problem during the issuance of commercial paper, the corporation can draw on its credit line until the problem is cleared up. These credit lines are not credit guarantees; they can be, and are, canceled on very short notice. It is the cancellation of a commercial bank credit line that signals to other investors that the borrower's credit quality has deteriorated. Thus, the threat of a line cancellation gives banks tremendous power over a borrower's business, even though the bank no longer makes a loan.

Given the importance of the banking franchise, even in highly developed financial markets, what competitive threat do capital markets pose to the franchise value of banks? Because capital market development creates alternative sources of funds that are available to corporations, it leads to a reduction in the role of bank loans in corporate finance. The spread between the interest rate on loans to corporations and bank funding costs declines, and bank profits decline. Under normal circumstances,

profitability would be restored through shrinkage of the banking industry both through mergers and through a decline in the percentage of financial instruments supplied by banks. A scaled-down banking system would then continue to play its important role in maintaining borrower liquidity.[69]

It is very difficult, however, for policymakers to scale down the banking system. Because of the important role that banks play in maintaining liquidity in financial markets and in providing accounts used as the means of payment, they are usually implicitly or explicitly insured by the government, either through direct deposit insurance or through access to central bank credit. This insurance is often not priced appropriately, preventing bank deposit costs from fully reflecting the risks that banks take. Consequently, bankers who operate banks that should exit with this shift have an incentive to maintain their profitability by taking increased risks (see Weisbrod, Lee, and Rojas-Suárez, 1992). The gains from using the insurance subsidy to generate profits increase as competition from capital market instruments causes spreads on safe credits to decline. Thus, at some point even banks with formerly strong franchises will be tempted to take risks (see Weisbrod, Lee, and Rojas-Suárez, 1992). The recent banking crisis in the industrial world—Japan, the United States, and Scandinavia—indicates the difficulty of timing regulatory actions to prevent the increase in bank risk.

In Latin America, therefore, the main issue in evaluating the capital market impact on the franchise is whether the spread that banks can earn by holding short-term loans to corporations on their balance sheets has fallen to the point where banks seek alternative, risky investments. The spread available to banks holding corporate loans can be approximated by comparing the cost to corporations of borrowing in the short-term money market with the marginal cost to banks of funding corporate loans. Banks' marginal funding costs are the costs that banks face in raising liabilities in the money markets, such as the wholesale market for certificates of deposit and the interbank market. If this spread is relatively high, banks can still make money by lending to large corporations, and the balance sheet franchise is relatively safe.

The only market for which there are published data on commercial paper rates and money market bank funding rates is Mexico. In Mexico, two wholesale funding markets are available to banks: the banker's acceptance market and the interbank market.[70] In early 1994, before the outbreak of the financial crisis, the commercial paper rate was about 13.5 percent, and the banker's acceptance and interbank rates were about 11.5 percent; thus, the spread between the commercial paper market and the banker's acceptance or interbank markets was about 200 basis points, compared with only a few or no basis points in the United States (Chart 17).[71] Consider the following scenario: if the noninterest expense involved in a bank making a large corporate loan is assumed to be 75 basis points, which is high by U.S. standards, the bank is still able to earn a spread of 125 basis points between a loan priced at the commercial paper rate and its marginal cost of funds. If the bank funds this loan with an 8 percent equity-to-loan ratio,[72] it will earn a pretax return on equity of 27 percent, which is high even for a market where treasury bill rates are somewhat less than 10 percent.[73] Thus, it appears that developments in domestic capital markets have not yet significantly threatened the profitability of Mexican banks.[74]

Besides Mexico, Chile is the other Latin American country where the issue of competition to banks from domestic capital markets has arisen. Chile is perhaps the only Latin American market that has developed a corporate bond market. As in the case of the Mexican commercial paper, the impact of this market on the bank franchise must be measured in terms of the spread between corporate bond interest rates and the marginal cost of funds facing banks. Unfortunately, this spread cannot be measured as directly as the spread in the commercial paper market in Mexico, but there is strong direct evidence that, if the spread between bond interest rates and the mar-

[69]The function of providing liquidity is still important, but the demand for bank loans to provide liquidity declines as capital markets develop. Capital markets develop because markets are liquid enough to settle payments at the end of the day with securities rather than with "good funds." This argument is presented in detail in Section II.

[70]Banker's acceptances were an important funding instrument for banks in 1989 when reserve requirements on deposits reached 100 percent. When these requirements were eliminated, the market for banker's acceptances shrank substantially, and bank deposits regained their importance as a funding source for banks.

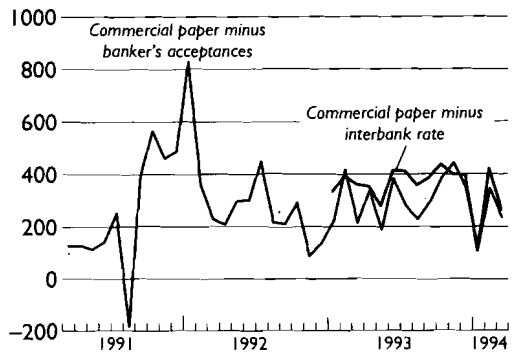
[71]Moreover, the spread between commercial paper and short-term deposits was about 400 basis points in early 1994.

[72]This equity ratio is chosen to conform to the capital guidelines of the Bank for International Settlements.

[73]This calculation assumes that 92 percent of the loan is funded at the bank's marginal cost of funds, and the remaining 8 percent of funds is raised in the equity market. Banks earned 13.5 percent on the entire loan, which is the commercial paper rate. They paid 11.5 percent, the banker's acceptance rate, on 92 percent of the funds used to make the loan, as well as 75 basis points of noninterest expenses on the entire amount of the loan. Based on this revenue stream and the funding and noninterest costs, banks earned about 27 percent on the remaining 8 percent of funds used to make the loan, which represents the equity funding.

[74]It is also noteworthy that during the financial crisis in Mexico, when interest rates on repurchase agreements secured by government paper rose to more than 80 percent, interest rates on bank deposits remained below 60 percent. Of course, only the most secure banks in the system were able to raise bank deposits under these conditions.

**Chart 17. Mexico: Interest Rate Spreads on Selected Financial Instruments, March 1991–March 1994**
*(In basis points)*




Source: Banco de México, *Indicadores Económicos* (November 1991 and March 1994).

**Table 10. Chile: Corporate Bonds Outstanding**

| Year | Corporate Bonds (1) | GDP (2) | (1)/(2) |
|---|---|---|---|
| | *(Billions of pesos)* | | *(Percent of GDP)* |
| 1980 | 2.0 | 1,075.3 | 0.18 |
| 1981 | 3.7 | 1,273.1 | 0.29 |
| 1982 | 21.1 | 1,239.1 | 1.70 |
| 1983 | 21.0 | 1,557.8 | 1.35 |
| 1984 | 20.0 | 1,893.4 | 1.06 |
| 1985 | 29.1 | 2,576.6 | 1.13 |
| 1986 | 12.3 | 3,246.1 | 0.38 |
| 1987 | 32.6 | 4,159.8 | 0.78 |
| 1988 | 107.8 | 5,411.0 | 1.99 |
| 1989 | 242.2 | 6,778.4 | 3.57 |
| 1990 | 411.7 | 8,477.9 | 4.86 |
| 1991 | 659.9 | 10,939.2 | 6.03 |
| 1992 | 758.1 | 13,740.0 | 5.52 |

Sources: Chile, Superintendencia de Valores y Seguros; and IMF staff estimates.

ginal funding costs of banks were available, it would be relatively large.

As a percentage of GDP, the corporate bond market grew rapidly during 1988–91 and has slowed down recently (Table 10). In 1992, corporate bonds, which equaled about 5.5 percent of GDP, were almost entirely held by pension funds and insurance companies, with two-thirds of the volume held in pension funds.[75] In contrast, pension funds and insurance only held 17 percent of total equities. In 1993, the top five pension funds held 74 percent of the total assets of all pension funds as well as 75 percent of the corporate bonds held by pension funds (Table 11). These figures indicate that the market for corporate bonds is quite narrow and concentrated and imply that the market is relatively illiquid—that is, a single trade probably moves the market price significantly. The illiquidity of the market should tend to keep interest rates on corporate bonds relatively high compared with a more liquid instrument like bank deposits. This would suggest that bank spreads and bank profits are still relatively immune to domestic capital market competition.

A possible further threat to the franchise value of the banking system in Latin America is large corporate access to the capital markets of the United States and Europe. For example, before the 1994 crisis, large, well-known firms with stable revenue bases, such as utilities, raised equity funds in the U.S. market through ADRs, which trade on the major stock exchanges.[76] In addition, some firms issued medium-term notes, which are instruments similar to bonds but are not subject to the disclosure

**Table 11. Chile: Pension Fund Assets by Type of Issuing Agency, December 1993**
*(Percent of all pension funds assets)*

| Issuing Agency | Five Largest Funds[1] |
|---|---|
| Total government institutions | 75.2 |
| Central Bank of Chile | 75.2 |
| Treasury | 71.6 |
| Other | 82.9 |
| Financial institutions | 69.3 |
| Enterprises | 75.2 |
| Investment in foreign entities | 88.4 |
| Other | 57.7 |
| Total assets | 74.0 |

Source: Chile, Superintendencia de Valores y Seguros.
[1]Cuprum, Habitat, Provida, Santa Maria, and Summa.

[75]For a relative comparison, in the United States, corporate bonds are about 19 percent of GDP.

[76]Foreign firms use ADRs to become listed on a U.S. stock exchange without being subject to the Security and Exchange Commission's disclosure requirement. To issue ADRs, however, foreign firms must hold a deposit with a U.S. chartered bank to guarantee payment of dividends. Receipts verifying the existence of these deposits are the instruments that are actually traded.

requirements of bonds, in the U.S. market. Despite their name, these instruments have varying maturities, sometimes quite long.[77]

While access to U.S. markets for new funds is quite limited under current conditions, access at some future date cannot be ruled out. How much of a threat does U.S. market access pose to the franchise value of banks in Latin America? Since ADRs are similar to equity instruments, a strong domestic banking franchise is an important complement to access to the U.S. domestic market as it is to access to domestic equity markets. The threat posed by access to the medium-term note market is best evaluated by considering why Latin American firms are not significant users of U.S. short-term money markets, such as the commercial paper market, unless they have a dollar-denominated cash flow. U.S. money markets are highly liquid, and large U.S. corporations use money market instruments rather than bank loans when cash outflows do not quite match cash inflows. It might seem relatively simple for a Latin American telephone company, for example, to issue commercial paper in the U.S. market and to engage in a currency swap to cover its cash outflow in its local market. In this way, it would seem to be able to lock in a low borrowing cost from a highly liquid market.

This transaction, however, is not as simple as it might first appear. A currency swap, like any futures contract, is priced according to the relative nominal interest rates between two markets. The currency in which nominal interest rates are higher will trade at a discount at maturity of that contract relative to the currency where nominal interest rates are lower. Swap contracts are usually priced off money market interest rates, such as the interbank rate. In Latin America, because money markets are relatively illiquid, banks may not be willing to price a contract off the interbank rate. If, for example, in Mexico, a peso-dollar swap contract were priced off the Mexican commercial paper rate rather than off the interbank rate, the discount on pesos at maturity of the contract would be relatively large because the commercial paper rate is higher than the interbank rate. This would erode a large portion of the gain to raising short-term funds in the dollar market.[78]

In Chile, the corporate bond market is a medium-term market, which might seem to provide an interest rate that can be used to price currency swaps for firms that issue medium-term notes in the United States. Again, the partial evidence presented above indicates that, like the Mexican commercial paper market, this market is illiquid, implying that Chilean medium-term interest rates include a liquidity premium, which reduces the cost advantage of raising funds in the more liquid U.S. market.

Based on the evidence of how fixed-income and equity markets in Latin America operate, it seems that a strong threat to the banking franchise from capital markets is some years away. The most liquid capital markets in the region are equity markets; even where fixed-income markets are operational—namely, the commercial paper market in Mexico and the corporate bond market in Chile—spreads are high relative to bank costs and the paper is held by a few investors. The growth of equity markets, however, poses some dangers for policymakers worried about unstable capital inflows.

[77]See Crabbe (1993).

[78]During the recent financial crisis in Mexico, a Mexican firm experienced a well-publicized default on its dollar-denominated commercial paper, perhaps damaging other Latin American firms' access to this market as well.

# VI Financial Soundness and Macroeconomic Stability: A Bank Balance Sheet Approach

This section focuses on the macroeconomic consequences of banks' performance. Specifically, it analyzes the extent to which the sustainability of a widely implemented type of stabilization program in Latin America, namely, an exchange-rate-based program, depends on the performance of the banking sector. This discussion complements those in previous sections, which used a sample of five countries to analyze how alternative policy environments in those countries affected the behavior and performance of banks, as well as the options available to the authorities to handle financial difficulties.

Recent literature on the sustainability of adjustment programs has focused on the destabilizing effects associated with the lack of credibility in the permanence of the announced policies (e.g., see Calvo, 1991; Obstfeld, 1986; Flood and Garber, 1984a; Calvo and Végh, 1990; and Rojas-Suárez, 1992). An often-cited example is that even when a long-run consistency exists between macroeconomic fundamentals and the announced exchange rate policy, a lack of confidence in the persistence of the announced policy may result in a speculative attack on the domestic currency. Because the attack itself changes the fundamentals—notably, by expanding domestic credit if the authorities accommodate the demands of speculators, or by raising domestic short-term interest rates if the authorities attempt to defend the exchange rate parity by increasing the cost of speculation—the government may find it too costly to defend the exchange rate on a sustained basis. In such cases, the authorities may validate the attack and abandon the announced exchange rate.

In the remainder of this section, it is argued that the degree to which a Latin American central bank may be able to withstand a speculative attack on its domestic currency—whether it involves a reversal of the capital inflows or not—depends crucially on two factors: (1) the extent of the commitment of the central bank to stabilize prices in the financial sector; and (2) the strength of the banking sector. While the first factor is a natural extension of the well-known literature on speculative attacks,[79] the second has not received sufficient attention in the economic literature. In addition, this section addresses the issue of the appropriate holdings of foreign exchange reserves by central banks.

As discussed in Section II and reinforced in Section V, although banks are a dominant feature in the financial landscape of Latin America, there are also significant differences in the degree of importance of banks and in the structure and organization of financial markets among countries in the area. The analysis that follows, therefore, centers on two cases that may best represent the alternative financial structures of the region: (1) an economy where the financial sector is largely dominated by banks and where dollar-denominated deposits are an important component of the banks' balance sheets (such as Argentina and Peru); and (2) a financial sector where some other long-term financial institutions, such as pension funds, are important players in absorbing financial flows and where dollar-denominated deposits are not an important fraction of total bank deposits (such as Chile).[80] By considering the specific effects of dollarization, the analysis will also derive conclusions for bank-dominated systems in which banks' deposits are largely denominated in the domestic currency.

In both cases, stock exchanges are assumed to be a small, albeit growing, component of the financial sector. In conformity with the current policy stance in most Latin American countries, it will be assumed that the government does not allow the nominal exchange rate to adjust freely to market conditions.[81]

[79]See, for example, Flood and Garber, 1984b; and Krugman, 1979.

[80]Although the analysis could incorporate the use of any foreign currency, U.S. dollars are, by far, the most commonly used currency in which bank deposits in foreign currency are denominated in those countries where foreign currency deposits are allowed.

[81]This is true even in those Latin American countries with the lowest degree of government intervention in foreign exchange markets, such as Peru.

## Bank-Intermediated System Facing Significant Dollarization

In the financial system to be analyzed here, the regulatory framework and/or domestic economic conditions prevent banks from facing significant competition from other financial intermediaries. This system, which characterizes many Latin American countries, can persist, even when constraints on credit allocation or interest rate controls are removed. An explanation for this occurrence is that high volatility in the net revenues of domestic firms complicates their issuance of commercial paper and bonds or their placement of equity shares.[82] As discussed in Sections II and V, commercial paper and corporate bonds are practically nonexistent in most Latin American countries (Chile being the exception for corporate bonds), whereas stock markets are booming, although the number of listed shares is very limited. As a result, bank credit remains the sole source of credit for the majority of firms.

Dollarization is defined here in its broadest form, namely, to indicate that the U.S. dollar is used not only as a store of value, but also as a unit of account and the medium of exchange.[83]

Assets issued by residents of a particular country are subject to two kinds of risk: (1) the risk of large losses in the real value of assets denominated in the domestic currency as a result of economic policies that lead to rapid inflation or to large exchange rate depreciations; and (2) the default risk associated with solvency problems in the issuing institutions or with the expropriation of domestic assets.[84] If the banking sector is perceived as sound and bank profitability is viewed as having a high priority among the authorities' goals—effectively ruling out the probability of expropriation of deposits because such an action would hamper banks' stability—a lack of confidence in the stability of the exchange rate would trigger a switch into bank liabilities denominated in U.S. dollars. By comparison, a lack of confidence in the soundness of the banking system would induce depositors to move their deposits denominated in either the domestic currency or U.S. dollars outside the domestic financial market; that is, it would trigger what is commonly known as capital flight.[85] Expectations of an exchange rate devaluation could also induce capital flight in a sound bank-dominated financial system where deposits denominated in a hard foreign currency—the U.S. dollar—are not allowed.

Although the stock of foreign exchange reserves in the central bank is important for assessing the effects of a possible reversal of the capital inflows on the exchange rate, its importance is associated with the degree of dollarization in the economy. In the extreme case of a fully dollarized economy, an attack on the domestic currency is meaningless because the domestic currency no longer plays any significant role in the system. However, agents holding U.S. dollar deposits in domestic banks may demand to convert them into liabilities issued by U.S. authorities that are held by the central bank.[86] In contrast, in an economy that is less than 100 percent dollarized, the stock of foreign exchange reserves plays a role in maintaining an announced exchange rate regime: an attack on the foreign exchange reserves of the central bank would involve short-term bank liabilities denominated in domestic currency. As in the former example, agents may also demand to convert U.S. dollar-denominated deposits into U.S. dollar bills. As will be discussed below, however, a speculative attack on the central bank foreign exchange reserves involving bank liabilities denominated in U.S. dollars will occur only if the public fears that its dollar-denominated deposits are no longer safe in the domestic banking system.

The decision of how large the stock of foreign exchange reserves should be is perhaps one of the key policy decisions of central bankers in Latin America. The discussion in Sections III and V made it clear that a large net foreign asset position held by a central bank carries with it two risks: first, it increases the temptation of governments to delay the correction of policy inconsistencies; second, it provides central banks facing an adverse shock in the domestic economy with the option of simply selling those foreign assets and expanding credit rapidly, with adverse consequences for the soundness of the banking system. This is particularly true when the central bank has a weak franchise value, as exemplified by the Peruvian experience during the mid-1980s. In other words, too many foreign exchange reserves in the hands of central banks may limit the amount of market discipline that authorities feel the need to

[82]See Weisbrod and Lee (1993) for a detailed discussion of this issue.

[83]The need to clarify the use of the concept is important because there is no agreement on the meaning of the term, and some authors (Calvo and Végh, 1992) would refer to this broad use of the foreign currency as "currency substitution."

[84]See Rojas-Suárez, 1991. Although the two types of risk are distinguished for analytical purposes, a situation may arise in which both risks become indistinguishable. For example, expectations of a devaluation—which increases the first kind of risk—may increase the expectation that the authorities, in an attempt to defend the domestic currency, would freeze dollar-denominated bank deposits—which increases the default risk.

[85]Notice that funds need not flow outside the country; they may well remain in an informal financial market dealing in U.S. dollars.

[86]Investors may also want to convert other assets denominated in U.S. dollars into U.S. dollar bills. They would be successful, however, only to the extent that the central bank guaranteed convertibility of those assets.

exert in making policy decisions. Moreover, when domestic interest rates (adjusted for changes in the exchange rate) are higher than international rates for risk-free assets, holding foreign exchange reserves is costly for the authorities because the marginal cost of central bank debt is higher than the marginal revenue of holding foreign exchange.

The discussion above suggests that there is a clear trade-off associated with holding foreign exchange reserves: on the one hand, they provide the resources to defend an exchange rate parity; on the other hand, they give rise to some risks and costs for sound policymaking, including delaying reforms of the banking sector. Aware of this problem, authorities in many Latin American countries are taking a policy stance regarding their desired holdings of foreign exchange reserves in a way that, according to their perceptions, minimizes such a trade-off. Indeed, their position regarding sterilization practices is a reflection of these choices. In the following two subsections, these choices are addressed.

### Monetary Base Fully Backed by Foreign Exchange Reserves

One of the central bank's choices is to maintain a ratio of the stock of (gross) foreign exchange reserves to the monetary base equal to or greater than one. This decision was made explicit in Argentina's convertibility law of March 1991, but it has been implicitly followed in many other Latin American countries during the early 1990s, including three of the countries analyzed in this paper.[87] The question to be addressed is to what extent the solvency of a banking system is important for determining the stability of a preannounced exchange rate in a dollarized economy where the monetary base is fully backed by foreign exchange reserves.

To analyze the importance of a solvent banking system for the stability of a preannounced exchange rate, assume that an adverse shock—which will remain unspecified here—generates a lack of confidence in the sustainability of the announced policies. Two scenarios will be considered. First, the shock produces a generalized expectation of a devaluation, but banks are perceived to be sound.[88] Second, the lack of confidence in the exchange rate is accompanied by a lack of confidence in the banking system.

[87]By the end of 1993, the ratio of gross foreign exchange reserves in Colombia, Mexico, and Peru was about 1.5. In contrast, Chile kept a smaller ratio of 0.8.

[88]In the remainder of this subsection, it is assumed that the exchange rate equals one. This simplifies the exposition greatly without affecting the analysis.

#### *Lack of Confidence in the Exchange Rate Policy, but Banks Are Perceived as Solvent*

In an economy where U.S. dollar bank accounts are allowed and the banking system is perceived to be sound, an exchange rate policy that lacks credibility does not need to generate flight from the domestic financial system; rather, the public will be induced to convert its domestic-currency-denominated deposits into deposits denominated in U.S. dollars. In addition, speculators taking positions against the domestic currency will increase their demand for loans denominated in domestic currency in the expectation that the devaluation will bring about a capital gain. However, if the central bank is committed to keeping the monetary base fully backed by foreign exchange reserves, the central bank will not validate the expansion of credit denominated in domestic currency (i.e., it will not provide banks with reserves to allow the expansion of credit);[89] instead, domestic currency interest rates will increase.[90]

Although central bank policy will prevent the extension of credit denominated in domestic currency, the public may be able, to a large extent, to convert its domestic-currency-denominated deposits into U.S. dollar deposits.[91] In the extreme, the public may want to have all its deposits (and cash holdings) denominated in U.S. dollars.[92] Assuming that reserve requirements on domestic-currency-denominated deposits equal those on foreign currency deposits, banks will need to convert the value of their cash assets (for reserve requirements purposes) denominated in domestic currency into U.S. dollars. As a result, the domestic monetary base will be extinguished, but the reduction in the stock of foreign exchange reserves held at the central bank will be limited to the initial stock of domestic currency in circulation (i.e., currency held by the public and out-

[89]In a fractional reserve requirement system, the monetary base includes reserve requirements on deposits denominated in domestic currency, other bank deposits in the central bank, and domestic currency in circulation.

[90]Likewise, by not providing an expansion of domestic currency to satisfy an increase in banks' reserve requirements, the monetary authorities would make it too expensive to reschedule existing loans denominated in U.S. dollars into loans denominated in domestic currency.

[91]Converting domestic-currency-denominated time and saving deposits into U.S. dollar deposits usually carries a cost. It is assumed here either that those costs are negligible or that they are outweighed by the expectation of large losses in the real value of those deposits arising from a devaluation.

[92]Although this is a highly unlikely case if interest rates are allowed to fluctuate freely, the example is used here to evaluate the capacity of the system to withstand flight from assets denominated in domestic currency. In a more realistic scenario, the people induced to shift into U.S. dollar assets would be those whose expectations of the size of the devaluation exceed that contained in the interest rate on domestic-currency-denominated deposits.

side the banking system).[93] The monetary system, that is, currency and deposits held by the public, will become, at least temporarily, fully dollarized.

Even in an extreme case when people prefer to move out of the domestic currency altogether, full dollarization will not persist if (1) there are some preexisting private contracts requiring payments in domestic currency; or (2) the authorities demand that certain payments take place in domestic currency, such as taxes and trading involving government bonds denominated in domestic currency. Although the demand for domestic currency to make payments on preexisting domestic-currency-denominated contracts may be temporary (it may vanish as the contracts expire), the demand for domestic currency to comply with authorities' regulations will be permanent. Therefore, if conditions (1) and/or (2) hold, the monetary base will not vanish (or may do so for a very brief period) following the sudden loss of credibility in the announced exchange rate policy; it will, however, be reduced significantly.

An example of the changes in the balance sheets of banks and the central bank that may follow immediately after a sudden loss of confidence in the exchange rate regime is shown in the appendix. Following the conversion of domestic currency deposits into U.S. dollar deposits, banks may find themselves with a mismatch in the currency denomination of their assets (domestic currency and dollars) and liabilities (only dollars in the example under consideration). However, the same factors that would make the dollarization a temporary process would also make the currency mismatch temporary: as preexisting stocks of loans denominated in domestic currency mature and as the need to undertake transactions that must be effected in domestic currency leads to the conversion of some U.S. dollar deposits into domestic currency, the currency mismatch would disappear. The correction of the currency mismatch is shown in the example presented in the appendix. That example also shows a plausible new equilibrium where, compared with the above example, the monetary base has fallen drastically and the dollarization process has strengthened significantly.

An interesting question remains, however: once the overhang of loans denominated in domestic currency matures, will borrowers engage in further borrowing denominated in domestic currency for business purposes? Although there is no definite answer to this question, the dynamics of expectations behavior sheds light on this issue. Clearly, if the authorities are able to convince the public at large of their commitment to the exchange rate, the initial decrease in the demand for domestic-currency-denominated loans will reverse because the real interest rate will decline.

Alternatively, uncertainty regarding expectations may lead people who are convinced of the authorities' commitment to believe that others remain unconvinced and that a further speculative attack may occur in the future (resulting in additional increases in the interest rate on domestic loans). These perceptions will affect the process of dollarization. The initial increase in the interest rate, following a speculative attack, hits not only speculators but also borrowers in domestic currency whose loans mature at the time of the attack. Borrowers convinced of the monetary authorities' commitment may fear the possibility of unanticipated future speculative attacks, because the resulting increase in interest rates will affect their maturing loans. Those borrowers may find it beneficial to shift the currency composition of their liabilities to the banks into U.S. dollar loans. That is, in this plausible outcome, different perceptions regarding the credibility of the monetary authorities' defense of the domestic currency will result in a strengthening of the dollarization process. In this example, the persistence of dollarization results from a lack of information regarding expectations. That is, dollarization can strengthen even if everybody individually believes in the authorities' commitment while thinking that others are unlikely to believe in such a commitment. Although this situation cannot persist in the long run, it can lengthen the period during which borrowers prefer dollar-denominated loans.

The discussion above assumes that the authorities are able to use the interest rate defense as a tool to respond to speculative attacks. Some empirical examples suggest, however, that in some cases the authorities perceived the costs associated with such increases in the real interest rates as exceeding the perceived benefits from defending the exchange rate parity, and, as a result, a devaluation followed.[94]

In general, the costs to the authorities of increasing interest rates on domestic currency assets are well known: the government's and businesses' financing costs increase, which may lead to a decline in output and employment. In addition, the increase in interest rates exerts a downward pressure on the price of nonbank assets, including the equity market. In the case under consideration, to the extent that some transactions need to be carried out using domestic currency, there could be a short-term decline in real activity following the temporary rise in real

[93]This is so because reserve requirements on domestic currency deposits held at the central bank will be converted into reserve requirements on foreign currency deposits also held at the central bank.

[94]The exchange rate crisis of the European Monetary System during the fall of 1992 offers a good example of the costs associated with using the interest rate defense to protect the exchange rate parity. For a detailed analysis of this episode, see International Monetary Fund (1993).

interest rates. Moreover, the default risk faced by banks may increase following the speculative attack as the increase in domestic currency real interest rates may adversely affect some borrowers' ability to pay. If, as assumed, banks are sound, they will be well capitalized and will be able to withstand the temporary increase in the default rate without the support of the monetary authorities.

The exchange rate parity can be preserved only if the authorities stand ready to accept the possible effects on the real economy of an increase in domestic real interest rates and avoid the temptation to expand credit in domestic currency, thereby abandoning the full backing of the monetary base with international reserves. Dollarization can, however, help minimize the well-known trade-off between real activity and exchange rate stability. The faster firms can adjust the currency composition of their liabilities—that is, the faster they can borrow in U.S. dollars rather than in domestic currency—the more limited the effect on the real sector.[95] Dollarization would be particularly important for those firms whose access to financial markets is limited to the domestic banking system. In the absence of dollarization, these firms would have to face the higher domestic real interest rates: the higher the financing costs, the more contractionary the effect of using the interest rate to defend the exchange rate parity.[96]

The discussion in this section has made it apparent that in a bank-dominated system where liquid assets are largely bank liabilities, the authorities may be able to successfully defend its parity against a speculative attack if the banking system is sound and is perceived to be sound and if the monetary base is fully backed by foreign exchange reserves. In this process, a plausible outcome is that dollarization is strengthened either if the authorities fail to convince the public of their commitment to the announced exchange rate policy or if some economic agents believe that further speculative attacks could occur in the future.[97] Allowing U.S. dollar-denominated accounts in the banking system is crucial for these results: by providing a source of financial investment denominated in foreign currency, dollarization prevents capital flight following a sudden loss of confidence in the exchange rate. Also, by providing a source of domestic credit denominated in foreign currency, dollarization minimizes the adverse impact of an increase in domestic currency interest rates on the financing costs of firms and, therefore, minimizes the pressure on the authorities to expand credit in domestic currency.

### *Lack of Confidence in the Exchange Rate Policy and in the Soundness of the Banking System*

In this case, an adverse shock generates a lack of confidence not only in the exchange rate system, but also in the stability and soundness of the banking system. Now, the public has an incentive to shift all of its deposits—in domestic *and* foreign currency—out of the domestic banking system. Because, in the case considered here, there are no domestic alternatives in which the public can keep its financial savings, there is an incentive to transfer the funds outside the country—that is, an incentive for capital flight.

If perceptions are right and the banking system is not sound, the authorities can do little to prevent a sustained flight from the banking system (with the exception of freezing deposits). If banks are not solvent, they will not be able to use their assets to satisfy the public demand to cash in its deposits—nonperforming loans cannot be liquidated to match the closing of deposit accounts. In this circumstance, the central bank would face strong pressure to bail out banks by extending credit to them. If the central bank were to expand the monetary base to extend credit to banks, however, the central bank would de facto be abandoning its commitment to fully back the monetary base with international reserves; this, in turn, would significantly hamper the central bank's ability to satisfy the demand for foreign exchange reserves at the announced exchange rate.

In contrast, a solvent banking system has a better chance of withstanding a "lack of confidence crisis." First, loans in good standing can be sold to pay bank depositors if there is a secondary market for bank loans, or used as collateral to obtain credit from foreign institutions, or, if there is room for monetary expansion without violating the assumption that the monetary base is fully backed by foreign exchange reserves, used to obtain credit from the central bank. When the system is solvent, the degree of maturity matching between assets and liabilities as well as banks' access to additional sources of liquidity are important to the success of the banks faced with a run.[98] Second, if banks are able to match the outflow of deposits with bank assets, and if the central bank does not expand domestic credit further, the maxi-

[95]This possiblity is of course related to the maturity structure of the existing stock of domestic-currency-denominated debt at the time of the speculative attack.

[96]Likewise, the net fiscal effect of a temporary increase in interest rates on domestic assets will be minimized if the government is able and willing to shift the currency composition of its debt.

[97]The authorities' alternative is to increase the number of transactions that have to be carried out in domestic currency to the extent that they *force* de-dollarization. As discussed above, however, this alternative would motivate capital flight even when the banking system is perceived as sound.

[98]Obviously, banks would not keep a perfect currency and maturity match between bank assets and liabilities. Likewise, however, it would be extremely unlikely that the run would dry up bank liquidity 100 percent, especially in an economy fully dependent on banks for financial transactions.

mum amount of demand for central bank foreign exchange reserves would equal the monetary base plus dollar-denominated reserve requirements.[99] Because the monetary base is fully backed by foreign exchange reserves, the central bank will be able to satisfy the demand for foreign currency at the established exchange rate.[100] As the discussion so far indicates, bank soundness complements exchange rate stability.

As in the first scenario, the central bank's commitment to back the monetary base with international reserves would imply an increase in the domestic currency real interest rate following the increased demand by speculators for liabilities denominated in domestic currency. Also, as in the first scenario, the increase in real interest rates may increase the default rate faced by banks. If banks are initially well capitalized, they can absorb the losses; otherwise, banks that were solvent before the run would become insolvent, inducing a further run out of the domestic banking system. The key, therefore, is appropriate bank capitalization such that a sound bank would remain sound following an unexpected increase in the default rate.

There is an additional similarity with the first scenario: if banks are indeed solvent, the authorities will be able to maintain the exchange rate parity only if they can resist the temptation to expand the monetary base to avoid the costs associated with the increase in the interest rates (even when the increase is temporary). There is, however, an important difference with the first scenario. Because the disintermediation from the domestic banking sector would include both domestic and foreign deposits, firms that depend completely on domestic banks would not be able to redenominate the currency of their loans because liquidity in *both* currencies would have dried up following the speculative attack; those firms would then have to pay the increased financing costs in full. If the process is understood to be temporary, these firms would have a greater incentive than before to delay production plans to avoid the increased financing costs. The temporary effects on output would, therefore, be greater than in the first scenario. Likewise, government domestic financing costs would be greater. Notwithstanding these increased costs, if banks proved to be sound, the process of bank disintermediation would tend to reverse itself.

Would the results be affected by the inflow of large amounts of foreign capital before the crisis? If the banks were sound *and stayed solvent and profitable during the inflows of capital*—that is, if they did not increase the risk of their loan portfolio—there should be no significant difference with the results discussed above. The size of the banks' balance sheets would be larger, as would the size of the temporary reversal of flows, but the analysis would remain unchanged.

If banks were not sound (or had a weak franchise value, to use the terminology of the previous sections), the previous capital inflow would make a difference: bankers who were not prepared to price risk correctly might have used the inflows of capital to extend risky loans that, in the presence of an adverse shock, would turn into nonperforming loans. If a bank run were to occur, the authorities would have to face the additional pressure of bailing out failing banks; the amount of central bank credit necessary to do so would increase in proportion to the size of the capital inflows used to extend bad loans. At this point, it is useful to recall the discussion on sterilization contained in Section V. As noted there, sterilization seems unnecessary if the banking system is solvent because the size of the capital inflows should make no significant difference. However, a sterilization policy seems to deserve strong consideration if banks are not yet strong enough to make sound credit decisions and the authorities fear a bank run before bank restructuring is completed. In this case, as discussed in Section V, curtailing the expansion of banks' balance sheets through sterilization seems appropriate. Although the costs of sterilizing are well known,[101] they may be outweighed by the costs of a bank run in the context of bad credit decisions. Sterilization could then be used as a temporary measure to allow enough time for banks to consolidate their operations. It is important to stress, however, that sterilization will yield the desired results only if the monetary authorities are in a better position than the banking sector to allocate financial resources.[102]

### Monetary Base Partially Backed by Foreign Exchange Reserves

The discussion above suggests that a stock of foreign exchange reserves smaller than the monetary base may weaken the central bank's ability to defend the exchange rate if a lack of credibility crisis emerges. This is the typical case analyzed in the traditional literature of speculative attacks (see Flood and Garber, 1984a; and Krugman, 1979) and does

[99]Total net liabilities of the central bank can be approximated as the monetary base plus other net liabilities denominated in foreign currency, which, for the purpose of this discussion, is assumed to equal U.S. dollar-denominated reserve requirements (see the example in the appendix).

[100]For this to be true, foreign exchange reserves need to be accounted for net of U.S. dollar bank deposits in the central bank to satisfy reserve requirements because investors may convert the entire stock of domestic currency into dollars.

[101]See Calvo (1991).

[102]On the appropriate choice of sterilization method, see the discussion in Section V.

not need an extended discussion. Two main conclusions are appropriate to the example analyzed here.

First, even if there is no lack of confidence in the solvency of the banking system—such that the public would want only to change the currency denomination of its deposits—a speculative attack on the domestic currency may force the monetary authorities to abandon the exchange rate because, in a massive attack on the currency, the central bank may not have enough foreign exchange reserves to satisfy demands from the public to convert domestic currency holdings into U.S. dollars. The higher the stock of domestic currency assets held by the public (including cash and bank deposits), the greater the pressure on the central bank's foreign exchange reserves.[103]

Defending the exchange rate would, therefore, most likely involve a greater increase in the domestic currency real interest rate than if the monetary base were fully backed by foreign exchange reserves. As discussed above, this would increase the costs of defending the parity and might increase the authorities' temptation to abandon such efforts.[104]

Second, if there were to be a loss of confidence in the domestic banking system, the pressures for a devaluation would probably be greater if the stock of foreign exchange reserves were smaller than the monetary base, even if the banks were solvent and could use their assets to cash out the closing of deposits.[105]

## A More Diversified Financial System

The limitations on the diversification of the financial system in Latin America were discussed in Section II. Indeed, as mentioned above, in countries where banks' relative importance in the financial system has declined, the only significant competition in absorbing savings comes from pension funds. On the lending side, banks remain the most important source of credit; with the exception of Chile, very few firms in other countries issue bonds in the domestic markets. Moreover, the stock exchanges in Latin America, although showing rapid increases in share prices, have a limited number of listed companies.[106]

It is nonetheless important to recognize that the quick expansion of equity markets may create pressures on the government to protect the real value of share prices, especially if the development of more sophisticated and diversified capital markets becomes a government priority. Indeed, a current policy discussion among policy regulators in Latin America concerns the extent of government involvement in developing capital markets. To keep the analysis relevant for Latin America, this example will assume that banks remain the most important source of liquidity in the system but that long-term assets, such as bonds and equity, compete with bank loans as sources of credit. Also, bonds are assumed to be denominated in domestic currency.

### Lack of Confidence in Exchange Rate Policy

Assume, as before, that banks are sound and are perceived to be sound, but that an adverse shock results in a speculative attack on the domestic currency. What difference does the introduction of financial assets competing with bank loans make to the analysis? The key difference is that it imposes additional constraints on the monetary authorities and may therefore weaken their capacity to defend the exchange rate.

The public would want to shift from domestic-currency-denominated assets to foreign-currency-denominated assets. In addition to bank deposits, the public now has a more diversified portfolio of assets that it may want to convert into foreign-currency-denominated assets. Pension fund managers, as well as the general public, would then have an incentive to transform bonds and, probably, equity into foreign currency assets (cash or foreign currency deposits).[107]

[103]If the reserve requirement on U.S. dollar deposits is smaller than that on domestic currency deposits, banks may find themselves with excess reserves following the conversion of domestic-currency-deposits into U.S. dollar deposits. Banks may, therefore, be willing to extend further credit in domestic currency, and the central bank may find that it is asked to convert these new domestic currency deposits into U.S. dollars. Further pressure on the exchange rate would then follow.

[104]Notwithstanding these additional pressures, as in the case when the monetary base is fully backed by foreign exchange reserves, the possibility of substituting among the domestic and foreign currencies may minimize the impact of the increase in domestic currency real interest rates on the firms' and government's financing costs; this may, therefore, minimize the costs of defending the exchange rate.

[105]As discussed above, if (1) the banks can liquidate assets to match the closing of deposits, and (2) the authorities do not expand domestic credit further, the maximum demand for foreign exchange reserves would equal the monetary base plus reserve requirements on U.S. dollar deposits. This demand would not be fulfilled if the monetary base exceeded the stock of foreign exchange reserves.

[106]International placement of bonds and equity in the international capital markets by private Latin American companies is improving in terms of both the number of issues and the contracts. See International Monetary Fund (1992). Once again, however, these markets remain small and confined to a select number of large companies with international standards.

[107]If there are bonds denominated in foreign currency, the public may be satisfied to change the currency composition of its assets and there may not be a shift toward bank deposits denominated in foreign currency. Because equity is a real asset, it is not clear that the demand for it would decline following adverse expectations about the exchange rate. The most affected issuing firms, however, would be those whose liabilities are mostly denominated in U.S. dollars but whose earnings are denominated in domestic currency (an example could be a firm producing a nontradable good using imported inputs).

The outcome of this attack on the domestic currency depends once more on the monetary policy followed by the central bank. If the monetary base is required to be fully backed by foreign exchange reserves at all times, the public as a whole will not be able to convert its bonds and equity holdings into U.S. dollar-denominated bank deposits. To understand this result, it is necessary to realize that for an economic agent to sell a bond or equity denominated in domestic currency, some other agent must give up a bank deposit denominated in foreign currency. This scenario is not possible in the aggregate because it contradicts the fact that, in the aggregate, the public wants to reduce its holdings of domestic currency assets. Two outcomes are then possible: (1) the monetary base will not expand, and bond prices, and perhaps equity prices, will fall, or (2) the monetary base will expand to prevent a decline in asset prices. The latter would imply a de facto abandonment of the full backing of the monetary base and would validate the attack on the exchange rate; this, in turn, would significantly weaken the central bank's ability to defend the parity.

The outcome described in (1) would increase the probability that the monetary authorities could maintain their exchange rate policy. The downside of this outcome, however, is that the decline in asset prices, by reducing the real wealth of their holders, could increase the probability of default faced by banks if asset holders were also banks' debtors.[108] If the authorities perceived that the decline in asset prices could lead to problems in the banking system, they could have an incentive to abandon the exchange rate policy. That is, a more developed financial system imposes greater obstacles to the defense of an exchange rate even if the banking system is sound and if the monetary base is fully backed by foreign exchange reserves.[109] This can be interpreted either as an argument against fixed exchange rates, or as one to keep most financial transactions under the roof of banks, at least during the transition period toward macroeconomic stabilization—when loss of confidence crises are likely to occur.

[108]Banks would also be directly affected if they were holding a significant proportion of the assets whose relative prices had declined.

[109]The larger the stock of international reserves relative to the monetary base, the higher the probability of success for a central bank defending a parity in a speculative attack. In the extreme, if foreign exchange reserves equal the monetary base plus the value of bonds and equity, a speculative attack is unlikely to be successful. However, as discussed at the beginning of this section and in Sections III and V, keeping a high ratio of foreign exchange reserves to the monetary base, which could be achieved through high reserve requirements on U.S. dollar deposits or through sterilization, may entail high costs both for the real sector—through the effects of higher real interest rates—and for the banking system, as it may weaken the franchise value of banks.

### Lack of Confidence in Both Exchange Rate Policy and Soundness of Banking System

Can the availability of assets competing with banks' liabilities help prevent capital flight during a bank run? Only if the alternative assets are denominated in foreign currency. This is just an extension of the discussion above and needs no further comment.[110] However, even if asset alternatives to bank deposits were denominated in foreign currency and capital flight was avoided, the stability of the exchange rate would still depend on the strength of the banking system. Just as in the case where banks were the only financial institutions, the decline in the demand for assets denominated in domestic currency—cash and bank deposits—would imply a reduction in the stock of foreign exchange reserves held at the central bank and, therefore, would put pressure on the announced parity. In other words, the pressure on the exchange rate does not depend on whether the foreign currency stays in the economy or leaves it through capital flight; rather, it depends on whether international reserves leave the central bank.

## Results

This section has used a simple balance sheet approach to analyze the role of a sound banking system in allowing the central bank to maintain the announced exchange rate policy following a speculative attack on the domestic currency. A summary of the results follows:

- Dollarization may be an ally for governments pursuing exchange-rate-based stabilization programs but only if the banking system is sound. Dollarization may prevent capital flight if a lack of confidence in the sustainability of the economic program leads agents to substitute away from bank deposits and other assets denominated in domestic currency into those denominated in foreign currency. Dollarization also minimizes the impact on output and employment resulting from a possible increase in the domestic currency interest rate that may follow the speculative attack, because domestic firms may find it advantageous to shift from bank loans denominated in domestic currency to bank loans denominated in U.S. dollars.[111]
- In sharp contrast, if a bank-dominated financial system is not sound but the public does not have in-

[110]The currency denomination of capital markets instruments may deter capital flight only to the extent that the lack of confidence includes only the banking system and not the entire financial system.

[111]Or, to the extent that it is permissible by the legislators, from issuing bonds denominated in domestic currency to issuing bonds denominated in foreign currency.

formation about banks' financial difficulties, dollarization may be a problem for governments undertaking serious adjustment efforts. In this case, although a speculative attack on the domestic currency may not be followed by capital flight, the problem would not vanish as depositors would just shift the currency composition of their deposits within the same troubled banks.[112] In the event of a run on the banking system, pressures to rescue problem banks would increase the government's incentives to abandon the announced exchange rate policy.

• Sterilization may be a useful policy in bank-dominated financial systems facing a large inflow of foreign capital, but only as a temporary measure to give time to banks to strengthen their balance sheets. As discussed in Section V, if the banking system is sound, sterilization is not only unnecessary but it also increases the financing costs for firms and the authorities.

• Increasing the domestic real rate of interest to defend the exchange rate may weaken the banking system because it may lead to an increase in the default rate faced by banks. If banks are well capitalized, however, the authorities may not face significant pressures to extend credit in order to rescue banks in trouble—that is, the better the banks' capitalization, the greater the probability that the authorities will be successful in preserving the exchange rate parity.

• A more diversified financial system imposes additional constraints on a government defending the exchange rate after a speculative attack. For the exchange rate defense to be successful, asset prices would have to decline. If a fall in asset prices is viewed as having a serious impact on the real sector of the economy, the authorities may have a greater incentive to expand domestic credit and abandon their exchange rate policy.

[112]The problem would compound if the reserve requirement on dollar-denominated deposits were lower than that on domestic currency deposits. In that case, the balance sheets of troubled institutions would expand further.

# Appendix Mechanics of a Speculative Attack on a Sound, Dollarized Banking System

Assume that the authorities impose reserve requirements on the following:

- domestic-currency-denominated deposits = k = 10 percent
- foreign-currency-denominated deposits = j = 20 percent

Assume also that transactions that must be effected in domestic currency (payment for taxes, for example) are such that the public needs to hold a minimum of deposits denominated in domestic currency equal to $10. For simplicity, assume that the public holds no cash, so that its entire financial wealth takes the form of bank deposits. The exchange rate between U.S. dollars and domestic currency is assumed to equal 1.

An initial position can be characterized as follows (where bank capital has been netted out in the accounts):

| Assets | Liabilities |
|---|---|
| Banks | |
| Reserve requirements | Deposits |
| Domestic currency = 10 | Domestic currency = 100 |
| U.S. dollars = 20 | U.S. dollars = 100 |
| Loans | |
| Domestic currency = 90 | |
| U.S. dollars = 80 | |
| Central Bank | |
| Foreign exchange reserves = 30 | Monetary base = 10 |
| | Bank deposits in U.S. dollars = 20 |

A lack of confidence in the announced exchange rate may lead to a shift away from the domestic currency. Hypothetically, if no other change occurs, the balance sheet may look as follows in the instant immediately after the shift away from domestic deposits.[1]

| Assets | Liabilities |
|---|---|
| Banks | |
| Reserve requirements | Deposits |
| Domestic currency = 0 | Domestic currency = 0 |
| U.S. dollars = 30 | U.S. dollars = 200 |
| Loans | |
| Domestic currency = 90 | |
| U.S. dollars = 80 | |
| Central Bank | |
| Foreign exchange reserves = 30 | Monetary base = 0 |
| | Bank deposits in U.S. dollars = 30 |

Because the monetary authorities will not accommodate a speculative attack on the domestic currency, the interest rate on domestic-currency-denominated loans will rise. The increase will prevent a currency restructuring of domestic currency loans.

In the above balance sheets, banks are not satisfying reserve requirements in U.S. dollars, and, therefore, that position is a disequilibrium one that could exist for only a brief time. The position also shows a mismatch in the currency composition of banks' assets and liabilities. As the existing stock of loans denominated in domestic currency expires and as the public need to hold a minimum of $10 in domestic-currency-denominated deposits becomes binding, a possible outcome may be:

| Assets | Liabilities |
|---|---|
| Banks | |
| Reserve requirements | Deposits |
| Domestic currency = 1 | Domestic currency = 10 |
| U.S. dollars = 29 | U.S. dollars = 145 |
| Loans | |
| Domestic currency = 9 | |
| U.S. dollars = 116 | |
| Central Bank | |
| Foreign exchange reserves = 30 | Monetary base = 1 |
| | Bank deposits in U.S. dollars = 29 |

In this outcome, the dollarization process has strengthened and will remain strong unless the public becomes convinced of the monetary authorities'

[1]The dynamics toward the final position could take a variety of forms. The example presented here is chosen only for illustrative purposes.

commitment to the exchange rate. Also, owing to a reserve requirement on U.S. dollar deposits higher than that on domestic-currency-denominated deposits, the new equilibrium involves a lower level of total loans to the economy. Notice that if k = j, total loans will have remained unchanged.

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The 1980s and 1990s

ISBN 1-55775-502-7