

INTER-AMERICAN DEVELOPMENT BANK

Economic and Social Progress in Latin America
2005 REPORT

UNLOCKING
CREDIT

The Quest for Deep and Stable Bank Lending

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2005 REPORT
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The Quest for Deep and Stable Bank Lending

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PREFACE

Credit supplied by the banking sector is the most important funding source for firms and households in Latin America and the Caribbean. Unfortunately, credit is scarce, expensive, and volatile. Without deep and stable credit markets, it will be very difficult for the region to achieve high and sustainable growth rates and combat poverty.

The past few decades have been a period of continuous transformation in the Latin American banking sector. During the 1970s, much of the financial system was repressed, and the government had a prominent role in financial activity. After a brief period of financial liberalization and some privatization, in the 1980s most financial systems faced deep crises that forced governments to intervene and increase public ownership. By the late 1980s, great concern about bank regulation and supervision had spread worldwide, with an important impact in Latin America. A new wave of financial sector reform and privatization materialized once again, this time in a context of stronger prudential regulation and supervision. By the mid-1990s, bank credit was growing at historically remarkable rates, following a surge in capital inflows. Nonetheless, crises hit again in many countries during the second half of the decade. By the beginning of the new century, banks remained weak and credit stagnated. What went wrong? If deep and stable bank lending was a priority, what piece of the puzzle was still missing?

The stability of credit markets as well as their size and accessibility have long been a concern of the Inter-American Development Bank and its Research Department. Throughout the mid and late 1990s, the Bank was a leading voice in the analysis and understanding of banking crises. Views on this issue have changed and much has been learned. Both Bank research and operational experience have led us to rethink how to integrate into the global financial market, how to design appropriate prudential rules that deal with vulnerabilities that are spe-

cific to the region, and how to cope with external shocks such as sudden stops in international capital flows, which were not incorporated previously in the analysis of banking crises. The 2005 edition of *Economic and Social Progress in Latin America* summarizes many of those lessons, providing different points of view that, hopefully, will be useful for bank regulators and supervisors.

While coping with domestic and international macroeconomic volatility is one of the main tasks to achieve deep and stable lending, there are many other institutional factors that are crucial as well. One is the design of an adequate financial safety net defining clear tasks for the central bank, the deposit insurance agent, the market, and the banking system's regulators and supervisors. However, other ingredients in the institutional prescription go beyond financial institutions. The effective protection of property rights (particularly creditor rights in bankruptcy procedures) is a key area where much still needs to be done in Latin America and the Caribbean in order to better exploit the benefits of credit markets.

A topic of great controversy regarding the characteristics of the banking system is its ownership. Latin America and the Caribbean has switched from one extreme to the other several times in the past decades, both in practice as well as intellectually. Banks have switched from private to public hands and vice versa repeatedly, and, recently, foreign banks have become the main players. The intellectual debate in this area has been extremely polarized. An objective of this Report is to balance extreme views in order to learn what can be gained from alternative sources of ownership, and to understand the real trade-offs involved, refraining from an ideologically driven debate.

Small and volatile credit markets are harmful to all. However, certain groups are more vulnerable to credit restrictions. The Report emphasizes two

of them—small and medium-size enterprises, and households that require mortgage credit—that represent a segment of society that is crucial to attend to in order to promote economic growth and increase overall social welfare.

The 2005 Report contributes to the identification of Latin America and the Caribbean's main challenges in the banking sector, and to the analysis, understanding, and design of prescriptions for

financial sector policies that promote deeper, more stable, and accessible credit. Far from being the last word on a topic that generates much discussion, it gives readers a better understanding of credit markets in Latin America and the Caribbean and of the major sources of vulnerability in the region's banking systems, and proposes new ideas regarding policy directions to improve the well-being of Latin Americans.

Enrique V. Iglesias

President

Inter-American Development Bank

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PART I

Stylized Facts and Summary

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Introduction

BANKS play a pivotal role in the determination of living standards in modern economies. Banks have the ability to stimulate and collect a society's savings and allocate them among firms and sectors that demand capital as an input in their economic activities. Through the allocation of resources, the banking sector can determine and alter the path of economic progress, particularly in countries that have not yet developed alternative sources of financing such as deep capital markets. The role of banks also extends to credit allocation. By offering payments system services and protecting deposits, banks may become a cornerstone of economic prosperity.

In the context of this Economic and Social Progress Report on Latin America and the Caribbean, a bank is understood as an institution whose main operation consists of receiving deposits from the public and granting loans. In this process of financial intermediation, commercial banks finance most of their loans using deposits and have high leverage levels. The nature of this operation involves transforming assets in such a way that several risks are taken simultaneously.¹ When granting loans, banks face credit or repayment risk, liquidity risk (linked to differences in maturity between liabilities and assets), interest rate risk, and other market risks (for example, risks associated with the fluctuation of relevant prices such as the exchange rate). The combination of these makes banking activity inherently fragile, and this fragility is exacerbated by overall macroeconomic imbalances.

The Report analyzes several issues regarding the size, cost, and stability of bank credit, and relates them to the underlying risks that characterize banking. The Report includes thorough analyses of the determinants of the cost and amount of credit available to societies, as well as the determinants of the volatility of credit and the fragility of the banking sector. It stresses policy issues that have been and currently remain at the center of the ongoing financial debate throughout Latin America and the Caribbean.

WHY CARE ABOUT BANK CREDIT?

Most of the tasks carried out by banks are related to the efficient allocation of resources. This role is crucial for economic development. Banks are a key player in the allocation of capital and, hence, in stimulating economic development. In fact, bank credit and gross domestic product (GDP) per capita are highly correlated, as shown in Figure 1.1. Countries with small banking sectors have lower levels of development. This strong correlation is a clear sign of the link between financial and economic development.

From a theoretical point of view, the direction of causality of this link is not clear. Financial development may cause economic development by improving the allocation of savings in the economy, but also economic development, through the creation of good institutions and the required infrastructure, may foster growth in the financial system. Nonetheless, a series of recent empirical studies, such as the seminal papers by Levine and Zervos (1998) and Rajan and Zingales (1998), have shown that higher initial financial development implies subsequent higher GDP growth, proving that financial development in fact causes economic growth. Good banks that provide credit in an inexpensive and stable fashion are of great relevance for development.

Economic development is related not only to the development of the banking system, but also to the development of other financial intermediaries such as stock markets and nonbank credit providers. Table 1.1 shows bank, nonbank, and stock market development for a group of countries at different levels of economic development. Clearly, there are large differences in the various forms of financial development across countries. Developed countries have the most developed financial markets in every dimension and possess capital markets that can complement and in some cases even substitute for bank credit. For reasons that lie beyond the scope of

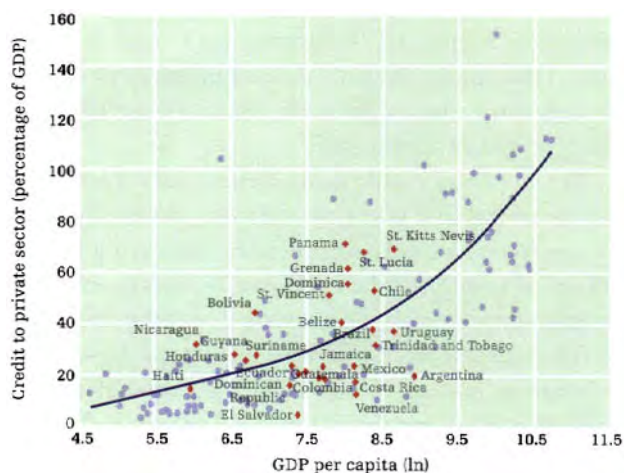
¹ For example, banks transform short-term liquid deposits into long-term illiquid loans. They transform several other characteristics of assets as well, taking many risks during the process.

TABLE 1.1 FINANCIAL DEVELOPMENT BY INCOME GROUP, WORLDWIDE, 1990s
(Percentage of GDP)

Income group	Banks	Other institutions	Stock markets
High	81	41	33
Upper-middle	40	21	11
Lower-middle	34	12	12
Low	23	5	4

Note: Values are simple averages for the World Bank's income groups.
Source: Demigüç-Kunt and Levine (1999).

FIGURE 1.1 Banking Depth and Economic Development in Latin America and the Caribbean, 1990s



Note: Average credit to the private sector over GDP and GDP per capita during the 1990s. Trend line using natural cubic spline.
Source: IMF and World Bank data.

this Report, strong capital markets have not developed in Latin American countries, and the main source of external financing for firms in the region is bank credit.

As is evident from Table 1.1, in relative terms, bank credit is much more relevant in developing countries than in developed ones. It is perfectly natural for countries with an underdeveloped banking system to have an underdeveloped capital market. International experience suggests that a security-based financial sector relies on a mature banking sector. That is, there is a sequential process in the development of banking and capital markets; the latter develops once the former is fully established (Rojas-Suárez and Weisbrod 1994). In order to work properly, capital markets need banks; and banks need capital markets to protect against certain types of risks and to grow as well. Usually, at the end of

every capital markets transaction, there is a bank providing the necessary liquidity to complete the transaction. Moreover, banks play the role of market makers. A recent example is the development of public bond markets.² As expected, given its level of economic development, the financial sector in Latin America and the Caribbean is bank-based, and security markets are small and illiquid.

In a context of few alternative sources of financing, the development and stability of the banking sector is crucial for achieving a stable economic growth path. When capital markets are shallow, banks carry most of the responsibility of searching for safe and profitable investment projects in need of capital, and of supplying them that capital. Without an efficient means of capital allocation, profitable projects would not be undertaken, and economic growth could be hindered.

The stability of the credit supply process is also crucial for development. Long-term profitable projects require continuous access to sources of funding. An interruption in credit supply can lead to a disruption in investment and economic growth and prosperity. It is not surprising that countries with deeper credit markets exhibit higher rates of economic growth and lower volatility in response to shocks.³ From this perspective, policies that increase the ability of banks to supply credit and to manage risks appropriately are important for exploiting the potential benefits of cred-

² Other examples include the development of services such as insurance and leasing. The reason banks are at an advantage in initiating the development of these services is their access to information on risks.

³ See, for example, King and Levine (1993), Rajan and Zingales (1998), and Beck, Levine, and Loayza (2000) for discussions of how financial development causes economic growth, and Galindo and Micco (2004b) for a discussion of how more financially developed countries tend to be more stable after an external shock hits the economy.

TABLE 1.2 FINANCIAL DEVELOPMENT BY REGION, 1990s

Region	Number of countries	Credit to private sector (percentage of GDP)	Credit and market capitalization (percentage of GDP)	GDP per capita, 1995 (U.S. dollars)
Developed countries	24	84	149	23,815
East Asia and the Pacific	10	72	150	2,867
Middle East and North Africa	12	43	80	4,416
Latin America and the Caribbean	20	28	48	2,632
Eastern Europe and Central Asia	18	26	38	2,430
Sub-Saharan Africa	13	21	44	791
South Asia	6	20	34	407

Note: Values are simple averages for the regions for the 1990s.
Source: IMF and World Bank data.

it markets in achieving efficient credit allocation and fostering economic growth.⁴

The discussion above stresses the great importance of banks in providing capital efficiently to finance investment projects. But there are several other tasks that banks undertake that also support economic activity. Banks provide liquidity and access to a payments system. In a world without transaction costs, where information was available and free to everyone, there would be no need for money. However, given the existence of frictions and information limitations, the use of money is more efficient than pure barter. For example, because of the size of transactions or the physical distance between parties in a transaction, the use of nonphysical forms of money—such as checks, debit cards, and credit cards—is crucial for the adequate performance of goods and services markets. Banks provide a clearing system and a complete network to facilitate most economic transactions by guaranteeing that the payer at one end of a transaction will in fact deliver the agreed funds to the payee at the other end of the transaction in a quasi-automatic way. The ability to efficiently transfer funds between agents is essential for a market-based economy. Costly and ineffective transactions can hinder the behavior of several markets. Hence, protecting the payments system has become a policy objective in itself.

Providing a safe set of institutions to protect savings, allocate resources efficiently, and support the efficient handling of financial transactions is crucial for development. However, due to problems related to asymmetric information and full contractibility between borrowers and lenders, the management of risks is not straightforward. Creating and maintaining a safe and sound banking system is a difficult task.

BANK CREDIT IN LATIN AMERICA AND THE CARIBBEAN: STYLIZED FACTS

Bank credit is scarce in Latin America and the Caribbean. During the 1990s, the average level of credit to the private sector in the region was only 28 percent of GDP, a rate significantly lower than that of other groups of developing countries, such as East Asia and the Pacific (72 percent), and the Middle East and North Africa (43 percent). The size of the region's credit markets, as shown in Table 1.2, is shockingly small when compared with developed countries (84 percent).

A larger view of the financial sector, including bank credit as well as capital markets, leads to the same conclusion. Despite the fact that the current level of credit to the private sector in Latin America and the Caribbean compares favorably with the level observed in the past, other groups of developing countries have experienced much faster development of their banking industries. For example, credit to the private sector in East Asia averaged 15 percent of GDP in the 1960s, whereas now it exceeds 70 percent of GDP, while Latin America and the Caribbean has gone from 15 percent to 28 percent.⁵

The problem is not only one of small credit markets. A great source of concern is that apparently in many countries, the size of the financial sector is even smaller than what would be consistent with their level

⁴ For a discussion on financial liberalization and efficient credit allocation, see Galindo, Schiantarelli, and Weiss (2003); for the impact on financial liberalization and growth, see Galindo, Micco, and Ordoñez (2002b).

⁵ Based on IMF and World Bank data.

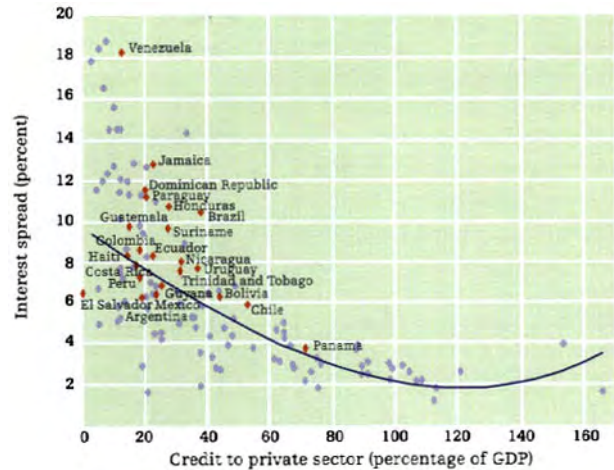
of economic development. Figure 1.1 shows that for the region as a whole, credit to the private sector is close to the expected value (the trend line in the figure), given the level of GDP per capita; however, there is a great deal of heterogeneity in the region, in particular between Caribbean countries and the rest of the region. Except for Bolivia, Chile, and Panama, most of the continental Latin American countries have a small banking sector for their level of development (Figure 1.1). Countries such as Argentina, El Salvador, Mexico, and Venezuela have very underdeveloped banking sectors. In Argentina, the level of credit to the private sector during the 1990s (20 percent) was 30 percentage points lower than predicted for its level of development (50 percent). On the other side of the spectrum, most Caribbean countries present larger banking sectors than expected, given their development level. Explaining why financial development is so far behind in most countries and studying policy recommendations to deal with this are some of the main tasks of the Report.

The underdevelopment of the financial sector in general and the small banking sector in particular imply that one of the major problems faced by businesses in Latin America is accessing financial markets. For almost all Latin American countries covered by the World Business Environment Survey, access to credit was the most serious concern.⁶ In countries where credit constraints are tighter, firms are unable to grow properly. IDB (2001) estimates that on average, a large firm, which in principle should be less credit constrained than small and medium enterprises, could increase its assets by nearly 5 to 8 percent for every 10 percent increase in domestic financial depth. Moreover, as shown in this Report, small and medium enterprises are more credit constrained in Latin America than elsewhere.

Underdeveloped banking sectors are related not only to lower amounts of credit, but also to higher interest rate spreads—the difference between the interest rate charged to borrowers and the rate paid to depositors—and therefore higher lending rates and lower net returns to savings. The spread between these two returns reflects (i) the efficiency and market power of the banking sector; (ii) the risk of default on loans; (iii) liquidity, currency, and other risks; (iv) underlying regulations; and (v) explicit and implicit bank taxation. High lending rates, which result from the cost of funds for banks and their spread, is another major concern of businesses in Latin America and the Caribbean.

Figure 1.2 shows the close relationship between banking depth and interest rate spreads—measured as net interest income divided by the average of loans and deposits—in 1995–2002. Countries with small bank-

FIGURE 1.2 Interest Spreads and Banking Depth in Latin America and the Caribbean, 1995–2002



Note: Interest spread is the mean value for 1995–2002 and credit to the private sector over GDP is the mean value for the 1990s. Trend line using natural cubic spline.

Source: IMF and BANKSCOPE data.

ing sectors have high interest spreads. Venezuela has the third-highest margin in the world (18.3 percent). Panama, which has a well-developed financial sector, has a low interest spread (3.8 percent), which is close to the mean spread observed in developed countries (3.5 percent). In the Latin American and Caribbean region, Panama and Chile have the lowest spreads. Table 1.3 shows the average interest spread in different regions of the world. As a whole, Latin America and the Caribbean has one of the highest spreads in the world (8.5 percent), just below that of Eastern Europe and Central Asia (8.8 percent).⁷ At the other extreme, developed countries have the lowest spreads (2.9 percent). In Latin America and the Caribbean, credit is not only scarce, but also costly. Explaining its cost is also a task carried out throughout the Report.

As mentioned above, one of the most important determinants of spreads is the efficiency of the banking industry. Estimating the efficiency of banks, however, is not an easy task. The simplest way to do this is to use balance sheet data and compare overhead costs (expressed as a share of total assets) for banks across

⁶ The World Bank conducts the World Business Environment Survey on firms across the world. Chapter 14 presents details on the survey.

⁷ The median country in Latin America and the Caribbean has a higher spread than the median country in Eastern Europe and Central Asia.

TABLE 1.3 INTEREST SPREAD AND EFFICIENCY BY REGION, 1995–2002

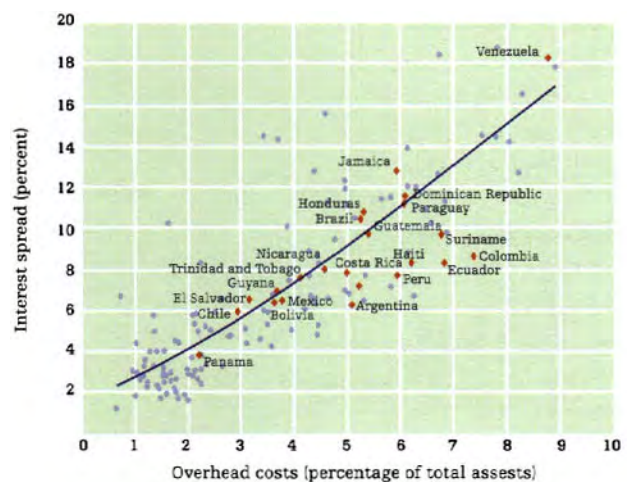
Region	Number of countries	Interest margin (percent)	Overhead costs (percentage of assets)	Credit to private sector (percentage of GDP)
Sub-Saharan Africa	32	10.6	5.1	15
Eastern Europe and Central Asia	23	8.8	5.0	26
Latin America and the Caribbean	26	8.5	4.8	37
East Asia and the Pacific	16	5.1	2.3	57
South Asia	5	4.6	2.7	23
Middle East and North Africa	13	4.0	1.8	38
Developed countries	30	2.9	1.8	89

Note: Mean values for 1995–2002.
Source: IMF and BANKSCOPE data.

countries (Mathieson, Schinasi, and others 2001). Figure 1.3 plots interest rate margins and overhead costs. The figure shows a strong positive relationship between overhead costs and spreads, confirming that inefficient banking sectors have higher spreads. Not surprisingly, Venezuela has one of the highest overhead costs in the world (8.8 percent), whereas Panama has a level similar to that of developed countries (2 percent). The Report also explores issues explaining these inefficiencies, particularly those related to the way institutions that govern banking markets affect bank performance, as well as those related to the changing nature of the ownership structure of the Latin American banking industry.

Beyond financial depth and low interest margins, financial stability is also crucial for growth. Fluctuations in access to bank credit and uncertainty about the stability of the banking system are serious constraints for economic prosperity. Interest rate volatility and abrupt credit swings increase business uncertainty and therefore reduce investment and growth.

Table 1.4 reports the volatility of real credit—measured as a country's standard deviation of real credit growth during the 1990s—for regions of the world. Eastern Europe and Central Asia had the highest credit volatility during the 1990s (21 percent). This is not surprising considering the drastic economic changes that formerly communist countries underwent during this period. Sub-Saharan Africa (18 percent) and Latin America and the Caribbean (14 percent) are the next two regions with high credit volatility. Developed countries have the lowest credit volatility (6 percent). In terms of financial development, Figure 1.4 shows that countries with a higher level of credit market development, measured as bank credit over GDP, have much lower credit

FIGURE 1.3 Interest Spread and Overhead Costs in Latin America and the Caribbean, 1995–2002

Note: Average values for 1995–2002. Trend line using natural cubic spline.
Source: BANKSCOPE.

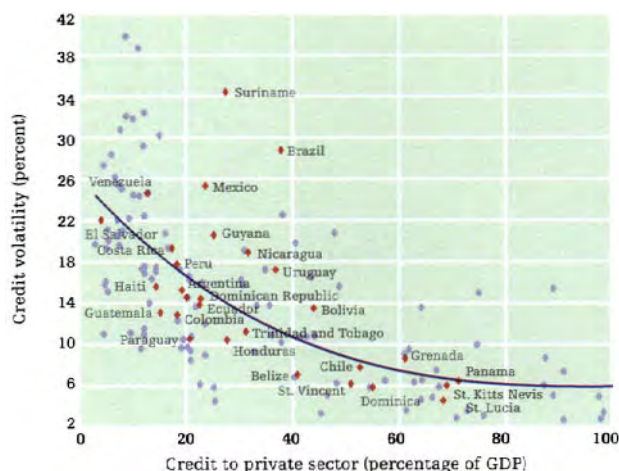
volatility.⁸ Focusing on Latin America, Panama has the lowest volatility (6 percent), and Venezuela has one of the highest values in the region (25 percent), similar to Mexico but lower than that of Brazil (28 percent).

⁸ This strong correlation remains significant after controlling for the shocks that countries faced in the 1990s (results not reported here). These exercises control for either GDP volatility or external demand shocks (measured as the weighted average of GDP growth rates of a country's external trade partners).

TABLE 1.4 CREDIT VOLATILITY BY REGION, 1990–2002

Region	Number of countries	Credit volatility without adjustment (percent)	Credit volatility adjusted by GDP volatility (percent)	Credit volatility adjusted by external shocks (percent)
Sub-Saharan Africa	37	18	17	19
Eastern Europe and Central Asia	20	21	16	18
Latin America and the Caribbean	31	14	15	14
East Asia and the Pacific	16	14	14	12
Middle East and North Africa	16	12	12	11
South Asia	6	9	12	8
Developed countries	24	6	8	6

Note: Results in the third and fourth columns are normalized to have the same worldwide aggregate credit volatility as in the second column.
Source: IMF and World Bank data.

FIGURE 1.4 Credit Volatility and Financial Development in Latin America and the Caribbean, 1990–2002

Note: Trend line using natural cubic spline.
Source: IMF data.

Differences in credit volatility are explained by differences in the size of the shocks that hit countries. Table 1.4 presents measures of credit volatility after controlling for differences in GDP volatility and a measure of external shocks proxied as the growth rate of the GDP of a country's trading partners. Not surprisingly, after controlling for country-specific shocks credit volatility increases in developed countries (because in general their economies suffer small shocks), and decreases in Eastern Europe and Central Asia because of the large shocks that region faced during the transition from communism. The table also reveals that Sub-

Saharan Africa has the highest intrinsic credit volatility (17 percent), which is not much greater than that in Latin America and the Caribbean (15 percent).

The high volatility in the region comes from the fact that credit growth in Latin America and the Caribbean has been marked by very strong boom-bust cycles. Financial liberalization, the promise of market-friendly reforms, and large capital inflows at the beginning of the 1990s spurred credit growth in the region. In 1994, the Tequila crisis, which came with a number of banking crises, blunted the rapid growth trend. In 1996, after banks in many countries were restructured and/or capitalized, real credit regained its impetus. But again it came to a drastic stop after the Russian crisis in mid-1998. Since then, credit has been falling despite an increase in economic activity during the past few years.

Cases of extreme credit volatility are usually the result of systemic crises in the banking industry. A severe crisis invariably disrupts the real economy through its effect on the supply of credit and the interruption of the payments system. Banking crises occur throughout the world, but they are particularly severe and frequent in developing countries. Drawing from a comprehensive dataset on banking crises ranging from the 1970s to 2002, Table 1.5 describes the somber performance in Latin America and the Caribbean. Compared with other regions, Latin America displays the highest average number of crises per country. Moreover, when ranking regions by the share of countries that have experienced two or more crises, Latin America comes out first, with 35 percent of its countries having experienced recurrent crises. This share is almost three times higher than in any other region. These results are striking, and

TABLE 1.5 | RECURRING BANKING CRISES, 1974–2003

Region	Average number of crises per country	Countries with recurrent crises (percent)
Latin America (excluding the Caribbean)	1.25	35
Latin America and the Caribbean	0.90	27
High-income OECD countries	0.21	0
High-income non-OECD countries	0.09	0
Eastern Europe and Central Asia	0.89	11
East Asia and the Pacific	0.38	8
South Asia	0.38	0
Middle East and North Africa	0.40	0
Sub-Saharan Africa	0.83	13

Source: IDB calculations based on Caprio and Klingebiel (2003).

they highlight the need for appropriate crisis avoidance mechanisms in the Latin American and Caribbean region. The recurrence of banking crises is particularly worrisome because they are costly.

Explaining the causes of volatility and ways of reducing banking fragility are at center stage in the Report. The role of macroeconomic factors, weak institutions, and regulations in explaining bank fragility are discussed extensively in the upcoming chapters. In brief, the stylized facts presented above indicate that bank credit in Latin America and the Caribbean is scarce, costly, and volatile. The Report revisits these three main issues, addresses why these adverse characteristics have prevailed, and provides policy recommendations. Dealing with these issues is not trivial. The risk-taking nature of banks and their highly leveraged balance sheets make them difficult to stabilize and regulate.

WHAT MAKES BANK CREDIT SPECIAL?

Banks take deposits from the public and offer loans to households and entrepreneurs through credit contracts. Such contracts are complex and depend on supporting institutions to avoid problems of asymmetric information and lack of full contractibility. Credit contracts must also deal effectively with diverse risks. Risks concerning borrowers arise from uncertainty about the projects and the borrowers themselves. In addition, the behavior of depositors and the combination of borrowers and depositors generate risks. In short, banks face credit or repayment risk, liquidity risk, interest rate risk, and other market risks. In order to work and behave properly, banks need fine-tuned supporting insti-

tutions that align the incentives of all players and ease the complexities of risk management. They also need a stable and safe macroeconomic environment that enables them to carry out their crucial tasks for society.

Loan risk and the associated fragility of banks could undermine the confidence of depositors and, therefore, limit the mobilization of national savings. Given that in most cases the general public is not equipped to assess the safety of banks and does not have the right incentives to do so, there is a need for an external agent to verify that banks preserve the interests of individuals.⁹ This external agent is usually the government itself in the form of the central bank, banking superintendency, and other supporting institutions such as deposit insurance agencies.

A collapse in banks can have enormous social consequences by disrupting the supply of credit, breaking the payments network, and eroding the value of savings. These facts justify the need for governments to intervene in the banking business via regulation and supervision in order to guarantee that bank managers' decisions are aligned with social welfare. An adequate institutional and macroeconomic environment that guarantees the soundness of banking is crucial in order to exploit as much as possible the multiple advantages of having a deep and stable source of credit and a stable payments system.

The process of intermediating funds, that is, taking deposits and offering loans, goes far beyond matching borrowers with lenders. Financial intermediation in

⁹ The free-rider problem arises because depositors individually will not monitor their bank because they believe that other depositors will do it.

a modern society involves transforming several characteristics of the assets involved in a financial transaction, managing the risks involved, processing information using the latest technologies, and monitoring borrowers. All of these functions involve risks that have to be dealt with carefully. Risk mismanagement can lead to a meltdown of the banking system and to financial catastrophes that, as shown in the Report, not only are very costly, but also are difficult to recover from. The Report discusses the risks of banking in detail and addresses several alternatives to deal with them in the years ahead.

In the process of intermediating funds, banks need to transform deposits into loans. In many cases this process includes transforming the nature of the deposits that they take and converting them into assets that have particular characteristics that satisfy the needs of the investment project of the borrower, which tend to differ from the saving preferences of the depositor. For example, banks transform the denomination, maturity, and in many cases quality of their liabilities in order to grant borrowers the instruments that best match their needs. Some of the risks that banks need to manage are credit risk, interest rate risk, currency risk, and maturity risk.

Dealing with credit risk, that is, the risk that the borrower may not pay back the loan, is one of the crucial functions of banks. On the one hand, lenders face uncertainty because any project has some probability of failure. The ability to choose among investment projects is an extremely important role that banks undertake in the process of allocating capital efficiently. On the other hand, banks also lack complete information about their borrowers. Although under some conditions borrowers may not be able to pay back their debts because projects fail, it may also be the case that borrowers find it in their interest to default, even when they may have the resources to repay their debts. Moral hazard—the possibility that the debtor may not want to pay back the debt or provide the necessary effort to make the investment project succeed once the loan has been disbursed—is a common feature in credit contracts. When making loans, banks are usually uncertain about the degree of effort that an entrepreneur will put in a project, or even worse, about whether the project will succeed or fail. Thus, banks incur a risk when granting credit.

In addition, also because of asymmetric information, banks have to deal with a problem known as adverse selection. Banks have to cope with uncertainty about the type of borrowers that they face and must find ways to screen good from bad borrowers. In general, it is difficult for a bank to know with certainty the quality of the project that it is financing. Particular bank

policies, such as interest rates charged on loans, may be subject to adverse selection problems that attract low-quality participants. For example, consider the case of a bank facing two types of projects, one with high volatility and high return, and another with low volatility and low expected return. A high rate on loans may discourage low-risk borrowers, leaving banks only with high-risk projects. This of course would be deleterious for the quality and stability of the bank. For this reason, banks may choose to ration credit instead of charging higher interest rates because they know that those willing to take higher interest rates would be those with risky projects. There are several procedures that have been suggested to mitigate this problem, such as the use of collateral (see Coco 2000). Once again, banks have a comparative advantage in dealing with these issues, provided a proper institutional setup is in place.

With respect to the denomination of deposits, there are several transformations that take place in a bank when making loans. The simplest transformation is that of units. Usually deposits come in small sizes from many small depositors. However, borrowers usually need large loans. Banks transform many small deposits into fewer larger loans by pooling deposits. This of course implies risks. If one of the depositors wants to leave the pool, the bank needs to be able to generate some liquidity to return what the depositor deposited. Not being able to do so could generate a lack of confidence in the bank, which, if large enough, could induce a run on deposits and eventually spread to the banking system. To protect against these risks, banks must keep liquid assets and a certain amount of reserves. Regulation plays an important role in guaranteeing that bank portfolios are sufficiently liquid.

Banks also transform the maturities of their liabilities, which are usually short-term, into longer-term loans that better suit the needs of investment projects. Obviously, this also implies taking risks, given that if depositors wish to withdraw their funds before a loan contract comes to an end, the bank will face the need to search for that liquidity elsewhere, or in extreme cases even force the liquidation of the investment project. If, for example, a bank is not able to service deposit withdrawals made by a particular depositor, not because it is insolvent, but because its loans are long-term, and if other depositors suspect that the bank may indeed be insolvent, then a bank run may materialize. The ability to avoid such events at the individual bank level, as well as the skill to prevent isolated runs from becoming systemic, requires proper rules, regulations, and supervision in order to limit or deal effectively with maturity mismatches. In addition, institutions must be harnessed

to provide liquidity to solvent but illiquid banks and to protect depositors in case of bank failures. In summary, a financial safety net comprising the interaction of these and other institutions that support financial stability must be established. The Report discusses the optimal configuration of a financial safety net.

Banks can also transform the currency denomination of deposits when offering loans. In several countries, regulators allow deposits and loans in various currencies. Banks may take some deposits in local currency, but borrowers might prefer foreign currency-denominated debts that match their future cash flows in order to avoid currency risk. In such cases, a loan in local currency is not necessarily the best alternative for the borrower, who would incur additional transaction costs for currency conversion. Similarly, depositors may prefer to save in foreign currency rather than in local currency. In such a case, banks may take deposits in foreign currency.

Some of the risks of having a currency mismatch (different values of dollar-denominated assets and liabilities) are straightforward and arise from the different preferences of borrowers and lenders in terms of the currency composition of their liabilities and assets. If, for example, banks have more deposits than loans in foreign currency, an increase (depreciation) in the exchange rate may lead to a reduction in banks' wealth. Such a negative balance sheet effect could ultimately lead to broader financial instability. In order to avoid these problems, regulators provide guidelines for banks to limit currency mismatch. However, as discussed in several parts of the Report, there is another source of mismatch that has proven to be equally harmful for banks and more complicated to regulate: the currency mismatch of borrowers. In many cases, banks lend in foreign currency to borrowers that have an income stream in domestic currency. In such cases, a depreciation of the exchange rate affects borrowers' net worth and diminishes their ability to repay loans, thus undermining banks' capacity to meet the withdrawals of depositors.

In some countries—among them Brazil, Chile, and Colombia—deposits and loans can also be denominated in alternative currencies, such as CPI-indexed units. Here, too, banks can transform deposits and loans from nonindexed to indexed units of account and vice versa, creating risks similar to the currency risks and systemic challenges experienced in some Latin American countries.

Banks also transform the quality of assets. An individual investor may find it difficult to obtain inexpensive sources of financing. By contrast, a bank with

an established reputation and franchise value can find cheaper funding through deposits mainly because of its diversified portfolio. In this sense, a bank can transform risky assets (loans) into less risky liabilities (deposits). Of course, the franchise value of the bank, which is preserved through sound management practices, is crucial to fulfill this role.

The role of banks in transforming assets helps provide entrepreneurs an appropriate supply of funds on conditions that are consistent with the nature of investment projects, while guaranteeing depositors the safety of their funds. Clearly, many risks are borne in the process. In such a context, banks play an important role in managing risks; it is a role that, due to its complexity, individual lenders cannot usually undertake. Economies of scope and scale prevail in bank operations.

Dealing with credit risk and market risks, such as interest rate and currency risks, requires a great deal of expertise. Banks have developed this skill, but nonetheless there is a crucial role for regulation and for regulators to monitor banks in order to guarantee that bankers represent the interests of depositors and maximize social welfare.

In order to survive in a world of many risks, banks need to develop mechanisms to assess risks effectively and efficiently, as well as ways of protecting their worth and franchise value in the event that risks materialize. The traditional way of coping with risks is by imposing capital requirements and provisions to cover unexpected losses. The Report discusses these issues in detail in the chapters on banking regulation and supervision.

Success in mitigating risks depends on effective monitoring of borrowers and accurate processing of information in order to identify creditworthy borrowers. Owing to the large scale on which banks operate, they can invest in a cost-effective way in the information technologies that simplify the monitoring and identification of clients. Moreover, given the repetitive nature of the lending process, banks can develop long-term relationships with their clients that ease these tasks.

FINAL REMARKS AND STRUCTURE OF THE REPORT

Bank credit is the main source of external funding for firms in Latin America and the Caribbean. Unfortunately, bank credit remains scarce, costly, and extremely volatile. The Report analyzes the causes of each of these three main characteristics of bank credit.

The Report is divided into five parts. Part I presents the basic stylized facts and provides a summary of

the main results of the Report. Part II provides a detailed analysis of the determinants of banking crises, with particular emphasis on the Latin American and Caribbean experience. It also addresses crisis resolution as well as the setup of a financial safety net to reduce the likelihood of crises. Chapter 4 takes a detour through issues concerning financial dollarization, which is important for many countries in the region. Part III discusses how the changing ownership structure of the banking sector has affected its performance. Of particular interest

is the role played by foreign banks, state-owned banks, and the increased concentration of the industry over the past few years. Part IV studies the role of additional supporting institutions in providing increased access to credit at lower cost. Finally, Part V concludes the Report by discussing several remaining challenges of crucial importance in Latin America and the Caribbean, such as approaches to the changing nature of international banking standards on the eve of Basel II and ways to deal with money laundering in the region.

Overview

THE size of credit markets and the cost of credit and its volatility are closely related to macroeconomic imbalances, the nature of the institutions and regulations that govern credit markets, and the microeconomic structure of the banking system. Weak macroeconomics leads to weak and fragile banks that consequently offer insufficient and expensive credit. Weak institutions cause similar outcomes.

The chapters in this Report explore the main channels through which the macroeconomy, institutions, and the structure of the banking sector affect credit, interest rates, and banking fragility and propose policy recommendations. This overview summarizes many of the findings of the Report.

A VOLATILE WORLD

To a great extent, the size and volatility of credit markets in Latin America and the Caribbean can be linked to macroeconomic shocks. In fact, the way countries respond to macroeconomic shocks has important implications for the shape of the banking sector. The size of the banking sector and many other characteristics can be linked to the evolution of the macroeconomic environment. For example, the high levels of inflation and macroeconomic uncertainty of the 1980s produced small and/or highly dollarized banking systems in some countries.

There is a two-way relationship between the banking sector and macroeconomic imbalances. On the one hand, banks have often been an important source of instability in the region. On the other, the volatility of bank assets and liabilities reflects a long history of macroeconomic imbalances and a lack of instruments to cope with these imbalances. To the extent that bank portfolios have remained vulnerable to macroeconomic fluctuations, depositors have chosen to stay liquid, typically selecting short deposit maturities, thus being “ready to run” in case some factor, typically external, triggered a crisis.

Many of the most recent banking crises can be linked to external factors leading to liquidity constraints

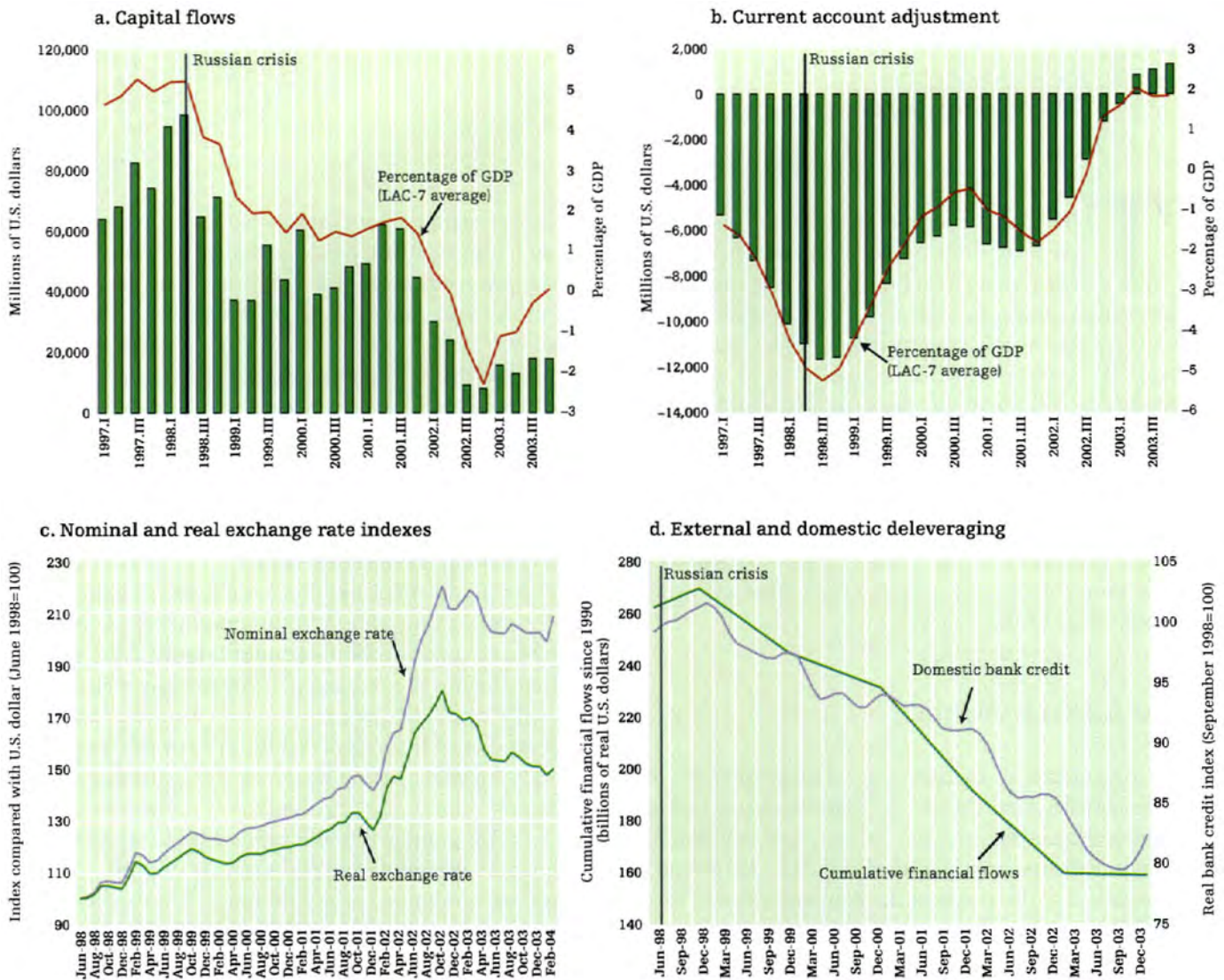
and contagion across capital markets. Sudden stops in capital flows, namely unexpected cuts in the financing of the current account deficit, have had a profound effect in Latin America and the Caribbean. The bunching of banking crises and sudden stops during the 1990s suggests that a common external element may be partly responsible for bank volatility, particularly because countries facing quite different macroeconomic fundamentals were hit at about the same time. In this respect, the Russian crisis of 1998 represented a major volatility factor in the Latin American and Caribbean region and in emerging markets in general. In the case of the seven largest Latin American economies, the sudden stop of 1998 was accompanied by a deleveraging of domestic debt and a contraction in credit (Figure 2.1).¹ Equally dramatic was the reduction in the current account deficit and the real depreciation of the currency. As a result, gross domestic product (GDP) growth fell on average from 7 percent before the crisis to –2 percent after the crisis.

This approach points toward an exogenous coordination element in sudden stops—and it may very well explain developments in economies that were otherwise performing well, such as Chile. However, new evidence suggests that financial dollarization, coupled with large potential changes in relative prices following a sudden stop, may have a substantial effect on the likelihood of a standstill in capital flows, which, in turn, may wreak havoc on the banking system (Calvo, Izquierdo, and Talvi 2003).

These findings suggest that particular banking sector characteristics such as high dollarization may in and of themselves be responsible for macroeconomic volatility. Indeed, sudden stops have typically been accompanied by banking crises, particularly in cases of high liability dollarization. This can be seen in Figure 2.2, which shows that for the case of highly dollarized countries, about 75 percent of sudden stops have materialized together with banking crises (this figure increases to 100 percent when dollarization is accompanied by a

¹ The seven largest economies represent about 90 percent of Latin American purchasing power parity-adjusted GDP.

FIGURE 2.1 The Sudden Stop of Capital Flows in Latin America in 1998



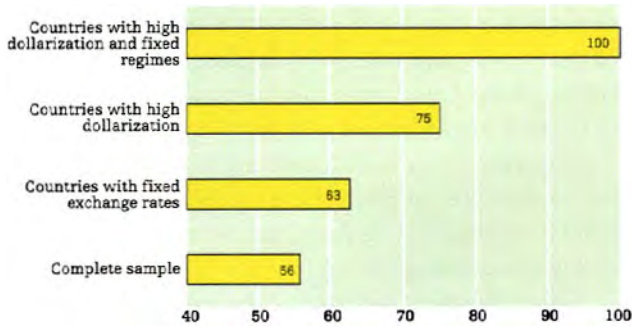
Note: Values are averages for Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.
 Source: IDB calculations based on data from central banks.

fixed exchange rate regime). These particular characteristics, as discussed in Chapter 3, are mainly the result of poor domestic policies, including high inflation and its effects on currency substitution and eventually liability dollarization, excessive risk-taking on the part of banks leading to excess dollarization, and restrictive trade policies that induce scarce production of tradable goods and potentially lead to significant changes in relative prices following a sudden stop. Excessive risk-taking can be explained by high economic volatility, which weakens the ability of creditors and regulators to properly assess risks, and by moral hazard issues result-

ing from a poor regulatory and supervisory framework and the perception that the government will bail out unsuccessful investments.

In addition to liquidity factors, moral hazard factors, understood as incentives toward excessive risk-taking, have also been extremely relevant in explaining the development of banking crises. Indeed, another key lesson learned from many adverse experiences in emerging countries is that processes of financial and capital account liberalization should be handled with care, taking into consideration the need for the sequencing of reforms. Although financial liberalization may promote

FIGURE 2.2 Banking Crises and Sudden Stops Worldwide, 1974–2003
(Percentage of sudden stop episodes contemporaneous with banking crises)



Source: For banking crises, Caprio and Klingebiel (2003), Kaminsky and Reinhart (1999), and Demirgüç-Kunt and Detragiache (1998); for exchange regime classification, Levy-Yeyati and Sturzenegger (forthcoming); and for sudden stop episodes and dollarization, Calvo, Izquierdo, and Talvi (2003).

savings and improve its allocation, thus having a positive impact on financial depth and economic growth, as the crises of the 1980s and 1990s illustrate, things did not turn out as bright as originally expected.²

The standard explanation of these dismal results puts the blame on the remarkably rapid expansion of credit, a factor that created challenges for financial institutions and bank supervisors. Weak financial regulation and supervision and either implicit or explicit government safety nets meant that related lending or fraud and excessive risk-taking on the part of depositors, borrowers, and banks would be the most likely outcome. Excessive risk-taking opened the door for financing bad credit risks and eventually led to the emergence of a substantial amount of nonperforming loans. Given that in many cases financial liberalization coincided with the removal of capital account restrictions, much of the lending boom was financed through foreign capital inflows, sometimes directly mobilized by the banking system through increases in bank liabilities with foreigners. This strategy, in turn, made countries more vulnerable to external liquidity shocks. Thus, in many respects, banking crises were accidents waiting to happen in the context of bank fragility due to excessive risk-taking during lending booms spurred by liberalization.

Avoiding banking crises is extremely relevant because they bring about output volatility and daunting fiscal costs. The disruption of the payments system not only hits short-term economic growth, but also affects growth in the long run. Crisis episodes are typically associated with a dramatic weakening of balance sheets, on the side of both banks and borrowers. To the extent that

banks represent a major source of financing, contractions in credit due to plummeting net worth may lead to a forced reduction of investment and consumption spending. The undermining of depositors' confidence in the banking system may in turn lead to a reduction in saving or to capital outflows. As banks are intervened or closed, valuable information on borrowers is lost.

All these factors contribute to the inability of the banking system to function efficiently, and, as a result, to diversion of a significant amount of resources from the formal financial sector into less efficient uses that reduce bank intermediation. In addition, bank bailouts typically entail high fiscal costs, which, by raising the public debt and debt service cost, may have an impact on consumption and investment decisions. These considerations are much more problematic than they may seem individually because in times of crisis they come together and even interact with each other, leading to a substantial effect on economic growth. Given the short and long-run costs associated with crises, the Report devotes special attention to their determinants, on both moral hazard and liquidity dimensions.

A crucial area of concern that the region still needs to resolve is financial dollarization, which entails a steep trade-off between financial depth and financial volatility. As argued in Chapter 4, restrictions on financial dollarization, by limiting the portfolio choice of depositors, may increase the variance of real returns on savings and damage financial sector development, in particular via placement of deposits offshore. Recent empirical studies looking at the effect of dollarization on financial development confirm this result. De Nicoló, Honohan, and Ize (2003) find that dollarization is associated with deeper financial systems in high-inflation countries. Similarly, findings in Cowan and Do (2003) indicate that restricting dollarization has larger negative effects on financial development when depositors are set to lose more (in terms of a higher variance in the return of their portfolios). The restriction encourages movement from an optimal portfolio consisting of deposits in both domestic and foreign currencies to a portfolio consisting of only domestic currency assets.

This fact and the findings discussed in Chapter 3 on the negative effects of liability dollarization on macroeconomic volatility imply that policymakers may be

² Empirical work by Demirgüç-Kunt and Detragiache (1998) stresses the relevance of financial liberalization as a determinant of the probability of a banking crisis. Further work by Galindo, Micco, and Ordóñez (2002b) shows that financial liberalization had a positive growth effect in countries with a well-built institutional setup.

faced with a dilemma when determining whether to impose restrictions on dollar-denominated financial contracts. If depositors are uncertain about future inflation rates, then allowing the establishment of foreign currency deposits will increase financial depth. However, this may come at the cost of a higher likelihood of facing macroeconomic turbulence, as would be the case for sudden stops in capital flows. These trade-offs are fully elaborated in Chapter 4.

Banking crises have been frequent in Latin America and the Caribbean. The recurrent nature of these crises has impaired the development of the region's banking sector and has defined many of the current characteristics of the region's banking systems. In particular, inappropriate crisis resolution may be a cause of disintermediation in financial systems. By looking at crisis resolution episodes in the 1990s and early 2000s, such as those in Argentina (1995 and 2001–02), Mexico (1995), and Uruguay (2002), Chapter 5 provides examples of crisis resolution processes that successfully battled disintermediation and others that did not. In the latter case, by insulating borrowers from the effects of a crisis and hitting depositors instead, one of the key principles of crisis resolution was violated, namely, the principle that those who benefit the most from risk-taking activities should bear the brunt of the cost of restructuring the banking system following a crisis.

KEY VULNERABILITIES OF BANKING SYSTEMS IN LATIN AMERICA AND THE CARIBBEAN

The Report stresses the crucial vulnerabilities that arise from high dollarization and high concentration of public debt in the asset structure of banks. For a start, high and volatile inflation throughout the 1980s and the beginning of the 1990s led to dollarization processes in several countries in the region. Almost all countries in which dollarization of bank deposits exceeded 50 percent by 2001 had experienced periods of high inflation in the past. High inflation is associated with high-inflation volatility, a characteristic that provides few incentives to save in domestic currency, particularly when the alternative is dollar deposits, which have typically shown less volatility in terms of their purchasing power.

The resulting desire to save in foreign currency assets had two important consequences. For countries that restricted the use of deposits in foreign currency, this may have led to lower intermediation levels because savings were transferred offshore.³ But for countries that allowed foreign currency deposits, the fact

that regulation required banks to match their assets and liabilities by currency type, coupled with the fact that most dollar deposits were onlent locally rather than abroad, inevitably led to dollar lending to nontradable sectors in those economies in which dollarization of deposits was pervasive. This lending policy basically transferred bank exchange rate risk to borrower credit risk as nontradable sectors now faced mismatches stemming from their income in nontradable goods and their debts in terms of tradable goods (dollars). As a result, a sizable component of bank assets was vulnerable to real exchange rate fluctuations.

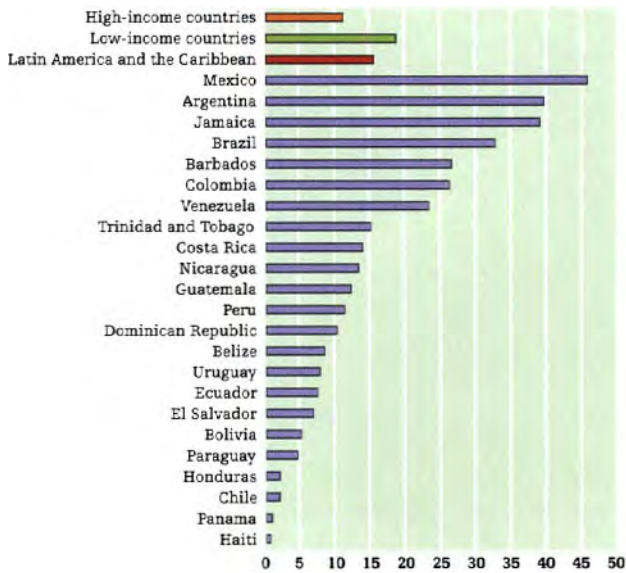
Fiscal behavior has also contributed to the volatility profile of banks, mainly because for many countries the share of public sector debt in total bank claims is high, and the price of such claims is quite volatile in Latin America. Figure 2.3 shows the ratio of public claims to total claims in banks for countries in the region and compares them with averages across other low and high-income economies. Although the average share for the region is not high relative to the other regions shown in the figure, there is substantial variance across countries in the region. On the one hand, public debt is a sizable share of total bank lending in most of the large economies. Argentina, Barbados, Brazil, Colombia, Jamaica, and Mexico all have ratios of public claims to total claims exceeding 25 percent, so that one in every four dollars owed to banks is owed by the government. At the other extreme of the distribution, Bolivia, Chile, Haiti, Honduras, Panama, and Paraguay all have ratios of public claims to total claims of 5 percent or less.

Government borrowing from domestic banks is an issue that has become increasingly relevant in recent years, as shares of public loans in total lending have increased during this recession period. Indeed, the average share of public claims over total claims in the banking sector has followed a “U” shape over the past decade. The share dropped over the period of high growth and capital inflows of 1991–95, and then rose over the second half of the decade and into the early 2000s, as the effects of both the Tequila crisis of 1995 and the East Asian and Russian crises of 1997–98 kicked in (Figure 2.4).

Figure 2.4 also shows that rising shares of public claims on average coincided with rising fiscal deficits in the late 1990s. The pressure of government deficits on bank portfolios is particularly clear for the seven larg-

³ Indeed, studies such as De Nicoló, Honohan, and Ize (2003) suggest that there has been greater financial intermediation in high-inflation countries that allowed for deposit dollarization.

FIGURE 2.3 Public Debt in Banks, 2000–01
(Percentage of total claims)



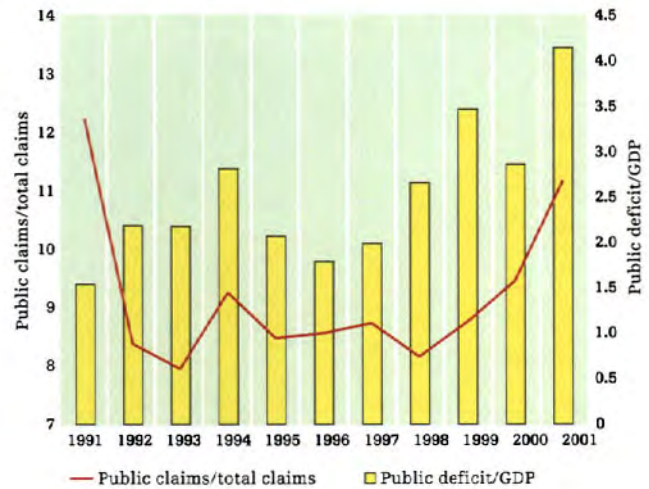
Source: IDB calculations based on IMF data.

est Latin American economies as shown in Figure 2.5. This pattern also hints at the potential crowding-out effects that public sector finances may have over the private sector in times of crisis.

Although public deficits in Latin America and the Caribbean are not particularly high relative to middle or high-income economies when measured as a share of GDP, they are higher than in any other group of economies when measured as a percentage of total bank lending (Table 2.1). As a result, the potential pressure that the public sector could exert on the banking system in Latin America and the Caribbean is high. These pressures may become substantial in times of crisis when deficits are expanding and external funding is limited.

Considering only the seven largest Latin American countries, the share of government claims in total bank claims doubles to almost 26 percent (Figure 2.3). Such a sizable amount of government claims becomes particularly relevant for the volatility of bank portfolios when considering the behavior of government bond prices. Over the period 1994–2003, the average volatility of (log) changes in government bond prices of Latin American countries vis-à-vis that of developed countries was higher by a factor of three. Thus, substantial valuation changes in government debt can easily erode bank capital when bonds are marked to market, which is the only relevant pricing for depositors who bear the risk of bank failure. This factor is not appropriately addressed by existing regulation, which allows banks to

FIGURE 2.4 Public Claims in Banks and the Public Deficit in Selected Latin American Countries, 1991–2000
(Percent)



Note: The countries in the sample are Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.

Source: IDB calculations based on IMF and World Bank data.

price bonds at face value, thus providing an incentive for banks to hold public sector claims. This is yet another reason why banks may accept holding proportionately more government bonds relative to private sector holdings in times of crisis (Chapter 6).

The combination of loans in foreign currency to nontradable sectors and holdings of public sector debt provides a very unstable bank portfolio base for depositors. External shocks, such as sudden stops in capital flows, can bring about spikes in real exchange rate behavior that could drastically erode bank assets and therefore render the banking sector bankrupt. Thus, depositors will want to hold liquid assets that allow them to react swiftly to any indication that a crisis is about to materialize. This is particularly so because crisis resolution processes in many Latin American experiences have typically insulated borrowers from the effects of a crisis and have hit depositors instead.

AVOIDING CRISES: A FINANCIAL SAFETY NET

A recurrent problem throughout Latin America and the Caribbean has been the proliferation of banking crises or episodes of near crisis. In all countries, the costs of restructuring financial systems have been high, both in terms of the direct fiscal cost and the associated slowdown in economic activity. In order to avoid

FIGURE 2.5 Public Debt and Fiscal Deficit
(Percentage of GDP)

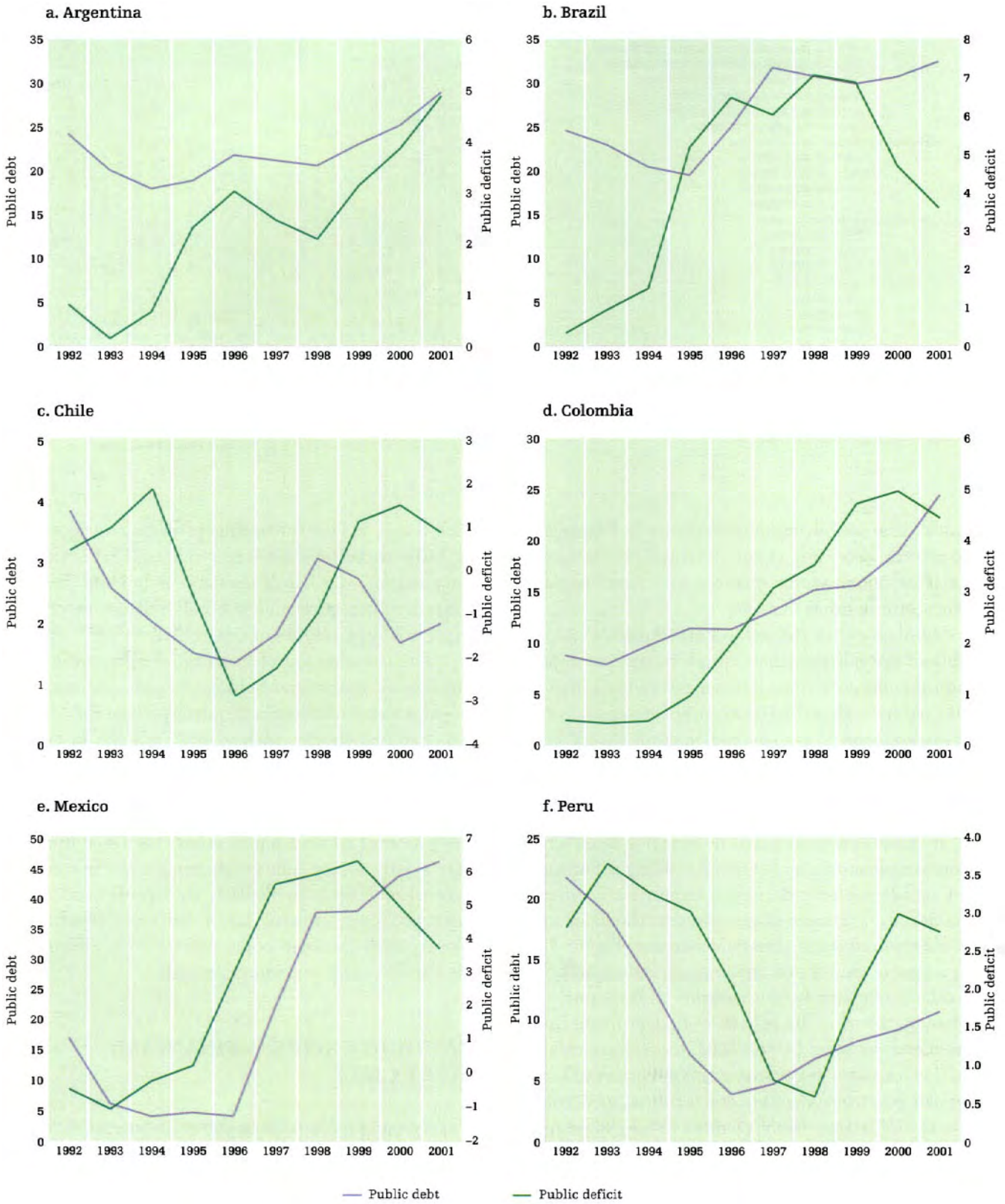
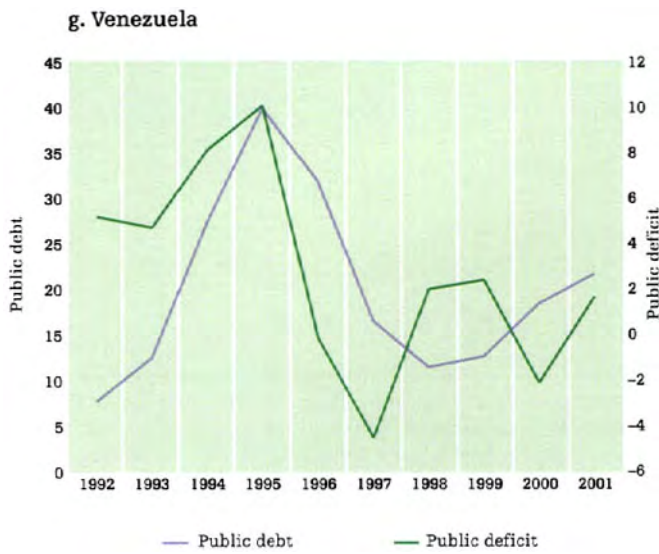


FIGURE 2.5 *continued*

Source: IDB calculations based on IMF data.

such costs, many countries have placed great effort in strengthening the financial sector and reducing its volatility. In the presence of multiple shocks that can induce tremendous financial volatility and eventually systemic banking crises, policy has been aimed at the development and strengthening of financial safety networks. A financial safety network is a set of rules and institutions designed to reduce financial instability in order to protect financial intermediation and the payments system. It comprises the definition of prudential rules and their strict enforcement, adequate supervision of banks and establishment of institutions such as deposit insurance and a lender of last resort and enables private agents to monitor and discipline banks. Clearly, the recent fragility in Latin American banking markets reveals that there are still many weaknesses in the financial safety net. The evolution of these rules and institutions, their current stance, and possible directions to improve them are discussed in detail in the Report.

A key component of a financial safety net is prudential regulation and supervision of banks. There are at least two classic arguments for banking regulation. The first is the protection of small and unsophisticated depositors. Capital regulation and the requirement to inject new capital when necessary or otherwise face closure are ways to align a bank's risk-taking position with the interest of depositors. The second classic rationale for banking regulation stems from the unavoidable need to protect the payments system and the financial system

more generally. It may be the case that otherwise solvent banks may be subject to pure liquidity runs. Moreover, if some depositors run against a weak bank, other depositors may run against other more healthy banks in the system, fearing actual financial links between these banks or simply selecting a bad or run equilibrium because of lack of information. This is frequently referred to as contagion.⁴

One way to prevent such runs is for a central bank to promise liquidity to solvent banks—that is, for the central bank to provide lender of last resort services. However, the promise of such liquidity may weaken banks' incentives to reduce risks. As discussed in Chapter 6, defining the operation of the lender of last resort implies finding a balance between these trade-offs. A second way to prevent such liquidity runs is through the provision of deposit insurance. However, if depositors are insured, then the link between the required rate of return and the underlying risk of the bank is broken and the incentives of bank owners and managers may change. These shifts in incentives are normally referred to as moral hazard. Having a deposit insurance mechanism that allows for greater credibility in the financial system to mitigate bank panics without generating excessive moral hazard makes its design a crucial topic. International evidence has shown that a well-defined deposit insurance scheme can contribute to financial stability, but a deficient one can increase the likelihood of a crisis. Chapter 7 addresses this issue.

Capital regulations may then be seen as an attempt to counteract the moral hazard created by the existence of a safety net. From this perspective, intervening through prudential regulation and supervision is justified on the basis of reducing banking sector risks to avoid the potential negative externalities of crises on the rest of the economy. In this area, there is a long way ahead for Latin American countries. Despite the fact that there have been many reforms throughout the region, especially since the 1990s, there are still severe weaknesses that regulation has not addressed properly. The principal weaknesses are in areas related to the operational independence and resources of the regulatory agency, the existence of a suitable legal framework and

⁴ Contagious bank runs may have significant negative externalities on the rest of the economy and hence are generally thought to be costly, especially if they affect otherwise healthy banks or prevent the normal functioning of the payments system. In particular, if otherwise healthy banks fail, then because those banks may hold private information on their clients, there is the possibility that this information will be lost and the economy may suffer a more general credit crunch.

TABLE 2.1 GENERAL GOVERNMENT DEFICIT BY COUNTRY INCOME GROUP, 1991–2001
(Percent)

Measure	1991–93	1994–96	1997–99	2000–01	1991–2001
<i>Percentage of GDP</i>					
High-income countries	5	3	0	–1	2
Latin America and the Caribbean	2	2	3	4	3
Middle-income countries	6	4	4	6	5
<i>Percentage of total claims in banks</i>					
High-income countries	5	3	0	–2	2
Latin America and the Caribbean	15	10	10	12	12
Middle-income countries	12	11	9	9	11

Note: Public debt in banks was constructed as the sum of claims on central government (IFS line 22a), claims on state and local government (22b), and claims on nonfinancial enterprises (22c). The countries grouped as high-income are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, and the United States. The countries grouped as Latin America and the Caribbean are: Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela. The countries grouped as middle-income are: Bulgaria, Hungary, Malaysia, Morocco, Philippines, Poland, South Africa, Tunisia, Turkey, and Ukraine.

Source: IMF and World Bank data.

legal protection for supervisors, remedial measures in case of bank fragility, weak links between capital adequacy requirements and risk, and lack of consolidated supervision. Weaknesses in regulation increase the likelihood and costs of crises. In the Dominican Republic, lack of regulation and enforcement on credit concentration and related lending, among other aspects, led to a large-scale banking collapse in 2003. In Argentina and other highly dollarized countries, weaknesses in addressing the risks associated with financial dollarization also increased the likelihood and costs of the banking crises in 2001 and onward. Another concern in many countries is how to address the risk of holding a high concentration of government debt in banks' balance sheets. All in all, it is clear that prudential regulation and supervision are not tight enough, and further reforms are needed in order to improve banking oversight. Chapter 6 discusses this in detail.

Assuming that supervisors have appropriate powers and that regulations are properly designed, supervisors may still lack the required information to effectively monitor those regulations. There is an unavoidable informational asymmetry between a bank and its supervisor.⁵ These regulatory and supervisory failures imply that it will in general be useful to harness the market to discipline banks. Market discipline has typically been viewed as the reaction of bank creditors (depositors and other liability holders) to increases in bank risk. This definition is extended in Chapter 8 to include the sub-

sequent reaction of banks to the actions of creditors as well. Discipline is considered effective when banks take prompt remedial actions to curb any actual or potential negative actions on the part of creditors.

At first sight, market and supervisory discipline may be thought of as substitutes, but, in fact, in the terminology of modern microeconomics, they are strategic complements. This means that appropriate regulations can enhance the disciplining power of markets, and markets may enhance the disciplining power of supervisors. Together they may imply greater discipline than the simple sum of the two components. Chapter 8 provides evidence on how depositors discipline banks in Latin America by lowering deposits when banks become more vulnerable or asking for higher interest rates when bank fundamentals look weak. The chapter also shows how banks in turn increase their capital-asset ratio to compensate for the behavior of depositors. Nonetheless, there is still enough room to increase the scope of market discipline in Latin America in order to increase private sector oversight of the banking system.

⁵ Banks may not always truthfully disclose the required information, and, as witnessed recently in major corporate scandals in the United States and Europe, auditors do not always ensure that even fully audited information is 100 percent reliable. Moreover, the supervisor may have access to balance sheet and other hard information but lack the finer information from, say, intraday market transactions.

THE CHANGING NATURE OF BANKING SYSTEMS: DOES STRUCTURE MATTER?

Advances in information technology, globalization, and deregulation are leading to drastic changes in the structure of the banking industry around the world. Innovations and increased competition reduce margins in traditional banking activities and spur mergers between banks and other financial institutions. Latin America is not an exception to this trend. During the 1990s, the region was characterized by a process of bank consolidation and entry of foreign banks that was mostly triggered by financial crises and regulatory tightening. In Argentina, Brazil, Colombia, Costa Rica, El Salvador, and Peru, more than a quarter of all banks either closed or merged between 1996 and 2002. While this sharp decrease in the number of banks in the region led to an increase in bank concentration in some countries, Latin America as a whole still displayed a low level of bank concentration by 2002 compared with other regions of the world.

This consolidation process was characterized by deep changes in ownership structure in the industry. The entry of foreign banks has been a dominant characteristic, and in many countries foreign-owned banks have become the main players in the domestic financial system. In Latin America and the Caribbean, local currency lending by branches or subsidiaries of foreign banks represents more than 65 percent of total bank lending. In Argentina, Chile, Mexico, and Peru, foreign banks controlled more than 50 percent of assets in 2002. Foreign banks did not control more than 30 percent of assets in any of these countries in 1995. As reported in Chapter 9, the increase in foreign bank participation in Latin America came together with a fall in public sector participation in commercial banking. The changing nature of the ownership structure of Latin American banking systems has raised crucial questions on how such changes affect access to credit and its cost.

One of the major sources of concern regarding the reduction in the number of banks and the increasing presence of large international banks is that these could exploit their market power by paying lower deposit rates and charging higher interest rates on loans. However, the evidence presented in Chapter 9 suggests that this has not been the case. The increase in concentration in Latin American banking was due to technological innovation and financial liberalization that reduced entry barriers and did not lead to greater market power. There is no evidence that higher concentration increased credit costs or lowered credit levels in Latin America.

Concentration and competition may also affect credit volatility over the business cycle. Some theoretical views suggest that when banks' interests collide, it is likely that they will increase mark-ups during bad times, amplifying business cycle fluctuations. By contrast, other views suggest the opposite, that is, that low competition can stabilize credit when bad shocks hit the economy. If there is low competition in the face of bad shocks, banks could avoid the liquidation of some loans that might not be profitable in the short term (because of the shock) but that could be profitable in the long run. With high competition, banks would not be able to take these chances.

Furthermore, an implication of modern portfolio theory is that diversification reduces volatility. In this context, large banks taking advantage of the law of large numbers are likely to be better diversified and hence better able to face shocks than smaller and less diversified banks; therefore, large banks would have more stable credit levels. The evidence presented in Chapter 9 shows that, conditional on the level of financial development and income, countries with greater concentration in the banking industry have less procyclical credit. A similar reaction in credit is observed after an external demand shock hits the economy. These results suggest that a concentrated banking sector, which does not necessarily mean a noncompetitive one, has lower credit volatility.

The rising trend in foreign banking in Latin America has led economists and policymakers to consider its implications. Most economists agree that the presence of foreign-owned banks can play a useful role in developing and modernizing the financial system. As shown in Chapter 10, there is in fact evidence that foreign bank entry plays a useful role in expanding credit, although the evidence suggests that most of this credit expansion is directed toward large firms. Foreign banks also tend to be more efficient than domestic banks and have lower net intermediation margins. They can afford such low margins because they tend to have lower overhead costs. For Latin America, Table 2.2 shows that relative to domestic private banks, foreign institutions have lower overhead costs and interest margins (the deposit rate minus the loan rate).

An area in which the presence of foreign banks represents a mixed blessing is credit stability, which is discussed in Chapter 10. In case of problems, foreign banks have better exit strategies than domestic banks, and hence in times of crisis they can destabilize credit. For example, if an economy is hit by a shock that affects the productivity of overall projects and increases credit risk, most banks might decide to cut back on credit.

TABLE 2.2 OWNERSHIP AND BANK CHARACTERISTICS IN LATIN AMERICA, 1993–2003
(Percent)

Bank ownership	Loan rate ^a	Deposit rate ^a	Overhead costs ^b	Loans to public sector ^c	Nonperforming loans ^d	Return on assets ^e
Domestic	4.20	2.68	1.10	12	6	0.28
Public	3.86	1.84	1.40	19	6	0.12
Foreign	4.01	2.74	1.00	13	5	0.28

^a Rates are in real terms.

^b Overhead costs over total assets in percentage points.

^c Loans to the public sector as a share of total assets.

^d Nonperforming loans over total loans.

^e Return on assets in percentage points.

Note: For domestic banks, the value is the sample median. For public and foreign banks, it is the private domestic value plus the computed deviation using a regression analysis. Countries included in the sample are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, and Peru.

Source: Bank superintendencies.

However, if a bank has the alternative of redirecting its funds toward another economy that was not hit by the shock, this might make its credit more volatile than others. Usually foreign banks face such alternatives and can cut credit by more than domestic banks can.

However, there are also cases in which foreign banks may play a useful role in stabilizing credit. Foreign banks do not suffer as much as domestic banks when there is an overall decline in deposits, given that they usually have access to additional sources of funding, such as deposits from abroad or capital transfers from their parent bank. In addition, foreign banks may also be more stable when there is a run on deposits, due to the fact that depositors may perceive that foreign banks are stronger than domestic banks since they have the support from their parent, usually from a developed country. The empirical analysis presented in Chapter 10 shows that whether foreign banks stabilize or destabilize credit depends on the nature of the shocks that hit the economy. Foreign banks play a useful stabilizing role when shocks come from the deposit availability side. The potentially beneficial role of foreign banks is also likely to depend on the degree of sophistication of the financial system, with foreign banks playing a more useful role in less sophisticated financial systems (Levine 1996).

Traditionally, the public sector has been a large player in Latin American banking systems. Views on this issue are extremely polarized. On the one hand, some economists suggest that the need for public intervention is particularly strong in economies where the

scarcity of capital, general distrust of the public, and endemic fraudulent practices among debtors may fail to generate the sizable financial sector required to facilitate economic development. On the other hand, other economists suggest that there is little economic justification for government ownership of banks and that the latter is only dictated by political goals. Chapter 11 tries to balance these points of view and unveils empirical evidence that tests them. It finds that state-owned banks do not play a useful role in expanding credit availability or directing credit toward small firms or sectors that require it the most. The chapter also shows that much of the existing evidence on the negative development role of state-owned banks is not as strong as previously thought, although there is no strong evidence that the presence of state-owned banks increases credit. Focusing on access to credit by different sectors, the evidence suggests that the credit access gap between large and small firms in countries with high public participation in commercial banks is larger than in countries with low levels of public banking.

There is evidence that public banks reduce borrowing costs for their customers. In fact, the Report shows that interest rates charged by public banks are lower than those charged by domestically-owned private banks (see Table 2.2). These lower rates are due to lower funding costs, which, in turn, are probably due to subsidies in the form of either implicit insurance or public sector deposits that pay low interest rates. It is difficult to say whether these subsidies are justified based on the argument that low-cost credit finances ac-

tivities that produce positive externalities. The presence of public banks neither seems to favor access to credit for small and medium-size enterprises, nor does it favor access to mortgage credit or credit by firms in economic sectors facing problems in tapping credit markets. What is clear is that part of the subsidy seems to be wasted because state-owned banks are characterized by higher net intermediation margins and higher overhead costs (Table 2.2). Moreover, public banks could be a source of instability, given that they are also characterized by a larger share of nonperforming loans.

Whether most banks are privately or publicly owned may also affect the volatility of the banking system. Private bank lending could overreact to recessions and amplify the business cycle. Although this problem could be addressed by government guarantees or subsidies, these actions could take time to materialize because they would likely require some sort of legislative action. Hence, public bank managers that internalize the benefits of increasing credit during recessions may play a useful role in smoothing credit cycles.⁶

The evidence on the stabilizing role of public banks is still extremely limited and somewhat controversial. One view argues that, compared with the behavior of private banks, public bank lending reacts less to macroeconomic shocks, that is, lending decreases less during recessions and increases less during expansions. Another view claims that the effectiveness of monetary policy is reduced (and not enhanced) by the presence of state-owned banks. From a microeconomic perspective, Chapter 11 presents evidence that in the case of Latin America, credit extended by public banks is less procyclical than credit extended by private banks. In addition, the chapter shows that the smoothing effect of public banks is particularly strong in periods characterized by slow growth of domestic deposits and periods when credit grows less than total demand deposits. In fact, empirical evidence also suggests that deposits of public banks are less procyclical than deposits of private domestic banks.

Although these results suggest that public banks may play a useful role in reducing credit procyclicality and hence in reducing business cycle fluctuations, it should be pointed out that this analysis focuses on bank-level variables and not on aggregate credit. If public banks were to crowd out private credit, it would still be possible that their presence could lead to greater credit volatility. Chapter 11 also presents evidence at the aggregate level and finds a negative but weak correlation between the presence of state-owned banks and the elasticity of credit to external shocks. This finding supports the microeconomic evidence that public banks do not amplify, and if anything smooth, credit cycles.

RULES AND INSTITUTIONS BEYOND THE FINANCIAL SAFETY NET

A properly designed financial safety net is crucial for financial stability. But there are other rules and institutions that also help promote the stability of credit markets and financial institutions. Because of the characteristics of financial contracts, strong institutions are crucial to support deep and stable financial markets. When the ability to enforce loan contracts is imperfect, people are tempted to renege on their loans. Large and impersonal financial markets require not only an appropriate legal framework, but also adequate enforcement of the rights and responsibilities of each of the parties involved in the contract. Otherwise, financial contracts may become infeasible.

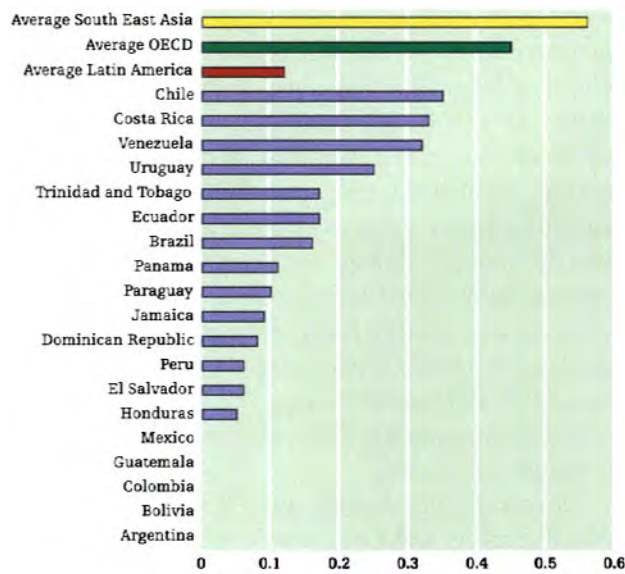
One of the major differences between developed financial markets and underdeveloped ones is the role played by property rights. The latter are crucial in order to exploit the benefits of using collateral in financial contracts. Collateral is an essential mechanism for dealing with several types of uncertainty that inhibit credit expansion. As shown in Figure 2.6, regulations and institutions do not provide sufficient protection of property rights in Latin American countries. In most countries, laws are not designed to protect creditor rights, tend to favor debtors in cases of dispute, and make it excessively costly for creditors to recover collateral in case of borrower default. In addition, the low levels of rule of law and of judiciary efficiency in the region make securing property rights even more difficult, costly, and inefficient.

But inadequate rules, regulation, and economy-wide institutions are not the only limitations for the expansion of credit markets in Latin America. In many countries in the region, the possibility of using collateral fails in several other dimensions. Titling and property registries tend to be weak and poorly managed, which makes it difficult for creditors to establish the priority and seniority of their claims to an asset that has been or will be pledged as collateral. In addition, in some countries property fraud is also a significant problem. This further limits the utility of property as collateral and consequently places serious constraints on access to credit.

The rights of creditors to the assets pledged as collateral and the cost of taking over collateral have a ma-

⁶ The idea is similar to the argument that monetary policy has shorter implementation lags than fiscal policy. In this context, a case can be made in favor of contingent guarantees that activate in the event of a crisis.

FIGURE 2.6 Effective Creditor Rights
(Index, 0-1)

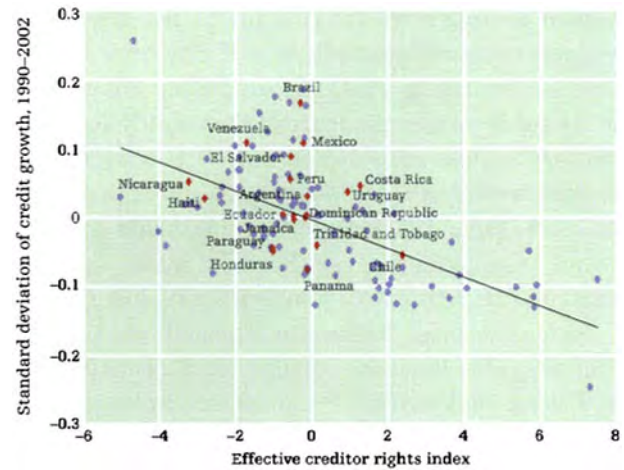


Note: The effective creditor rights index measures legal protection for creditors and the degree of law enforcement. The index ranges from 0 to 1. Higher values measure greater creditor protection.
Source: La Porta and others (1998); World Bank (2003); Chapter 12 of this Report.

major role in explaining the depth of financial markets. By increasing the value of collateral, stronger creditor protection increases financial breadth and lowers the cost of credit. With low creditor protection, the chances for the borrower to recover collateral in case the borrower defaults are slim, and the value of the residual claim for the lender is likely to be very low. Increasing the value of collateral diminishes risk from the lender's perspective and aligns the lender's and the borrower's incentives to adhere to the credit contract, thereby increasing credit and reducing its cost. Moreover, as discussed in Chapters 12, 14, and 15, stronger institutions that protect creditors also facilitate access to credit for small firms and deepen mortgage markets. In short, better institutions not only increase the size of the pie, but also allow more players to access the pie.

In addition to promoting the depth of credit markets in general and reducing constraints on small and medium-size debtors in particular, creditor protection can also reduce the impact of adverse shocks over the credit cycle. If creditor rights are protected, when the economy faces an adverse shock that increases credit risk, the extent to which credit shrinks will depend on the regulations regarding collateral repossession. If creditors cannot recover the collateral pledged in case borrowers default, it is likely that the overall increase in credit risk experienced during a recession will be ex-

FIGURE 2.7 Credit Volatility and Protection of Creditor Rights



Note: The figure controls for the standard deviation of external shocks.
Source: IDB calculations based on data from La Porta and others (1998) and World Bank data.

acerbated by the fact that creditors will not even be able to recover the collateral. In such cases, the credit market overreacts to the exogenous shock, and credit strongly contracts. Figure 2.7 shows how countries with better creditor protection tend to have more stable credit.

Another item on the institutional development agenda that is needed to increase credit and reduce its cost is the improvement of credit bureaus and credit registries. Credit registries that collect standardized historical data on borrowers can create a new kind of collateral: reputation collateral, which can help in lowering the information and moral hazard hurdles that are common in credit contracts. Moreover, credit-scoring technologies that make use of such data greatly reduce loan costs and open up new lending opportunities, especially for relatively opaque clients such as consumers or small and medium-size enterprises.

Credit registries play a substantial role in the development of credit markets. Financial development, measured as the ratio of private credit to GDP, is greater in countries that have either a public or a private credit registry than elsewhere. Chapter 13 discusses how these institutions can be particularly relevant in boosting the performance of less developed financial systems where information and moral hazard problems are more acute.

The use of data from credit registries to assess borrower risk can also have a significant impact on interest rates charged to clients. Lack of specific information about clients leads to charging high average interest rates, punishing good debtors while allowing risky bor-

rowers to obtain credit at interest rates lower than those according to their risk. With better knowledge about clients and their behavior, lenders can more easily attach a default probability to a client and hence assign a more accurate interest rate to the loan. Clearly, this practice tends to favor the best borrowers. Evidence discussed in Chapters 13 and 14 also reveals that small and medium-size enterprises tend to gain greater access to credit markets in countries where credit registries are more developed. Despite the fact that much has been done in the region in the past few years, there is still a long way to go, particularly in developing methods to guarantee the quality of the data in the credit registries and in solving legal issues related to information sharing.

The rising trend in the development of credit registries may also help to diminish financial volatility. In addition to their contribution to the development of financial markets, credit registries can also be used to reduce certain vulnerabilities. Proper use of credit registries can reduce the nonperforming loan ratio of a banking institution by allowing creditors to sort good and bad debtors before granting credit. Chapter 13 shows how the use of credit registries has reduced default rates in Latin American banks. Lower credit risk implies lower volatility. Credit registries might also be used for prudential supervision purposes. As discussed in Chapters 13 and 16, credit registries can play a very important role in assessing whether capital and provisioning regulations match up to actual lending risks.

CURRENT AND FUTURE CHALLENGES: THE ROAD AHEAD

Deepening credit markets, facilitating access to banking services, and lowering the cost of credit and reducing its volatility are undoubtedly issues of great concern in Latin America and the Caribbean, representing important hurdles that need to be crossed. Yet, the region must simultaneously address additional challenges that not only contribute to the objectives laid out above, but also deserve to be treated separately because they are at the center stage of current debate. Among them are the changing environment in international banking standards stemming from the new Basel capital accord (Basel II) and the challenges imposed by money laundering. The final chapters of the Report address these issues.

Chapter 16 discusses how to face current transformations in international regulatory standards. Currently, the Basel accord on banking regulation and

supervision is going through a period of enormous transformation. If and how Latin America and the Caribbean should adopt the new accord known as Basel II are crucial questions for policymakers across the region. The view of the Report is that countries should be extremely careful in the adoption of Basel II and should not hurry in this direction without first guaranteeing stronger compliance with the basic core principles of supervision and regulation. Moreover, as compliance with the core principles advances, some of the issues in Basel II will be covered, and the transition will be much smoother. While the importance of the driving ideas of Basel II are completely acknowledged and recognized, there are several concerns on implementation issues, especially those concerning capital requirements. Clearly, there is a strong need to develop methods that truly link risks with capital requirements; however, the methods proposed in Basel II cannot be easily implemented in Latin America and the Caribbean. Chapter 16 proposes a method for dealing with the transition.

In the context of increased drug trafficking and terrorism finance, there is much concern about money laundering. This is not unfounded, as rough estimates of money laundering in the region show it to be somewhere between 2.5 and 6.3 percent of annual regional GDP. The region has embarked on international cooperation as well as new or updated legislation to deal with this problem. Yet, money laundering is an important threat judging by the fact that some variables that are potentially linked with it are being dealt with only partially. Specific legislative measures deal in part with improved soundness of the banking system or greater development of the financial sector; however, countries should also deal with the issue that law giving is not equal to law abiding; in other words, monitoring and enforcement are crucial.

A successful fight against money laundering in the region requires a comprehensive view of the full picture, for which it is important to understand the true dimension of its pervasiveness. In this context, some of the structural weaknesses in the region contribute to thriving money laundering activities and, as long as such weaknesses are not properly dealt with, purely legislative measures may not suffice. The road map is challenging, as discussed in Chapter 17. Countries in the region should consider at least five challenges in the fight against money laundering: a sound of banking system, greater development of capital markets, improvement in the quality of institutions, good corporate governance, and a reduction in the size of the underground economy.

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PART II

Banking Crisis Prevention and Resolution

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Determinants and Characteristics of Banking Crises

IN times of banking crises, complex interactions arise between banks and the macroeconomy. Under such circumstances, either monetary policy (with flexible exchange rate regimes) or the exchange rate peg loses, typically as a result of a bailout of the banking system. Especially when banking crises occur simultaneously with currency crises or sudden stops in capital flows, there is a strong feedback between the macroeconomy and the banking system through channels that are dormant under normal circumstances.

Banking crises can be particularly damaging because they entail a major disruption in economic activity. A meltdown of the payments system may interrupt transactions on a generalized basis, with a resulting collapse in output. Crisis episodes are typically associated with a dramatic weakening of balance sheets, on the side of both banks and borrowers. To the extent that banks represent a major source of financing, credit contraction due to plummeting net worth may lead to a forced reduction of investment and consumption spending. The undermining of depositors' confidence in the banking system may, in turn, lead to capital outflows. As banks are intervened or closed, valuable information on borrowers is lost. All these factors contribute to the inability of the banking system to function efficiently; as a result, significant resources are diverted from the formal financial sector to less efficient uses.

In addition, bank bailouts typically entail high fiscal costs, thereby raising public debt and debt service requirements, and affecting perceptions about future fiscal policy that could adversely affect consumption and investment decisions. The combined impact of these developments could lead to a substantial decrease in economic growth.

Cases of banking crises that bring about a disruption in economic activity are systemic in nature, as opposed to individual bank failures. Bartholomew, Mote, and Whalen (1995, p. 9) define systemic risk as "the likelihood of a sudden, usually unexpected, collapse of confidence in a significant portion of the banking or fi-

nancial system with potentially large real economic effects." As recognized by Caprio and Klingebiel (1996, p. 5), "there is no objective, generally accepted definition" that determines "when a problem in the banking sector becomes systemic," yet "Central Bank governors tend to behave as though they know a systemic problem when they see one." Given the demandable debt and sequential servicing features of the banking industry, the origin of a systemic crisis may not necessarily lie only in trouble with large banks. Indeed, events of systemic crises can be triggered by individual bank failures (an issue that is dealt with in Chapter 5 with the analysis of deposit insurance).

Regardless of the origin of a systemic banking crisis, a defining characteristic is that it involves insolvency of a large share of the banking system. Systemic insolvency typically materializes in the form of overt runs, which are sudden and short-lived, or in the shape of financial distress, that is, when a large share of banks are insolvent but remain open. Caprio and Klingebiel (1996) use a tractable definition of systemic banking crisis that makes the concept operational. They define a systemic banking crisis as a case where the net worth of the banking system is almost or entirely exhausted as nonperforming loans use up most or all capital in the banking system. The analysis in this chapter is based on this definition of a banking crisis.¹

A systemic banking crisis in which generalized bank insolvency is at stake may be triggered by several factors. It may simply be due to poor lending decisions, excessive risk-taking, and the materialization of credit risk. But a solvency crisis may also originate in a liquidity shock, such as a banking panic and run on deposits, or an external factor, such as a sudden stop in capital flows. For this second type of crisis, bankruptcies may be the consequence rather than the cause of the crisis. Such

¹ However, it is acknowledged that accounting measures of capital might not be reliable during a crisis.

TABLE 3.1 | RECURRENCE OF BANKING CRISES, 1974–2003

Region	Average number of crises per country	Countries with recurrent crises (percent)
Latin America	1.25	35
Latin America and the Caribbean	0.90	27
Eastern Europe and Central Asia	0.89	11
Sub-Saharan Africa	0.83	13
Middle East and North Africa	0.40	0
East Asia and the Pacific	0.38	8
South Asia	0.38	0
High-income OECD countries	0.21	0
High-income non-OECD countries	0.09	0

Source: IDB calculations based on data from Caprio and Klingebiel (2003).

developments are typically associated with multiple equilibria, where pessimistic expectations become self-fulfilling. For this to happen, real costs due to illiquidity must materialize when facing a liquidity shock, such as an interruption in production when loans are called (as in Diamond and Dybvig 1983) or when projects that need additional financing to materialize are not funded (as in Chang and Velasco 1999). These frameworks potentially allow for the presence of a “good” equilibrium with no liquidity crisis (and therefore no solvency crisis) and a “bad” equilibrium when shocks to liquidity turn into solvency crashes.

This chapter first discusses the typical determinants and traditional explanations of banking crises, mainly related to excessive risk-taking and materialization of credit risk. It then shifts attention to the analysis of liquidity factors and banking crises through the lens of sudden stops in capital flows, a development in capital markets that severely affected Latin American countries in the late 1990s with the emergence of the East Asian crisis in 1997, and, most notably, the Russian crisis of 1998.² Sudden stops are closely linked to banking crises in emerging markets because drastic changes in relative prices take place during those events, severely affecting the quality of bank assets (mainly loans in foreign currency to nontradable sectors). A key element explored in this chapter is that although there may be times when countries are simultaneously tested (say, because of liquidity turmoil at the epicenter of capital markets leading to contagion across countries), there are country-specific determinants of the likelihood of experiencing sudden stops that are related to an important characteristic of the banking sector, namely, domestic liability dollarization.

BANKING CRISES IN LATIN AMERICA: WHY SHOULD WE CARE?

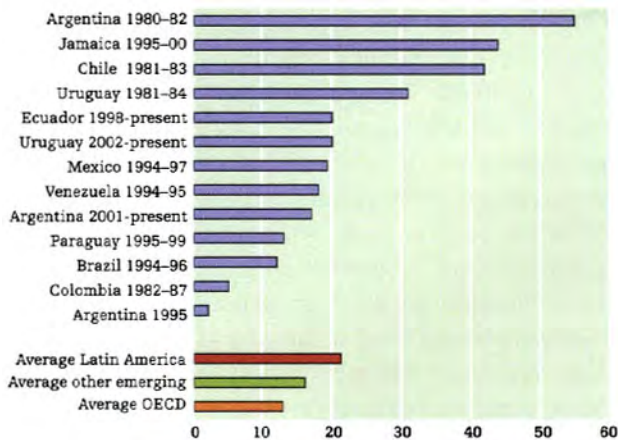
Compared with other regions, Latin America ranked highest in terms of the average number of crises per country, as well as for the recurrence of banking crises, in 1974–2003 (Table 3.1). In Latin America, 35 percent of countries have experienced recurrent crises, almost three times higher than in any other region. These results are striking and indicative of how much remains to be done to achieve banking stability in the region. This pattern of recurrent banking crises is particularly worrisome because banking crises are indeed costly spells.

Systemic banking crises have been fiscally costly events throughout the world, but particularly so in Latin America. Based on the Caprio and Klingebiel (2003) dataset, Figure 3.1 ranks the fiscal costs of banking crises in Latin America against other emerging countries and Organisation for Economic Co-operation and Development (OECD) countries. On average, fiscal costs have been greater than 20 percent of gross domestic product (GDP) for Latin American countries, almost twice as high as in the OECD region and about a third more than the average for other emerging markets.

Several arguments provide a rationale for government intervention in times of banking crises. One is that banking crises spread the damage from financial institutions to firms and families that risk being pushed

² This analysis does not represent an exhaustive survey of all factors leading to financial crises. For example, the impact of subnational government imbalances on the banking sector—an important feature of crisis in some Latin American experiences—is not directly covered here (although the impact of the fisc as a whole is discussed in Chapter 2). Instead, the analysis focuses on the most recent and relevant factors leading to banking crises.

FIGURE 3.1 Fiscal Costs of Systemic Banking Crises
(Percentage of GDP)

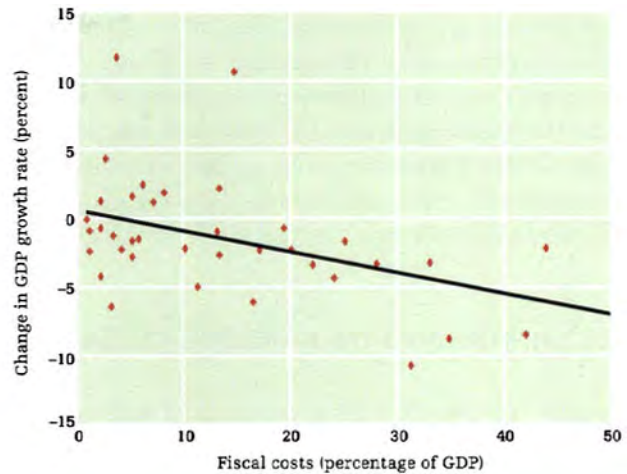


Source: Caprio and Klingebiel (2003).

toward financial distress or even bankruptcy, depending on their reliance on credit. Another widely mentioned argument in favor of government intervention is that a crisis can take a toll on the functioning of the payments system. Impediments to using deposits in the banking system force consumers and firms to rely on cash transactions, or to suspend operations for lack of proper means of payment, leading to a drastic downturn in economic activity.³ However, maintaining a payments system entails a series of costs: (i) money issuance to finance a bailout may lead to currency depreciation and higher inflation; (ii) debt issuance increases the future tax burden on the private sector, generally distorting consumption and investment decisions; (iii) public bailouts may exacerbate future excessive risk-taking on the part of banks and borrowers, thus becoming the seed of a new financial crisis; and (iv) government intervention redistributes the costs of a crisis across groups and over time, potentially causing social unrest and conflicts between winners and losers.

Banking crises result simultaneously in sizable fiscal costs and lower output growth. Indeed, these costs seem to be higher the deeper the crisis. This can be seen in Figure 3.2, which relates fiscal costs to changes in average GDP growth three years before and after a crisis (displaying a negative correlation of 0.51).⁴ This result has no causality implication per se; it only states that intervention costs increase with the magnitude of the crisis. However, causality can go either way because fiscal costs depend on the intensity of the crisis, and the crisis policies put in motion can influence the crisis. Some attempts have been made to address this issue. For example, Honohan and Klingebiel (2000) find

FIGURE 3.2 Fiscal Costs and Change in GDP
Growth Rate, World Sample



Source: Data from Caprio and Klingebiel (2003) and IDB estimates.

that a host of policy tools, such as liquidity support and blanket guarantees, do not influence output loss or recovery time.⁵ A limitation of this approach is that the cost of intervention should really be compared with the counterfactual of no intervention in each country; however, it is difficult to find counterfactual evidence, given that almost every financial crisis has faced government intervention.

Not only do banking crises deeply affect key macroeconomic variables in the short term, but they may also sow the seeds for lower long-run economic growth. A focus on immediate effects, especially when these appear to be less severe than expected, might be deceptive. To assess longer-term effects, a growth regression was estimated using annual information for 76 countries over the 1974–2001 period, taking Caprio and Klingebiel's database as a source of indicators of banking crises.⁶ After controlling for widely used determinants and controls, results indicate that the coefficient accompanying the financial crisis indicator is negative

³ To date, there is not much hard evidence on the consequences of liquidity shortages for the payments system. Commander, Dolinskaya, and Mumssen (2002) study the growth of bartering in Russia, where liquidity problems emerged even before the August 1998 crisis, but they find no significant effect of the share of nonmonetary to total transactions—a proxy for liquidity problems—on sales growth.

⁴ The correlation is statistically significant at the 1 percent level.

⁵ Dziobek and Pazarbasioglu (1997) reach the same conclusion regarding liquidity support after looking at the speed and success of bank restructuring packages in crisis countries.

⁶ See Soto (2003) on the advantages of using annual data to explain long-run economic growth. Estimations control for endogeneity.

and significant.⁷ Entering a financial crisis reduces annual long-term growth by approximately 1 percentage point, indicating that these episodes can be traumatic in the longer term as well.⁸ Financial crises distort the private sector's resource allocation because of heightened uncertainty, asymmetric information, and coordination issues. Compounding the problem, bailout policies are prone to inefficiency, and in some cases the process of financial crisis resolution violates property rights.

DETERMINANTS OF BANKING CRISES

In order to avoid the destructiveness and high costs of banking crises, it is important to understand their determinants. The two main causes—adverse selection and moral hazard factors, and liquidity factors—reflect two key concerns in the banking literature, as well as two groups of opinions. Some observers believe that the source of banking crises is inappropriate and poorly regulated behavior by banks and borrowers. Others emphasize liquidity shocks as a major factor not only in triggering crises, but also in potentially changing relative prices in such a drastic way that a banking sector that was solvent under some initial set of relative prices may become insolvent at the new set of relative prices. Of course, each crisis has its own particular characteristics, but in many cases a combination of moral hazard and liquidity factors causes banking crises. For many, banking crises, particularly those originating in bad banking decisions, have been accidents waiting to happen that often materialize following liquidity shocks.

Adverse Selection and Moral Hazard Factors

A common, unifying concept on how macroeconomic and regulatory variables affect banks is given by their contribution to adverse selection and moral hazard problems caused by information asymmetries. Indeed, according to Mishkin (2003), a financial crisis is a disruption of financial markets in which adverse selection and moral hazard problems become much worse, so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities, precipitating a sharp contraction in economic activity. Factors leading to the deterioration of balance sheets change incentives facing banks and borrowers (as they have less to lose if projects fail) and contribute to increases in their risk-taking.

Real interest rate spikes are one of the most often cited problems leading to adverse selection and moral

hazard issues. As originally ascertained by Stiglitz and Weiss (1981), borrowers with the riskiest projects are willing to take on high interest rates because, if their projects succeed, they will remain the main beneficiaries. Thus, higher interest rates may lead to financial instability as banks curtail credit to reduce the likelihood of lending to a bad credit risk (adverse selection). But increases in interest rates can also affect bank balance sheets because banks typically collect short-term deposits to fund long-term projects. When interest rates in contracts are fixed, an increase in interest rates will quickly be reflected in the cost of (short-run) deposits, whereas it will take more time to pass on the increase in the cost of funds to borrowers. Similarly, interest rate hikes erode the net worth of banks in present value terms by affecting the value of longer-term assets more than liabilities of shorter duration. In addition, Bernanke and Gertler (1995) note that higher interest payments reduce cash flows of both firms and households, leading to deterioration of their balance sheets.

Large increases in uncertainty can also be a source of banking crises, given that they make it difficult for lenders to discriminate between good and bad credit risks. A recession or an inflationary spike that increases uncertainty about future relative prices can produce larger uncertainty. Similarly, information problems can lead to banking crises in times of recessions if depositors cannot discriminate among individual banks in terms of their riskiness (Gorton 1988). The lack of bank-specific information may lead to the use of aggregate information in decisionmaking. Thus, panics can occur as a consequence of recessions because depositors might expect a large number of banks to fail during times when output growth falls. In a similar vein, Levy-Yeyati, Martínez Pería, and Schmukler (2004) highlight the influence of systemic factors—such as an increase in country risk or expectations of a higher depreciation of the currency—on depositor behavior in the case of Argentina. Systemic factors may directly affect depositors through the perceived future value of their deposits—irrespective of individual bank health—or indirect-

⁷ The regression controls for the log of initial income per capita, initial secondary enrollment, openness to trade, government expenditure to GDP, secondary enrollment, credit to GDP ratio, as well as dummies for low, middle and high-income countries (capturing different levels of institutional development). To control for potential endogeneity, a generalized method of moments approach was used for estimation.

⁸ However, these results may be capturing the fact that financial booms preceded many crises. Particularly given the short time span of the data, the impact of crises on growth could be somewhat overstated.

ly through effects on the fundamentals of institutions heavily exposed to systemic risks.

Credit booms, coupled with poor bank regulation and poor supervision, may also result in moral hazard, in particular following financial liberalization episodes. Demirgüç-Kunt and Detragiache (1998) find that bank franchise values tend to be lower when financial markets are liberalized, due in part to greater competition. Thus, arguments attributing increased moral hazard to low bank franchise value may help explain why financial liberalization may lead to a credit boom and increase the likelihood of a banking crisis (Caprio and Summers 1996; Hellman, Murdock, and Stiglitz 1994). This result is conditional on the degree of institutional quality (usually proxied by GDP per capita or an index of law and order), which reduces moral hazard.

In many cases, financial liberalization is accompanied by the removal of controls on international capital movements. This process opens opportunities for banks to take on another type of risk by collecting funds in foreign currency and lending to unhedged domestic borrowers. In this way, banks transform currency risk into credit risk. Not surprisingly, banking crises have often been accompanied by currency crises (Kaminsky and Reinhart 1999).

Although deposit insurance may be beneficial for avoiding bank panics, it may also be a source of moral hazard because the ability of banks to attract deposits no longer reflects the risk of their asset portfolio and, therefore, banks may engage in risky lending. Demirgüç-Kunt and Detragiache (2002) find that, on average, deposit insurance increases the likelihood of a banking crisis because the moral hazard factor more than compensates for the reduction in the likelihood of bank panics.

Liquidity Factors

Runs on the domestic currency in expectation of future changes in monetary policy may introduce severe liquidity problems in the banking system. As argued in Calvo (1996), measures such as the ratio of monetary aggregates to foreign reserves can be a good indicator of the vulnerability to a run on the domestic currency, particularly for exchange rate peg regimes.

Sudden stops in capital flows also represent a major vulnerability to financial stability. As argued in Calvo, Izquierdo, and Talvi (2003), a standstill in the capital account causes major real exchange rate swings. Banking systems facing large exposure to credit risk based on potential changes in relative prices, as would

be the case of banks lending in foreign currency to nontradable sectors, could therefore be at the mercy of sudden stops. A related issue that can also conspire against financial stability is that of public bond holdings in bank portfolios. Public bonds in emerging markets are typically issued in foreign currency (a characteristic that Eichengreen, Hausmann, and Panizza (2003) call “original sin”), while a large share of government income typically comes from nontradable sectors. Thus, governments are exposed to the same vulnerability to changes in relative prices described above for the private sector and may become insolvent after a sudden stop. Therefore, large exposure of the banking system to public bond holdings may entail a threat to bank stability. Moreover, as stated in Calvo, Izquierdo, and Talvi (2003), in anticipation of government bankruptcy, depositors may flee the banking system to safeguard their assets. This has been implicitly captured by Levy-Yeyati, Martínez Pería, and Schmukler (2004), who find that country risk was indeed a determinant of depositor behavior for the case of the most recent banking crisis in Argentina.

Public banks have also been placed on the list of suspects for banking crises. Under liquidity shocks, central banks may have additional incentives not to let these banks fail and, by providing liquidity, may fuel the drainage of foreign exchange reserves. Still, evidence on the impact of public banks on the likelihood of a banking crisis is slight. Studies by Barth, Caprio, and Levine (2004) and Beck, Demirgüç-Kunt, and Levine (2003b) do not find robust evidence against public ownership as a determinant of banking crises.

Emerging markets are especially vulnerable to the behavior of international interest rates. Seminal work by Calvo, Leiderman, and Reinhart (1993) shows that foreign interest rates and the foreign business cycle explain on average 50 percent of the variance of domestic variables such as the real exchange rate and the accumulation of international reserves for the case of several Latin American economies. Fernández-Arias (1996) emphasizes the effects of international interest rates on country creditworthiness as an additional, indirect channel that may affect capital flow behavior. Naturally, these external factors are likely to affect the performance of the domestic banking sector, imposing significant stress in some cases. Eichengreen and Rose (1998) show that interest rates in the United States, Europe, and Japan tend to rise sharply and significantly in the year preceding the onset of a banking crisis. Related work by the same authors identifies contagion through trade links with trading partners, or contagion due to similar macroeconomic characteristics as in other cri-

sis countries (under the suspicion that similar problems may be developing) as relevant determinants of banking crises (Eichengreen and Rose 1999).

Other Factors

Bank concentration shares both moral hazard and liquidity arguments. On the one hand, concentrated banking systems may yield higher profits and lead to lower bank fragility in the presence of economies of scale. High profits bestow a liquidity buffer against shocks and increase the franchise value of banks. On the other hand, large banks can benefit from “too big to fail” policies; that is, they may have access to subsidies or liquidity provision from monetary authorities because letting them collapse could lead to a generalized banking crisis. This, in turn, may lead large banks to excessive risk-taking; see, for example, Boyd and Runkle (1993) and Mishkin (1999). Beck, Demirgüç-Kunt, and Levine (2003a) provide empirical support for the view that bank concentration decreases the probability of a banking crisis, lending some support to the first hypothesis.

Terms of trade shocks represent an additional source of concern for banking crises, particularly so for developing countries, which in many cases are highly concentrated in a few commodities. To the extent that banks are not sufficiently diversified, they can be overexposed to this type of shock. Caprio and Klingebiel (1996) find that on average in 75 percent of the countries with banking crises in their database, the terms of trade fell by more than 10 percent in the years preceding the crisis.

HOW DOES LATIN AMERICA FARE?

With so many factors influencing the probability of systemic failures, it is challenging to summarize their impact in one consolidated measure. One way to go about this is to combine the factors into a model that estimates the likelihood of a banking crisis. Based on the original specification set out by Demirgüç-Kunt and Detragiache (2002), this model was updated to cover the most recent banking crises as of end-2002. Some additional features were added, such as institutional and bank concentration variables, in line with Beck, Demirgüç-Kunt, and Levine (2003a).⁹ Averages of the main variables influencing the probability of a banking crisis were taken for five country groups in three periods.¹⁰ Taking 1991 as the starting point, averages for 1995–98 and 1999–2002 were constructed, thus splitting the sample before and after the Russian crisis of 1998, given the impact

this event has had on macroeconomic developments in Latin America.

Table 3.2 summarizes the evolution of the main determinants of banking crises by region. The table shows that Latin America has made considerable advances in reducing inflation and has been gradually lowering real interest rates. GDP growth, a key determinant of the likelihood of a banking crisis, although vigorous in the mid-1990s, has declined since the Russian crisis. This has been particularly true for emerging markets in Latin America. By contrast, other emerging markets have on average been able to sustain growth despite the Asian crisis of 1997–98, although this comparison should be made with care because they have had more time to recover. Credit growth, which was high in the mid-1990s, slowed significantly in 1999–2002, particularly in Latin American emerging markets where the sudden stop in capital flows following the Russian crisis sharply decreased credit growth. Another element stemming from this episode was the high rate of devaluation in the late 1990s and early 2000s. Consistent with reduced financing and changes in relative prices, current account deficits narrowed, particularly in Latin American emerging markets.

Regarding banking factors, deposit insurance (the moral hazard index in Table 3.2) in Latin America has been in line with other emerging markets, and substantially lower than in OECD countries. However, institutional strength, measured by a rule of law index, has been feeble in Latin America. This weakness is particularly relevant in Latin American emerging markets because, as these markets have relatively higher deposit insurance coverage, poor rule of law may induce banks to take excessive risk. According to data in Beck, Demirgüç-Kunt, and Levine (2003a), bank concentration levels seem to have fallen steadily in Latin Amer-

⁹ Demirgüç-Kunt and Detragiache (2002) estimate a logit model to convey the probability of a banking crisis, using a sample of developing and developed countries for 1980–97. The model was extended to cover 1980–2002. As shown in Table 3.2, many of the variables included in the estimation are macroeconomic variables that could in turn be influenced by a banking crisis, thus introducing endogeneity problems. This concern was addressed by working only with data before the start of a banking crisis and the first year of the banking crisis itself, leaving aside data for crisis years following that of the origin of a crisis. Given that the timing of the origin of banking crises is typically defined early on, before the crisis becomes systemic, this strategy should ameliorate endogeneity.

¹⁰ These groups are Latin America, emerging markets in Latin America (countries where external bond markets and capital flows play an important role, as defined by J.P. Morgan’s Global Emerging Market Bond Index, or EMBI global), other emerging markets around the world, the consolidated group of emerging markets, and OECD countries.

TABLE 3.2 DETERMINANTS AND PROBABILITY OF BANKING CRISIS

Determinant	Latin America			Other emerging markets			OECD			All emerging markets			Latin American emerging markets		
	1991	1995-98	1999-2002	1991	1995-98	1999-2002	1991	1995-98	1999-2002	1991	1995-98	1999-2002	1991	1995-98	1999-2002
Moral hazard and adverse selection															
Macroeconomic factors															
Inflation (percent)	95.3	14.5	9.1	37.1	25.3	7.3	4.1	1.8	2.5	56.2	22.6	8.8	78.4	16.3	10.4
Real interest rate (percent)	38.3	17.6	15.7	0.6	11.4	8.0	9.2	6.2	4.2	21.8	14.5	11.2	57.2	18.3	15.7
GDP growth (percent)	4.4	3.9	1.9	0.1	3.2	3.5	0.8	3.2	3.0	3.0	3.5	2.7	5.3	3.9	1.3
GDP per capita ^a	2.8	3.6	3.8	2.7	2.9	3.2	24.5	26.7	29.4	3.1	3.7	3.9	3.8	5.0	5.0
Credit growth (percent)	19.7	11.2	1.4	1.6	20.3	4.7	1.5	6.6	9.9	8.3	16.9	3.7	15.0	11.3	-0.4
Institutional factors															
Deposit insurance dummy ^b	0.3	0.5	0.6	0.3	0.5	0.6	0.8	0.9	0.9	0.3	0.6	0.7	0.4	0.8	0.9
Moral hazard index (deposit insurance index) ^c		-0.3			-0.3			1.5			-0.3			0.7	
Rule of law index ^d		-0.3			0.1			1.8			-0.1			-0.1	
Liquidity															
M2/reserves	5.2	4.0	4.2	22.0	5.5	3.9	16.3	16.5	23.1	14.1	5.0	4.1	4.3	3.9	4.3
Private sector credit/GDP	0.2	0.3	0.3	0.4	0.4	0.5	0.7	0.8	1.0	0.3	0.4	0.4	0.2	0.3	0.3
Current account deficit/GDP (percent) ^e	3.0	4.4	3.6	1.6	2.1	-0.8	0.8	-0.6	-0.5	1.6	2.2	-0.3	1.5	2.9	1.3
Nominal exchange rate depreciation (percent)	84.7	10.7	16.3	54.9	24.6	7.9	1.5	2.4	2.6	61.5	20.2	14.6	70.3	12.6	20.3
Real effective exchange rate volatility (5 year window, in percent) ^f		5.2	6.1		7.0	6.5		4.6	5.2		6.6	6.9		5.0	7.3
Other															
Terms of trade growth (percent) ^g	-2.6	0.9	0.6	-3.5	0.2	0.4	-0.4	0.3	0.3	-3.8	-0.1	0.8	-4.3	-0.6	1.5
Bank concentration (index) ^h	0.7	0.5	0.4	0.7	0.5	0.4	0.6	0.5	0.5	0.7	0.5	0.4	0.7	0.4	0.3
Banking crisis probability (relative to OECD)															
	6.2	1.2	3.8	9.6	4.2	1.6	1.0	1.0	1.0	4.7	3.7	3.8	4.9	2.7	13.4

^a In thousands of constant 1995 dollars.

^b Demirgüç-Kunt and Detragiache (2002); Barth, Caprio, and Levine (2004).

^c Demirgüç-Kunt and Detragiache (2002).

^d As of 1998. Kaufmann, Kraay, and Mastruzzi (2003).

^e Unweighted average.

^f Calculated from monthly data.

^g IMF World Economic Outlook Database.

^h Beck, Demirgüç-Kunt, and Levine (2003c).

Source: IDB calculations based on IMF and World Bank data, unless otherwise indicated.

ica, although this also seems to have been a feature of other emerging markets.

Putting all these factors together, a rough measure of the probability of a banking crisis in the region was computed using the above-mentioned empirical model. Variables that turned out to be significant at the 10 percent level were macroeconomic variables such as GDP growth, real interest rates, terms of trade growth, exchange rate depreciation, and credit growth; institutional variables such as deposit insurance, rule of law, and GDP per capita; and banking variables such as concentration and the credit to GDP ratio. Additional variables, such as holdings of public sector securities, the ratio of public bank assets relative to total bank assets, and deposit dollarization, did not turn out to be significant. This may be due to the availability of data for these variables only from 1995 onward, whereas data for most other variables start in the 1980s.

Given that the OECD group has been by far the most stable among the regions considered here, its probability of a crisis was taken as a benchmark for comparison against other groups. Not surprisingly, on average Latin America experienced a lower probability of crisis in the mid-1990s than in 1999–2002, but much of this effect was driven by the performance of Latin American emerging markets, indeed countries with strong ties to capital flows. Other emerging markets, after weathering the East Asian crisis of 1997–98, have managed to decrease the likelihood of a banking crisis. Although data for 2003 are not available for all countries, there are indications that many Latin American emerging markets are recovering from the sudden stop disaster and experiencing greater growth, lower interest rates, and currency appreciation, thus lowering the likelihood of a crisis. It is precisely at this stage that countries should face the challenge of addressing remaining barriers to bank stability.

THE STANDARD APPROACH TO BANKING CRISES

A well-established view about the emergence of banking crises in developing countries usually sets financial liberalization as a starting point for the unraveling of events leading to a crisis (see, for example, Mishkin 2003). In the recent past, countries throughout the world have moved toward policies that remove caps on interest rates, reduce reserve requirements, ease entry barriers, and privatize banks, leading in many cases to the appearance of foreign financial intermediaries representing a substantial share of the banking system.¹¹

This movement has strong foundations in the work of McKinnon (1973) and Shaw (1973), who argue that financial repression represented a barrier to capital accumulation because low or even negative real interest rates for depositors suppressed private savings, thus reducing the amount of funds available to finance investment. Financial liberalization could bring on the benefits of increased savings and the resulting increase in financial depth would accelerate growth.

However, as the crises of the 1980s and 1990s illustrate, things did not turn out as bright as originally expected.¹² The traditional explanation for these poor results puts the blame on the remarkably rapid expansion of credit, a factor that created challenges for both financial institutions and bank supervisors. In a context of weak financial regulation and supervision, and implicit or explicit government safety nets, excessive risk-taking on the part of depositors, borrowers, and banks would be the most likely outcome. To start with, banks typically lacked proper assessment systems to adequately price risk. And bank supervisors found it extremely difficult to cope with the lending boom, given that available resources were scarce in many cases, thus putting strain on their ability to monitor new loans appropriately. Excessive risk-taking opened the door for financing poor credit risks and eventually led to the emergence of a substantial amount of nonperforming loans. This, in turn, was reflected in the low performance or fall in stock market prices in advance of the crisis.¹³

Given that in many cases financial liberalization coincided with the removal of capital account restrictions, much of the lending boom was financed through the entry of capital, sometimes directly mobilized by the banking system through increases in bank liabilities with foreigners. This strategy, in turn, made countries more vulnerable to external liquidity shocks.

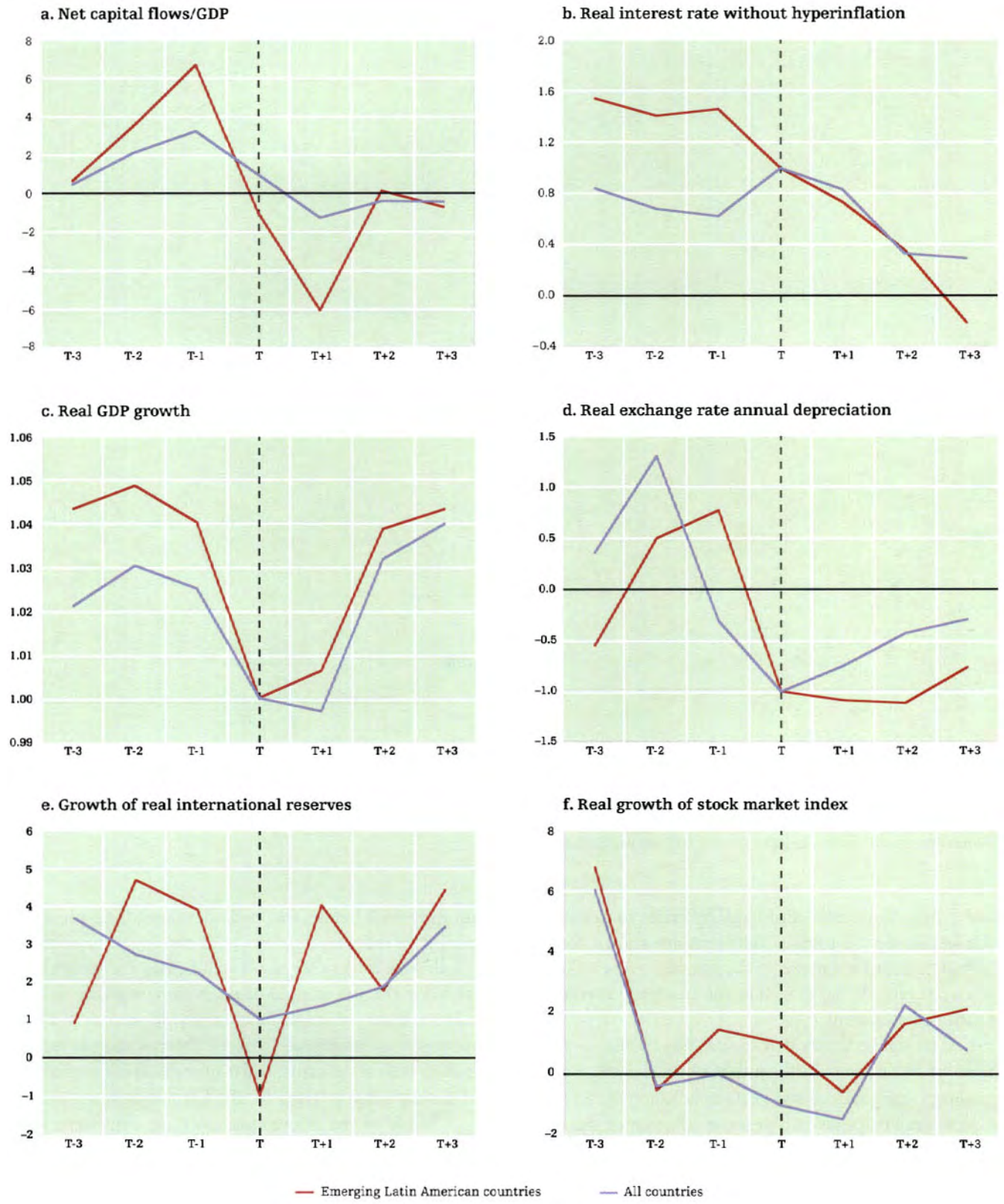
To substantiate this approach, Figure 3.3 sums up the evidence on the behavior of a key set of variables before and after banking crises. For comparison purposes, values are given relative to those prevailing at the time of crisis, marked as time “T” in the figure. Values represent annual averages across countries for each time period and span seven years (three years before, three years after, and the year of the crisis), based on Caprio

¹¹ While foreign entry was intense in the 1990s, the elimination of financial repression can be traced back to the 1970s.

¹² Empirical work by Demirgüç-Kunt and Detragiache (1998) stresses the relevance of financial liberalization as a determinant of the probability of a banking crisis.

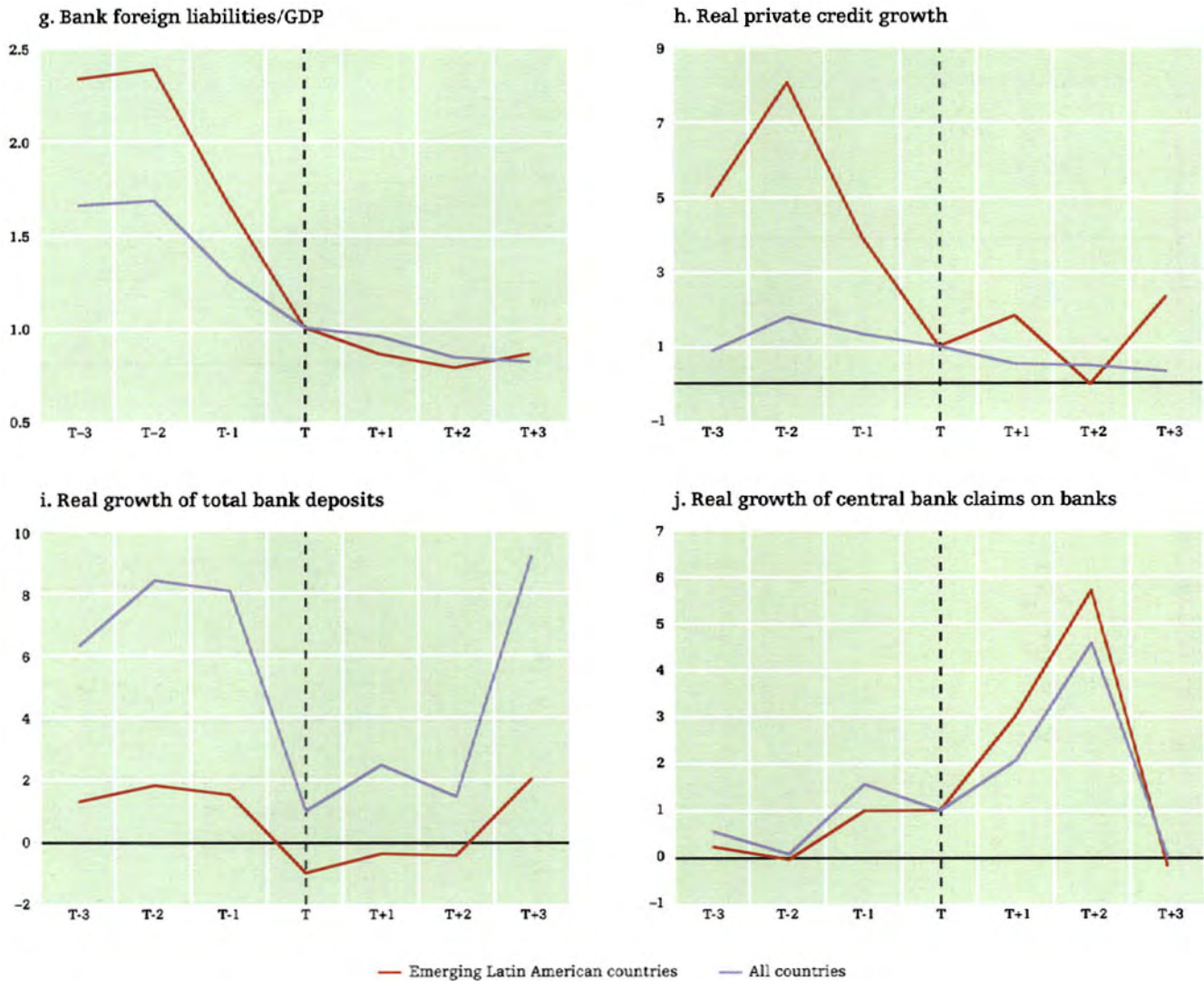
¹³ Indeed, Kaminsky and Reinhart (1999) find stock market price behavior to be a good early warning signal of banking crises.

FIGURE 3.3 Performance of Selected Variables before and after Banking Crises
(Series normalized by values at time of crisis, T)



(Figure continues on next page.)

FIGURE 3.3 Continued



Source: IDB calculations based on BANKSCOPE, IMF, and World Bank data.

and Klingebiel's dataset of banking crises to determine the beginning of a crisis. Averages are shown for the complete set of countries with systemic crises recorded since the late 1970s, as well as for emerging markets in Latin America only.

The figure shows that capital flows collapse at the time of a banking crisis, and bank debt with foreign creditors starts falling two years in advance of the crisis. Credit growth peaks two years in advance of the crisis before plummeting, particularly for Latin America. For the full set of countries, real interest rates before the crisis are about two times greater than after the crisis, and again this gap is larger for Latin America. It is interesting to note that growth in the real stock market index stops

abruptly well before the crisis develops. The pre-crisis rise in the real exchange rate (real currency appreciation) is followed by depreciation (even before the time of the crisis for the full sample of countries), working against balance sheet valuation in nontradable sectors.¹⁴ These events are accompanied by some deterioration in output growth before the crisis, and a substantial fall at the time of the crisis that is larger for the Latin American sample.

Many of the above measures are consistent with a weakening of the banking system. This can place substantial pressure on central bank monetary and ex-

¹⁴ A negative value indicates depreciation.

change rate policy because it reduces the likelihood that the monetary authority will be able to successfully defend the currency in case of a speculative attack. High interest rates may topple already fragile institutions—both banks and firms—and thus the central bank may be further constrained in averting exchange rate depreciation. Limitations in using the interest rate leave the door open for speculative attacks and currency crises, which are often observed during banking crises, a characteristic that has led to the coining of the term “twin crises.” This topic is explored in detail by Kaminsky and Reinhart (1999), who find that banking crises are a good predictor of currency crises. In addition to these considerations, the realization that a potential banking system bailout is equivalent to increased transfers that the government must make in the future (implying prospective fiscal deficits) may represent another reason for an attack on the currency (Burnside, Eichenbaum, and Rebelo 2001b).

These explanations are consistent with the view that banking crises that originate in poor banking decisions are plainly accidents waiting to happen. They often materialize following liquidity shocks or access to new information about the poor quality of loans and future bailouts. Figure 3.3 also shows another set of variables whose behavior points toward liquidity problems. The growth rate of bank deposits deteriorates substantially, a sign of stress on bank liquidity. The growth rate of international reserves also decreases. The marked growth in central bank claims on commercial banks following a crisis also represents a sign of assistance to banks under liquidity distress.

LIQUIDITY, CRISIS BUNCHING, AND COORDINATION

There is no doubt that the financial liberalization/moral hazard view has a lot of merit in explaining the path to banking crises. It explains many of the experiences in the 1980s and 1990s in which liquidity shocks were the trigger. However, liquidity factors may be relevant beyond starting crises. In particular, the frequency and coincidence of liquidity shocks across countries in the 1990s suggest that these events are important in their own right.

Several recent studies have worked out models relating banking and currency crises, stressing a particular characteristic of vulnerability that is not necessarily related to moral hazard. Chang and Velasco (1999), for example, refer to the illiquid nature of investment projects, which may require additional financing before

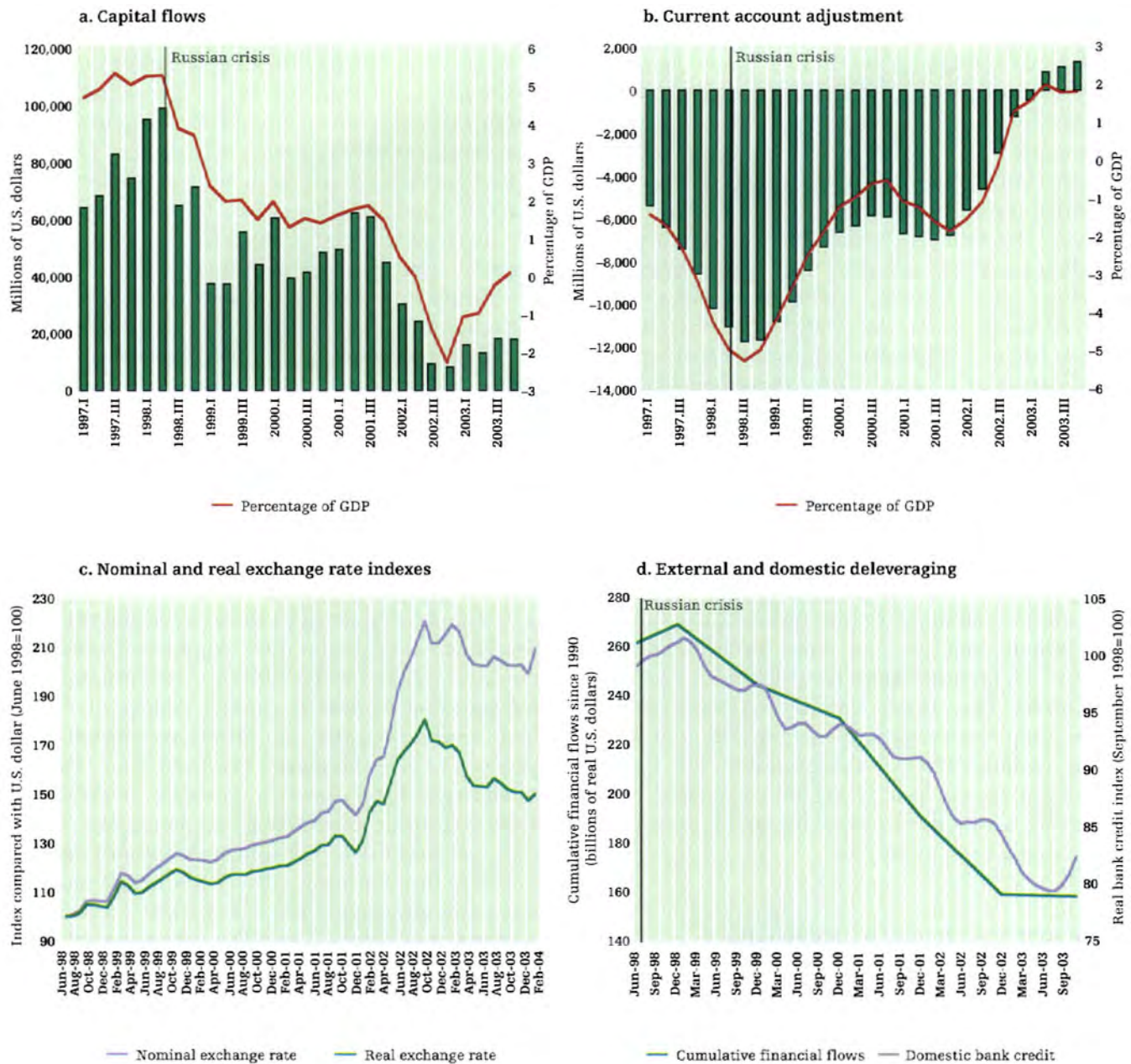
their returns can materialize, so that a liquidity shock may lead to a banking crisis with a currency crisis. Aghion, Bacchetta, and Banerjee (2001) rely on liability dollarization coupled with incomplete pass-through from the exchange rate to domestic prices to explain how currency depreciation can lead to a fall in net worth, reduced investment, and a drop in future money demand that validates currency depreciation. This provides a rationale for self-fulfilling expectational shocks that could push an economy into crisis.¹⁵

Even more important is the fact that several banking crises seem to have come about in bunches. It would be difficult to provide an explanation for this bunching behavior by placing the burden only on moral hazard or the sudden realization that a bailout may occur. This would imply that many countries were facing very similar conditions at about the same time and that policies were pushed to their sustainability limit in regions as different as East Asia, the Middle East, and Latin America. Instead, this behavior suggests the existence of a coordination element, that is, an event or market characteristic that makes investors react simultaneously and in the same direction.

The sudden stop in capital flows following the Russian crisis of August 1998 represents a milestone for Latin America and a relevant coordination factor for emerging markets in general that merits attention. Several countries with diverse fundamentals experienced a severe standstill in capital flows. For the seven largest Latin American economies (representing about 90 percent of Latin American purchasing-power-parity-adjusted GDP), these flows represented on average more than 5 percent of GDP just before the Russian crisis, and about 2 percent of GDP less than one year later (see Figure 3.4a). The halt in capital flows was accompanied by a deleveraging of domestic debt, as indicated by the contraction in credit shown in Figure 3.4d. Equally dramatic was the collapse in the current account deficit (see Figure 3.4b) and the increase in the real exchange rate (Figure 3.4c). As a result, GDP growth fell on average from 7 percent before the crisis to -2 percent after the crisis.

¹⁵ Liability dollarization could also be seen as yet another case of moral hazard, where borrowers take excessive risk on expectation of a bailout when depreciation occurs. While this element obviously contributes to liability dollarization (see for example, Tornell and Westermann 2002), liability dollarization may also be the consequence of currency substitution following periods of high and volatile inflation, coupled with the intention of the monetary authorities to stabilize the banking system by allowing for deposits in foreign currency so that withdrawals due to currency substitution are reduced (see Chapter 4).

FIGURE 3.4 The Sudden Stop in Capital Flows in Latin America after the Russian Crisis of 1998



Note: Values are averages for Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.
 Source: IDB calculations based on data from central banks.

The magnitude of this event calls for an explanation regarding the nature of the coordination process and its consequences. Several theories rely on contagion elements to explain coordination. For example, contagion between two countries could be due to the fact that they belong to a particular asset class (as in Rigobón 2001), borrow from the same banks (Rijckeghem and Weder 2003), or share a set of overexposed

mutual funds (Broner and Gelos 2003). Calvo (1999) suggests that developments in credit modalities at the heart of capital markets may explain why a shock such as the collapse of the Russian ruble may have worked as a virus that spread to other countries with few commercial or financial links. Consider a scenario in which a set of sophisticated (or informed) investors, who typically collect information about a country at a cost, face

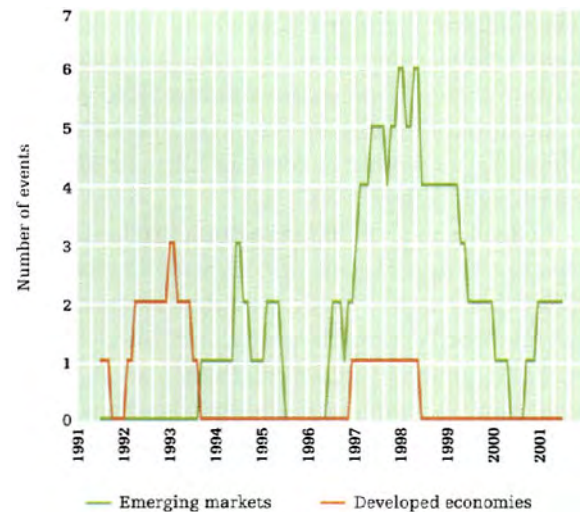
a liquidity shock due to adverse developments in one country. This could happen, as was the case of the Russian crisis, because of a margin call due to a fall in the price of holdings of Russian bonds.¹⁶ Margin calls, in turn, may force investors to trigger sales of assets from other countries in their portfolios in order to restore liquidity. Now add to this framework a set of uninformed investors who cannot observe whether sales of the informed investors are motivated by lower returns on projects or by margin calls. In this context, uninformed investors may interpret the fact that the informed investors are staying out of the market for emerging market securities (or massive asset sales) as an indication of lower returns. Thus, uninformed investors may decide to get rid of their holdings as well, although the cause of informed investors' sales was indeed due to margin calls.¹⁷

This framework could explain the unfolding of liquidity shocks that spread all over emerging markets in 1998–99, rationalizing the sudden stop in capital flows. An empirical counterpart was constructed to see whether bunching is a characteristic common to sudden stops. This measure, which captures the fact that sudden stops are large and unexpected shocks to the capital account, was obtained by identifying negative changes in capital flows exceeding two standard deviations below the mean (Calvo, Izquierdo, and Mejía 2004).¹⁸ Figure 3.5 shows the results for a group of 32 countries (evenly split between OECD countries and emerging markets). There are spikes for emerging markets in 1994–95 and 1998–99, coinciding with the Tequila and East Asian/Russian crises, and a spike for OECD countries in 1993 as a result of the exchange rate mechanism crisis.

Within a window stretching one year before and after the Russian crisis, Argentina, Chile, Colombia, Ecuador, Indonesia, Korea, Peru, the Philippines, Thailand, and Turkey were all in a sudden stop phase. Of this group, five countries (Argentina, Chile, Colombia, Ecuador, and Turkey) entered a period of sudden stop in 1998 or 1999. Such a heterogeneous group in terms of fiscal stance and other macroeconomic measures makes it difficult to argue that there was a common flaw in fundamentals driving these episodes, other than the fact that they are all emerging markets.¹⁹ This suggests that these episodes were not necessarily crises just waiting to happen, although there may be factors that made them more prone to crisis.

Sudden stops can be devastating, particularly for economies that are both closed in terms of their supply of tradable goods and liability dollarized. As analyzed in Calvo, Izquierdo, and Tàlvi (2003), a standstill in capital inflows means a rapid adjustment of the current ac-

FIGURE 3.5 The Bunching of Sudden Stop Events in Emerging Markets and Developed Economies



Source: Calvo, Izquierdo, and Mejía (2004).

count deficit, implying that the gap needs to be closed promptly. The resulting fall in aggregate demand will induce a fall in the price of nontradable goods relative to that of tradable goods, so that the real exchange rate (defined here as the inverse of this relative price) will rise.²⁰ It turns out that the smaller the supply of tradable goods relative to the absorption of tradable goods in any particular country, the larger will be the rise in the real exchange rate. This occurs because the lower the supply of tradable goods, the larger will be the required fall in the absorption of tradable goods following a sudden stop. Thus, the fall in demand for nontrad-

¹⁶ Margin calls are demands for cash that a lender will ask from an investor who has borrowed funds using some of the purchased assets as collateral. These cash demands materialize when a fall in the price of assets calls for a replenishment of initial collateral to comply with loan conditions.

¹⁷ This can occur when the variance of returns to projects is sufficiently high relative to the variance of the liquidity shock of informed investors.

¹⁸ This study describes additional criteria defining the construction of this variable.

¹⁹ For a detailed treatment of the Latin American episodes, see Calvo, Izquierdo, and Tàlvi (2003).

²⁰ For a small open economy, the price of tradable goods is given from abroad. In order to close the current account gap, the demand for tradable goods will fall. As long as nontradable goods are complements in consumption with tradable goods, then demand for nontradable goods will fall as well, inducing a fall in the price of nontradables. Thus, the real exchange rate will rise. See Calvo, Izquierdo, and Tàlvi (2003) for a detailed treatment.

able goods will also be larger, and so will the fall in the price of nontradables. Therefore, if the change in the real exchange rate is large and nontradable sectors are liability dollarized, massive bankruptcy will likely ensue as net worth vanishes given the large increase in debt relative to income from sales of nontradable goods. To the extent that the banking system is a major source of funding of nontradable sectors (see Chapter 4), a banking crisis will likely follow.

In this scenario, a banking system that looked sound at a particular set of relative prices prevailing before the liquidity shock may go bankrupt at the new set of relative prices (just as in Aghion, Bacchetta, and Banerjee 2001).²¹ In addition, governments of emerging markets typically face the same valuation problem after the change in relative prices because their debt is also highly dollarized, so they will eventually lack the resources needed to provide assistance to the banking system. Therefore, in expectation of a substantial increase in the real exchange rate following a sudden stop, there may be a run on bank deposits, given that in many cases bank assets are mainly dollar loans to nontradable activities and government securities that will be worthless after the collapse in the real exchange rate (see Chapter 2).

Sudden Stops and Banking Crises: Another Set of Twin Crises?

Given the potential effects of sudden stops on the banking sector, and particularly because of the apparent bunching of banking crises and sudden stops, the next step is to analyze whether banking crisis and sudden stop indicators signal their occurrence more or less simultaneously. A sudden stop is considered tied to a banking crisis if it occurs within a time window of two years before and after the beginning of a banking crisis (in line with the analysis in Kaminsky and Reinhart 1999). Table 3.3 presents the percentage of banking crisis episodes that materialized together with a sudden stop, as well as the percentage of sudden stop episodes that occurred together with a banking crisis.

On average, about 56 percent of banking crises came hand in hand with sudden stops. This result changes slightly across the Latin American, emerging market, and OECD groups. By contrast, there are striking differences by group in the proportion of sudden stops that materialized jointly with a banking crisis. Whereas about 73 percent of sudden stops in emerging markets occur contemporaneously with banking crises, this figure drops dramatically to about 29 percent for OECD countries. This fact may reflect several differences between emerging markets and OECD coun-

tries. The magnitude of changes in the capital account (exceeding two standard deviations below the mean) is small relative to the size of GDP or credit to the private sector in OECD countries, but it is large for emerging markets. OECD economies have a substantial supply of tradable goods and are therefore less subject to large swings in the real exchange rate. In addition, OECD governments typically do not lose access to financing in times of crisis and may therefore have enough resources available to contain a banking crisis.

These differences suggest that the likelihood of a sudden stop occurring at the same time as a banking crisis is high for emerging markets. Two additional characteristics increase this likelihood: liability dollarization and the exchange rate regime. The impact of the former is related to balance sheet effects that have already been analyzed. Fixed exchange rates may be related to financial instability when pegs generate a moral hazard problem given the lack of incentives for private agents indebted in dollars to hedge their foreign exposure when the government has a commitment to maintain the exchange rate (Eichengreen and Hausmann 1999). That is, currency mismatches could be more of a problem under fixed regimes. Ironically, the severity of the moral hazard problem raised by fixed exchange rates increases with the credibility of the regime.

In the complete sample of countries, having a de facto fixed exchange rate regime increases the number of sudden stops linked to banking crises from about 56 percent to about 63 percent.²² High dollarization increases the number of twin sudden stop and banking crisis episodes to 75 percent of all sudden stops.²³ However, for cases that are highly dollarized and have a fixed exchange rate regime, 100 percent of sudden stops materialized together with banking crises. Interestingly, these cases comprise only emerging market countries.

The results in Table 3.3 show that the combination of fixed exchange rates and liability dollarization could be costly because under this scenario sudden stops and banking crises are more likely to occur at the same time. Figure 3.6 plots the same set of variables shown in Fig-

²¹ The case of the banking crisis of 2002 in Argentina may fall in this category. Previous to the sudden stop the country experienced in 1999, its banking system was considered one of the best-regulated and supervised in developing countries.

²² From Levy-Yeyati and Sturzenegger (forthcoming), a country is assumed to have a de facto fixed exchange rate regime if it has sufficiently low variance of changes in the nominal exchange rate and high variance in foreign reserve accumulation.

²³ A country has high dollarization if its level of bank asset dollarization as a share of GDP is in the 75th percentile of the sample of countries.

TABLE 3.3 | **BANKING CRISES AND SUDDEN STOPS, 1980-2002**
(Percent)

Region	Complete sample	Countries with fixed exchange rates	Countries with high dollarization	Countries with high dollarization and fixed regimes
All countries				
Share of banking crises contemporaneous with sudden stops	56	56	60	67
Share of sudden stops contemporaneous with banking crises	56	63	75	100
Latin America				
Share of banking crises contemporaneous with sudden stops	50	60	63	100
Share of sudden stops contemporaneous with banking crises	69	75	83	100
Emerging markets^a				
Share of banking crises contemporaneous with sudden stops	53	57	60	67
Share of sudden stops contemporaneous with banking crises	73	80	75	100
OECD countries				
Share of banking crises contemporaneous with sudden stops	67	80	—	—
Share of sudden stops contemporaneous with banking crises	29	33	—	—

^a Emerging markets are countries where external bond markets and capital flows play an important role, as defined by J.P. Morgan's Global Emerging Market Bond Index, or EMBI global.

Source: For banking crises in 1974–2003, Caprio and Klingebiel (2003), Kaminsky and Reinhart (1999), and Demirgüç-Kunt and Detragiache (1998); for exchange regime classification, Levy-Yeyati and Sturzenegger (forthcoming); and for sudden stops, Calvo, Izquierdo, and Mejía (2004).

ure 3.3 to assess their behavior during a banking crisis, restricting the sample of banking crises to episodes that were accompanied by sudden stops. Not surprisingly, the variables react more markedly relative to their average behavior when sudden stops are involved as well. In particular, the decreases in capital inflows, foreign bank liabilities, credit growth, and post-crisis output growth are more remarkable. Real exchange rate depreciation and real interest rates are also much higher.

Banks and the Likelihood of Sudden Stops

So far the evidence has pointed toward an exogenous coordination element in sudden stops, particularly because of the observed bunching of these events, grouping countries with different fundamentals such as fiscal stance, monetary policy, and indebtedness levels. Yet,

Calvo, Izquierdo, and Talvi (2003) point out that countries that are most vulnerable to sudden stops have three elements in common related to trade, banking, and fiscal characteristics: (i) a short supply of tradable goods relative to the absorption of tradables; (ii) a high degree of liability dollarization; and (iii) high debt levels. All three characteristics mainly result from *poor domestic policies*. Typically, periods of very high inflation lead to currency substitution and eventually liability dollarization; restrictive trade policies induce scarce production of tradable goods at competitive prices; and poor fiscal policy leads to high levels of government debt.

Could these same sources of vulnerability to sudden stops in turn affect the likelihood of a sudden stop? If this were the case, then sudden stops in capital flows would not be purely exogenous events. The fact that these liquidity shocks could have costly effects could open up opportunities for endogenous behavior.

FIGURE 3.6 Performance of Selected Variables before and after Banking Crises for Episodes Accompanied by Sudden Stops, All Countries

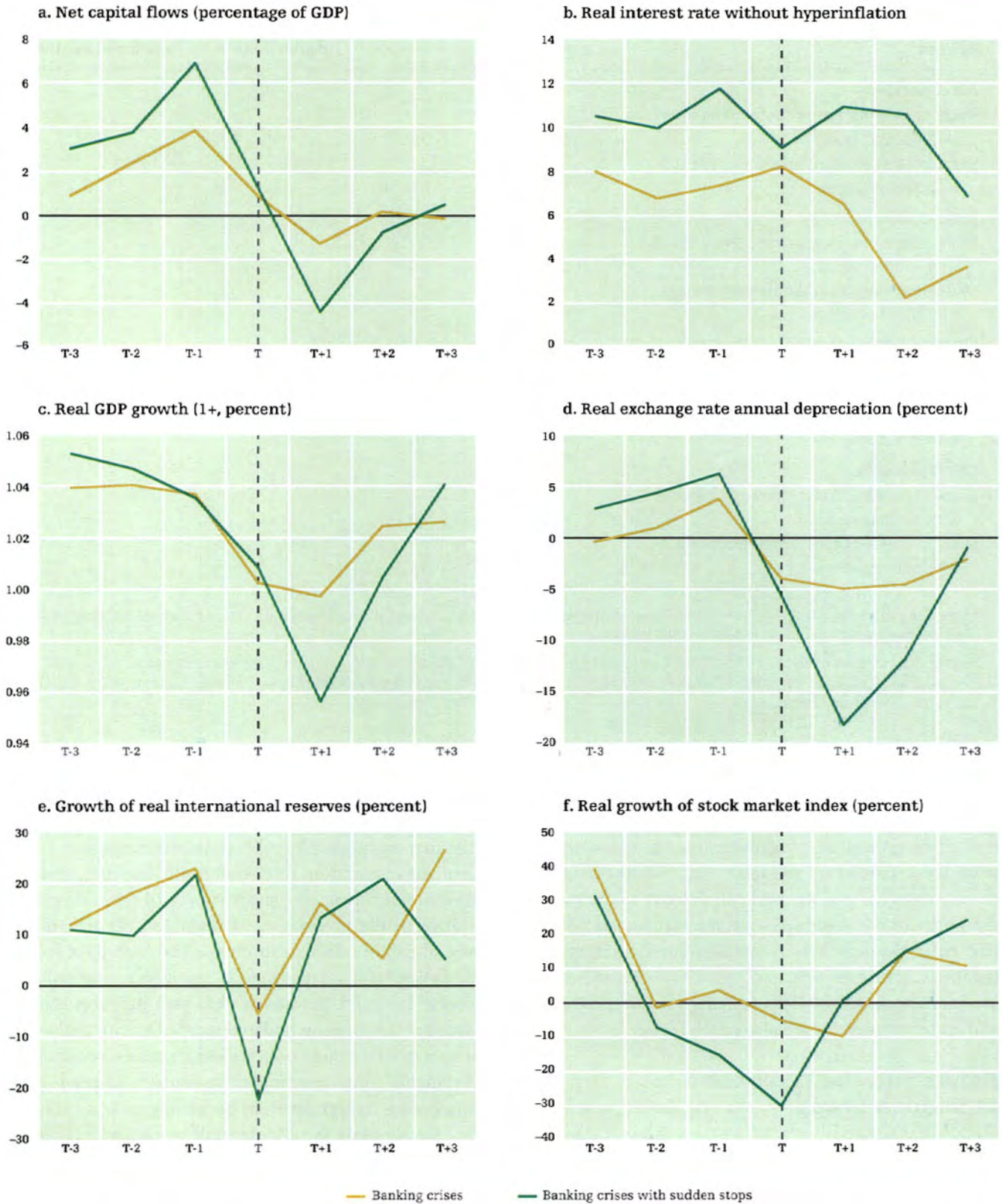
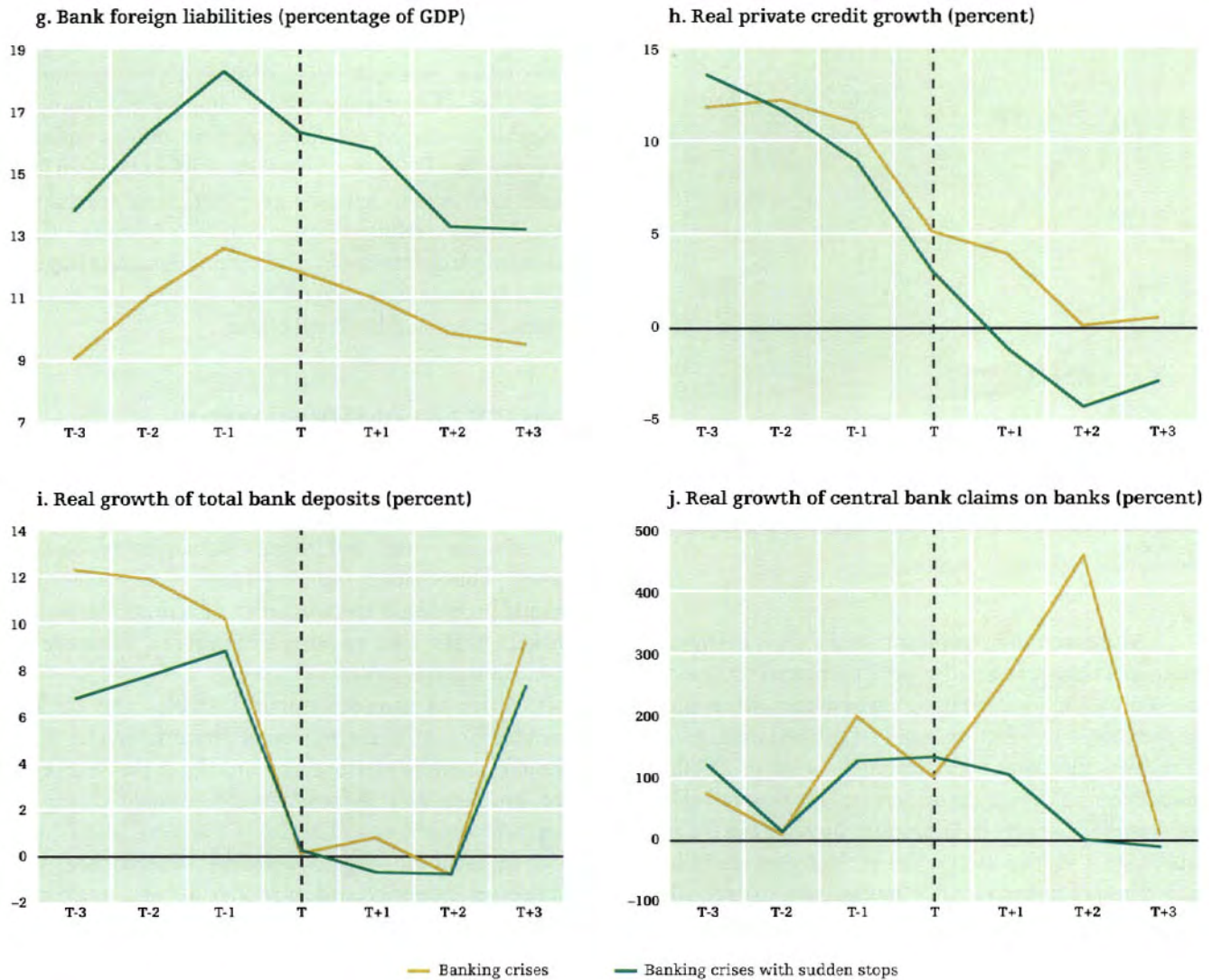


FIGURE 3.6 Continued



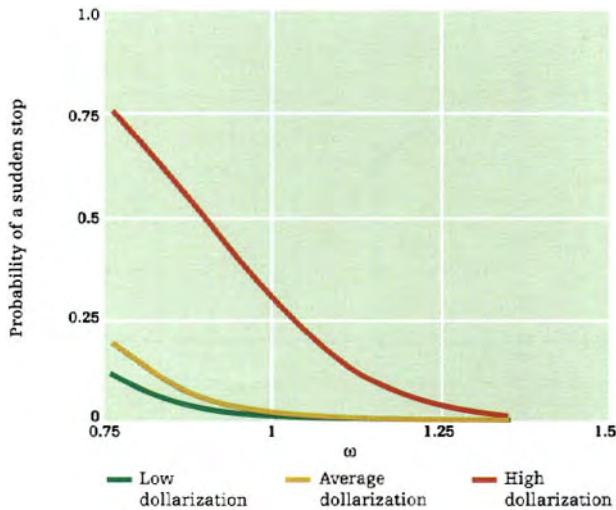
Note: Data are in levels.

Source: IDB calculations based on BANKSCOPE, IMF, and World Bank data.

With this in mind, Calvo, Izquierdo, and Mejía (2004) estimate a model of the probability of experiencing a sudden stop based on a set of determinants that includes two key vulnerability variables as well as a set of control variables typically associated with crisis. The vulnerability variables are a proxy (ω) for the potential change in relative prices that would occur were a sudden stop to take place, and domestic liability dollarization. The proxy ω is the ratio of the supply of tradable goods relative to the absorption of tradables (a smaller ω implies greater potential change in relative prices following a sudden stop; see footnote 20). Dollarization is defined as the ratio of loans in foreign currency extended by domestic banks as a share of GDP.

The estimation results highlight the significance of ω and liability dollarization in explaining the likelihood of a sudden stop and capture potential balance sheet effects that could prove crucial in explaining the probability of a sudden stop. Other relevant variables are terms of trade growth and, for some specifications for emerging markets, exchange rate inflexibility. The results are consistent with those presented in Table 3.3, indicating that sudden stops are more likely to occur with banking crises in cases where bank dollarization is high. The fact that this banking sector characteristic could become instrumental in deciding the likelihood of a sudden stop shows that there are close links between the banking sector and macroeconomic developments.

FIGURE 3.7 The Supply of Tradable Goods, Domestic Liability Dollarization, and Probability of a Sudden Stop



Note: ω is the ratio of the supply of tradable goods to the absorption of tradables.

Source: Calvo, Izquierdo, and Mejía (2004).

Moreover, the significant interactions between the potential change in relative prices captured by ω and domestic liability dollarization suggest that, when put together, these two factors could be dangerous. Figure 3.7 illustrates this point by indicating how the probability of a sudden stop changes as ω increases for alternative levels of domestic liability dollarization. Increases in the probability of a sudden stop when ω decreases are mild for low levels of dollarization.²⁴ By contrast, the probability of a crisis at high levels of dollarization increases dramatically when ω decreases, showing the highly nonlinear interaction between these two variables.²⁵ Thus, the same change in relative prices may be manageable for an economy with a low level of dollarization of its banking system but deadly for a highly dollarized one.

Are sudden stops exogenous events or are they endogenously connected to banking system and trade structure features? The fact that sudden stops come in bunches suggests that there is an exogenous element to them. Yet, the fact that banking system features may affect the probability of experiencing a sudden stop indicates the presence of endogeneity.

Perhaps a good example to clarify this issue is a comparison between the sudden stops experienced by Argentina and Chile in 1999. According to the probability model described above, by 1999, Argentina had a strong likelihood of falling into a sudden stop phase given its high level of liability dollarization and the potential change in relative prices; in fact, a sudden stop materialized in 1999. By contrast, Chile's likelihood of

falling into a sudden stop mode was much smaller than that of Argentina. Yet, like Argentina, Chile was subject to a standstill in capital flows. As pointed out by Caballero, Cowan, and Kearns (2004), and consistent with recent research on institutional determinants of contagion—linking financial contagion to characteristics of developed economy markets and investors—a country like Chile may have been contaminated by a crisis event in another emerging market for several reasons beyond standard fundamentals.²⁶ Although Chile has made large strides in overcoming financial fragility, it remains vulnerable to sudden stops simply because of specialist or neighborhood effects.

POLICY RECOMMENDATIONS AND OPEN QUESTIONS

Countries have strong incentives to work hard to avoid the massive costs and thorny dynamics of banking crises. This chapter has raised several key issues that should provide guidance in terms of actions that policymakers might want to pursue in order to minimize the risk of a banking crisis.

A set of macroeconomic variables and banking variables contributes to moral hazard issues. These should be addressed both by attacking the sources of the problem and shoring up enforcement of regulation and supervision. The latter is crucial and is dealt with in detail in Chapter 5. Specific determinants such as deposit insurance and its proper use and funding, as well as bank concentration and its causes, are covered in Chapters 7 and 9.

Yet, many of the determinants of banking crises are linked to macroeconomic developments, and all point to the need for a more stable environment. High real interest rates, high inflation, and recessions affect the screening capacity of banks and the balance sheets of banks and borrowers. Although fiscal laxity and high

²⁴ Low dollarization is defined as the level of dollarization for the country representing the 5th percentile of the sample.

²⁵ High dollarization is defined as the level of dollarization for the country representing the 95th percentile of the sample. Nonlinearity is common to all probit models. However, as many estimations have shown, this nonlinearity could be very small for the relevant range of a sample, something that does not occur in this context. Similarly, estimations using a linear probability model also find significant interaction terms between ω and liability dollarization, indicating the presence of nonlinearity within a linear framework. See Calvo, Izquierdo, and Mejía (2004) for details.

²⁶ In fact, the fundamentals were not significant in explaining the probability of a sudden stop in Chile.

inflationary episodes seem to be a thing of the past in Latin America, the region remains subject to spells of high real interest rates and recessions.

Much of the macroeconomic instability of the 1990s was linked to developments in capital markets. Calvo, Leiderman, and Reinhart (1993) stress the point that emerging markets are particularly vulnerable to external conditions, as much of the behavior of variables such as the real exchange rate and international reserves can be explained by international factors. The early 1990s witnessed a period of high capital inflows to emerging markets given the low interest rates prevailing in the United States. Even at that time, the authors wondered about the readiness of countries to face a reversal in external conditions.

The bonanza of the early 1990s, due to international liquidity coupled with processes of financial liberalization and the removal of capital account restrictions, was reflected in a lending boom in domestic banking systems, which raised moral hazard issues and pushed regulatory and supervision agencies to the limits of their capacity and available resources. Therefore, policy recommendations in this area stress the importance of sequencing, that is, setting up well-functioning regulatory and supervisory structures in advance of liberalization. For example, Mishkin (2003) suggests that in the absence of such structures, it may be worthwhile to restrict the growth of credit, perhaps by setting limits on loan-to-value ratios or requiring minimum percentages for down payments.

High capital inflows also exposed countries to liquidity shocks that in many cases turned into sudden stops. This fact points toward policy recommendations aimed at reducing the likelihood of a sudden stop, as well as the design of banking systems with reduced exposure to foreign liquidity shocks. Working on reducing the likelihood of a sudden stop calls for steady, long-term efforts, which include increasing the supply of tradable goods and reducing domestic liability dollarization. The latter is a particularly difficult issue because Latin America has been plagued with high and volatile inflation in the past, forcing people to rely on foreign currency as a coping mechanism.

As Chapter 4 argues, the relevance of minimum variance portfolio arguments in explaining deposit dollarization suggests that policies that work on reducing domestic price volatility are good candidates in reducing dollarization. In principle, such policies include the introduction of credible central bank independence and monetary regimes aimed at stabilizing inflation, for example through inflation targeting. However, even if this is the right way to go, it may be difficult for countries to

credibly maintain such policies given the magnitude of capital account reversals and the effects of sudden stops. These events may force countries to abandon inflation pegs or to endogenize monetary policy, either because of fiscal dominance when governments go bankrupt or because of banking system bailouts. A key issue is how to preserve credibility given the exposure of emerging markets to systemic capital account shocks. Caballero and Krishnamurthy (2003b) point to the need to establish contingent monetary policy programs that explain in advance the monetary policy to be followed in the event of a sudden stop.

There is a tension that needs to be addressed regarding the design of banking systems and allowance for domestic dollarization. In countries that have experienced substantial currency substitution, having a banking system working only with domestic currency subjects it to deposit withdrawals that may be entirely due to volatility in domestic money demand. Thus, the introduction of foreign currency deposits may stabilize the banking system. However, dollarization of deposits may lead to lending in foreign currency to nontradable sectors, thus increasing the likelihood of a sudden stop. A similar trade-off arises regarding the size of the banking system: allowing deposits in foreign currency brings home resources that may otherwise stay abroad, yet it increases the system's vulnerability to external shocks. Judging from experiences such as Argentina's in the 1990s, in which the banking system expanded dramatically once dollar deposits were allowed but then contracted following the crisis of end-2001, it may be worth thinking about alternatives that attain stable financial deepening, even if this process takes time. It will involve offering depositors saving alternatives to dollar holdings, such as deposits indexed to the consumer price index.

Appropriate pricing of asset risk is a vehicle for limiting dollar asset holdings by banks. Although this topic is covered in more detail in Chapter 6, it is worth touching on here because it represents an additional element contributing to the dollarization hazard. In part, banks may lend in foreign currency to nontradable sectors because of their expectation to be bailed out in case of a drastic change in relative prices following a crisis. This issue could be addressed if the pricing of those loans took into account this credit risk.²⁷ Alternatively,

²⁷ There are many sources of credit risk, and loans to some tradable sectors may be even riskier than loans to nontradables once other sources of risk are considered. Yet the substantial exposure of emerging markets to liquidity shocks and the dramatic changes in relative prices observed in the region imply that exposure to this type of risk should not go unnoticed.

some have proposed the introduction of loans contingent on the evolution of a relative price such as the real exchange rate to mitigate this risk.

Governments have been exposed to dramatic sustainability problems in the aftermath of a sudden stop (Calvo, Izquierdo, and Talvi 2003). Therefore, it is worrisome that banking systems in Latin America hold a substantial portion of government assets, which are typically priced at face value, following bank regulation practices in developed countries. A comparison of the price volatility of public bonds in Latin American countries vis-à-vis those in OECD countries for the period 1993–2004 suggests that volatility in Latin American countries is about three times greater than in OECD countries (Chapter 2). Once again, appropriate risk pricing would substantially reduce the vulnerability of the banking system to liquidity shocks.

Another factor that affects emerging markets and their banking sectors is terms of trade shocks. Caprio and Klingebiel (1996) note that terms of trade shocks represent an additional source of concern when countries specialize in a few commodities.

Caballero, Cowan, and Kearns (2004) place relative significance on the development of currency derivative markets as an element that allows the domestic banking sector to play a key role as a shock absorber. They compare the cases of Australia and Chile, two countries that are similar in the sense that both face external shocks due to sizable fluctuations in terms of trade. However, in contrast to the situation in Chile, the authors find that Australia's banking sector is well hedged and therefore able to smooth out external shocks.

Financial Dollarization

FINANCIAL dollarization is a distinguishing feature of the banking sector in many Latin American and the Caribbean countries.¹ Figure 4.1 shows the extent of deposit and loan dollarization for 22 countries in the region in 2001. The average levels of deposit and loan dollarization were 35 and 46 percent, respectively. Behind these averages is a wide regional disparity in dollarization levels. Dollar deposits in Bolivia, Uruguay, and Argentina accounted for more than 70 percent of total bank deposits in 2001. At the other extreme, Brazil, Venezuela, and Colombia limited dollarization by imposing restrictions or outright prohibitions on holding foreign currency deposits.

Figure 4.1 also shows that financial dollarization is not a uniquely Latin American phenomenon but is relatively widespread across all emerging market economies. On average, the share of dollar-denominated loans in non-Latin American emerging markets was approximately 40 percent in 2001, just below the Latin American share. For high-income economies, dollarization levels were substantially lower, averaging less than 15 percent of loans. Furthermore, average dollarization of banking deposits in Latin America and the Caribbean and other emerging economies has grown over the past 10 years. Figure 4.2 shows increasing levels of dollarization in all but the high-income economies.

Dollarization levels vary not only across countries, but also across categories of loans and deposits within countries. For a start, in the countries for which data are available, dollarization is higher in time deposits than in demand deposits (Figure 4.3). This is true in Chile and Mexico, where overall dollarization is relatively low, and in Argentina, where only time deposits are highly dollarized. In Peru, the picture is slightly different: although dollarization of demand deposits is still lower than time deposits, it is also considerably higher than the level of dollarization of demand deposits in Argentina. This suggests that while in Argentina foreign currency is used primarily as a store of value, in Peru it is also used for transactions.

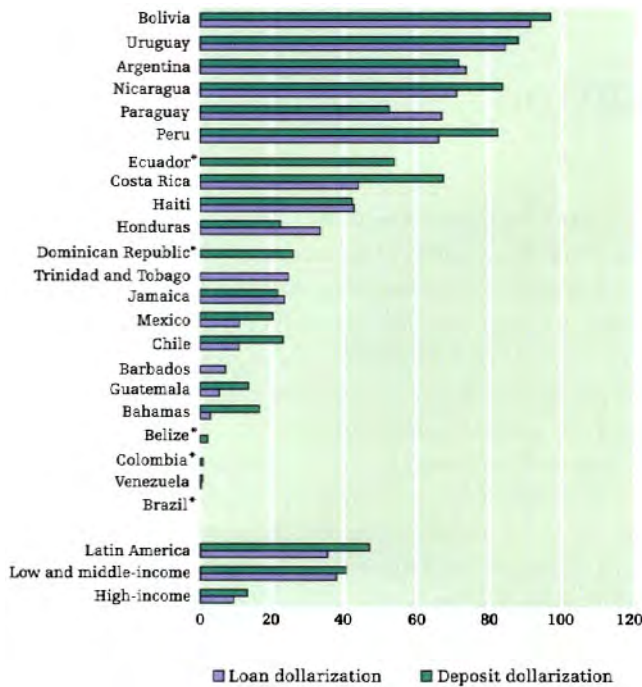
Bank loan data also show differences in dollarization levels by maturity. The countries in Table 4.1 (with the exception of El Salvador and the Dominican Republic) have greater dollarization of longer-term mortgage loans than of shorter-term consumer loans. For some countries in the region, Table 4.1 also shows dollarization of commercial loans, which is always greater than that of consumer or mortgage loans.

There is high cross-country correlation between the levels of dollarization of domestic deposits and loans (Figure 4.4). This feature of the banking systems is due to the existence of prudential measures that limit net foreign exchange positions at the bank level (World Bank 2003). Additional data indicate that foreign assets make up a minor part of the portfolio of banks in Latin America, which suggests that the vast majority of dollar loans are issued to domestic agents (World Bank 2003).

A potential shortcoming of all the measures of dollarization discussed so far is that they do not include offshore dollar deposits and loans, which constitute a substantial share of investors' portfolios in Latin American countries. Figure 4.5 shows the importance of offshore deposits in the total deposits of the nonfinancial sector (firms and households). Two features are worth pointing out. First, offshore deposits make up a substantial share of total deposits for most countries in Latin America. Second, offshore dollarization accounts for close to 100 percent of total deposit dollarization in Brazil, Colombia, and Venezuela—all countries with severe restrictions on onshore dollar deposits. This illustrates one of the main trade-offs faced by policymakers wishing to reduce dollarization levels by regulation: restricting financial dollarization may come at the cost of increased offshoring and smaller domestic financial systems.

¹ The term *dollar* refers to any asset or liability denominated in a foreign currency; *peso* contracts are financial contracts denominated in the domestic currency. *Financial dollarization* refers to debt contracts denominated in or indexed to a foreign currency.

FIGURE 4.1 Deposit and Loan Dollarization in Latin America, 2001
(Percent)



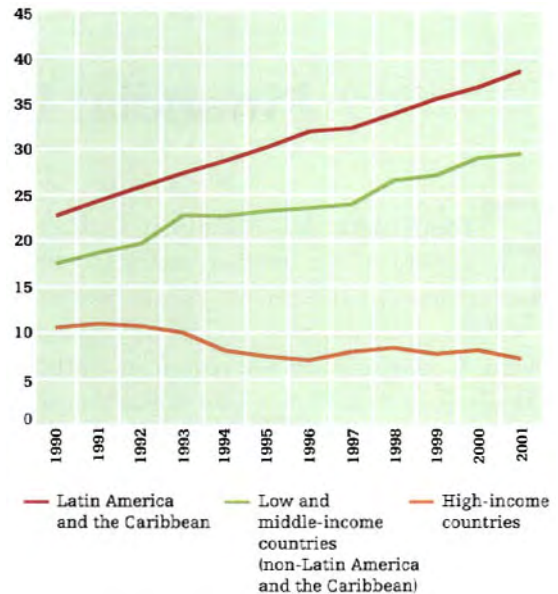
*Denotes countries where there is no information for loan dollarization.
Note: Countries grouped using World Bank income categories.
Source: De Nicoló, Honohan, and Ize (2003); Arteta (2002); Bank Superintendency of the Dominican Republic.

DOLLARIZATION AND MISMATCHES

The discussion above highlighted two key features of the banking system in Latin America and the Caribbean: (i) banks match dollar deposits with dollar loans, and (ii) a high proportion of those dollar loans are on-lent domestically to consumers and firms, not reinvested abroad. Banks are following prudential regulations by not holding open positions in a foreign currency and by hedging against exchange rate risk. However, by lending dollar debt to domestic firms, many banks may be trading exchange rate risk for default risk, shifting their currency mismatch from their own balance sheets to those of firms and consumers.

The financial vulnerabilities that may arise when firms are highly leveraged in dollar debt have taken center stage in policy debate in many countries following the Asian financial crisis (Aghion, Bacchetta, and Banerjee 2001; Krugman 1999; Céspedes, Chang, and Velasco 2000). Firms that borrow in a foreign currency and produce output whose price does not move in pace with the exchange rate face a currency mismatch between liabilities (typically denominated in dollars) and

FIGURE 4.2 Trends in Dollarization of Deposits, 1990–2001
(Percentage of dollar deposits)



Note: The figure plots time dummy coefficients in a regression of deposit dollarization that controls for country fixed effects. By doing so it controls for changes in dollarization levels brought about by countries entering or leaving the sample.

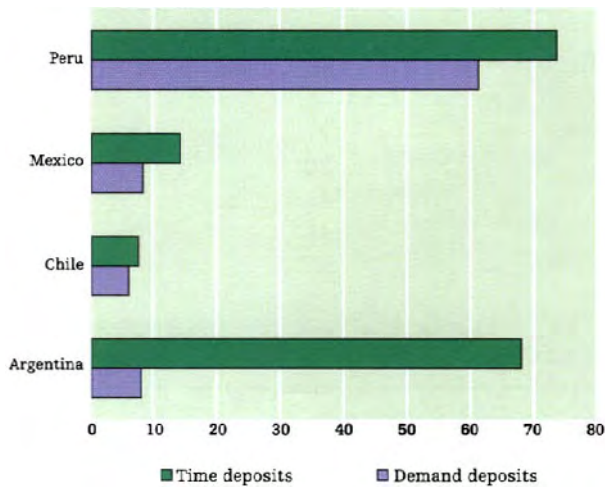
Source: IDB calculations based on De Nicoló, Honohan, and Ize (2003), Arteta (2002), and Bank Superintendency of the Dominican Republic.

their assets and income stream. Following a devaluation, a firm with a currency mismatch will see the peso value of its debt expand more than the peso value of its assets or income, straining the firm's ability to service and/or roll over its debt. The ensuing deterioration of borrowing capacity leads to a decrease in the firm's investment and production, known in the literature as a "balance sheet effect." If the mismatch and devaluation are large enough, the firm can suddenly find itself whipsawed into insolvency and bankruptcy.

Note that the source of the firm's vulnerability is not the dollar-denominated debt in itself, but the mismatch among the currency composition of income, assets, and liabilities. Therefore, when looking at currency mismatches across economies, it is crucial to look not only at the level of dollarized debt, but also at how this debt is distributed across the economy.²

² In the presence of financial frictions, such as dead-weight bankruptcy cost, changing the distribution of debt has effects on efficiency. This is analogous to issues of risk sharing in the presence of risk aversion.

FIGURE 4.3 Dollarization by Deposit Category, Selected Countries
(Percentage of total deposits in foreign currency)

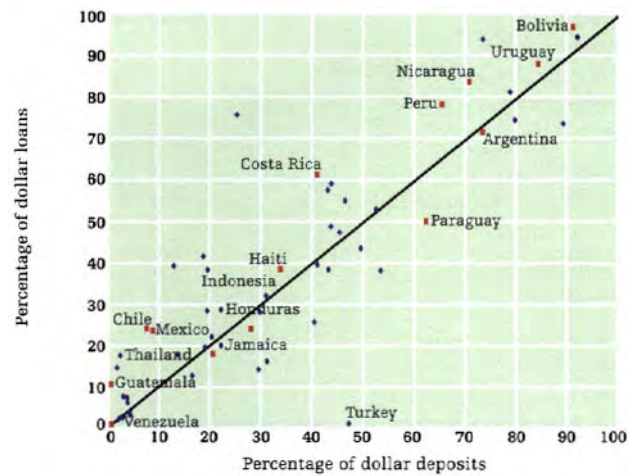


Note: The percentage of demand deposits over total deposits is 19.9 for Peru, 13.4 for Mexico, 28.5 for Chile, and 17.3 for Argentina. Period: Argentina 1996–2001, Chile 1996–2002, Mexico 1996–97, Peru 1996–2002. Source: Bank superintendencies.

A growing empirical literature evaluates how currency mismatches may affect the impact of depreciation on output and investment. Although it is clear that many economies in East Asia had substantial levels of dollar debt both in the banking sector and on firms' balance sheets, empirical evidence on the resulting balance sheet effects is far from conclusive. On the one hand, Claessens, Djankov, and Xu (2000) argue that inflated domestic debt and interest payments may have led to wide-scale insolvency and liquidity problems in East Asian firms. On the other hand, Bleakley and Cowan (2002) provide evidence that the negative balance sheet effect of devaluation is dominated by the competitiveness gains from devaluation in a sample of Latin American firms. More recent studies of Latin America, summarized in Galindo, Panizza, and Schiantarelli (2003), find that, although firms do partially match the composition of their debt with that of their income stream, liability dollarization can reduce or possibly reverse the expansionary Mundell-Fleming effects of devaluation.

Figure 4.6 summarizes information on the share of total loans (in domestic and foreign currency) going to the tradable sector (agriculture and industry), and the fraction of total loans denominated in foreign currency in the banking system for countries in the Latin America and Caribbean region. A minimum estimate of the level of currency mismatches can be obtained by

FIGURE 4.4 Correlation between Dollarization of Deposits and Loans in the Banking System, All Countries, 2001



Source: IDB calculations based on De Nicoló, Honohan, and Ize (2003), Arteta (2002), and Bank Superintendency of the Dominican Republic.

assuming that all loans absorbed by the tradable sector are denominated in dollars, with the remaining dollar loans being picked up by the nontradable sector. The presumption is that the tradable sector is better prepared to deal with dollar loans either because it directly exports part of its output or because prices move in step with the exchange rate. The figure shows that in many economies in the region, loans denominated in dollars are considerably larger than the total loans to the tradable sector, suggesting that currency mismatches in these countries may be substantial.

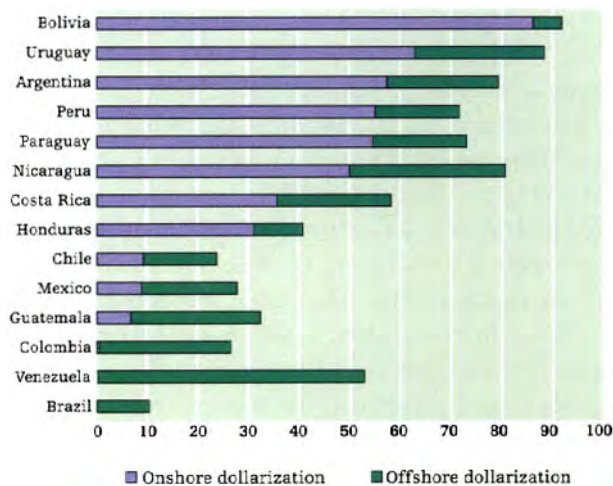
A more detailed picture of currency mismatches can be obtained for a smaller sample of countries for which currency composition data are available at the firm level (Galindo, Panizza, and Schiantarelli 2003; Cowan and Kamil 2004). Figure 4.7 reports the median shares of dollar-denominated liabilities in total liabilities for firms operating in both the tradable and nontradable sectors in 2001 in selected countries in Latin America. The figure shows that firms in the nontradable sector are highly leveraged in foreign currency debt in countries with high levels of financial dollarization: Argentina, Costa Rica, Peru, and Uruguay. The figure also shows that firms in the tradable sector are more highly dollarized than firms in the nontradable sector in countries with low overall financial dollarization: Brazil, Chile, and Mexico. In highly dollarized economies, this is not the case; the gap between tradable and non-

TABLE 4.1 DOLLARIZATION BY TYPE OF LOAN, SELECTED COUNTRIES
(Percentage of loans in dollars)

Country	Consumer	Mortgage	Commercial	Sample
Argentina	40	75		1996–2001
Bolivia	19	100		2002
Chile	0	0	5	1996–2002
Costa Rica	24	32	71	1998–2002
Dominican Republic	2	0	20	1996–2002
El Salvador	7	0	13	1996–2002
Guatemala	2	3	32	1996–2002
Honduras	12	19	51	1998–2002
Mexico	0	0		1996
Nicaragua	67	87	87	1996–2002
Peru	72	96		1996–2002

Source: Bank superintendencies.

FIGURE 4.5 Onshore and Offshore Dollar Deposits in Total Deposits, 2001
(Percent)



Note: Offshore deposits are external liabilities of BIS reporting banks vis-à-vis nonbank sectors in each Latin American country.
Source: World Bank (2003); BIS (2003).

tradable dollarization disappears or reverts, as in the case of Costa Rica.³

These findings can be interpreted in two ways. First, if the share of dollar loans in total loans is sufficiently high, then it will be inevitable that some dollar loans spill over into the nontradable sector. In other words, in countries where financial dollarization is high, no matter how much banks try to reduce mismatch, debtors from the nontradable sector end up with debts denominated in tradables, increasing their exchange rate exposure. Second, differences across countries in

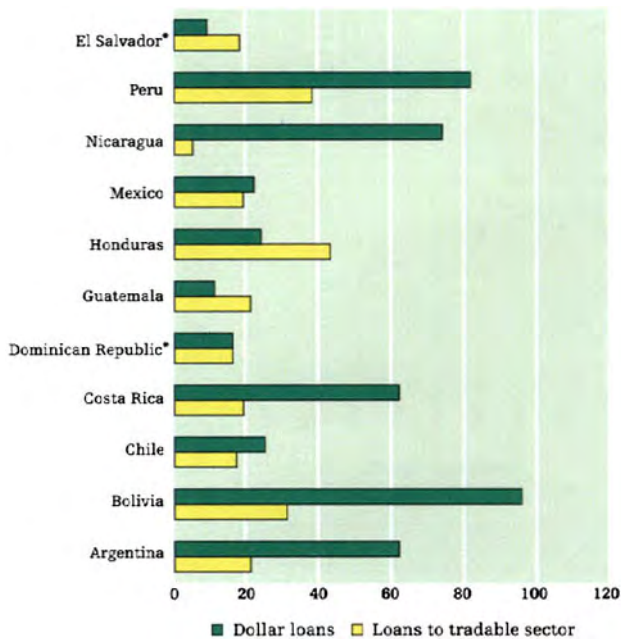
the degree to which firms match their liabilities to the exchange rate elasticity of their revenues might reflect other important differences in the economic and institutional structure that affect the incentives for firms or banks to hedge.

MACROECONOMIC DETERMINANTS

The previous section documented the levels and distribution of dollar-denominated debt in Latin American and Caribbean countries, and mentioned the potential effects this type of debt could have on overall financial stability by introducing currency mismatches in the economy. This section explores the factors that may be driving this dollarization in the region. The evidence suggests that a substantial share of dollarization can be explained by a persistent lack of monetary policy credibility. In this sense, financial dollarization is at least in part the optimal response of agents to aggregate (or

³ These results are robust to a more detailed analysis of the determinants of firm-level debt composition choice. Using the same sample of 1,200 publicly and nonpublicly traded companies in nine Latin American countries between 1993 and 2001, Cowan and Kamil (2004) study the determinants of the currency composition of debt by relating the share of foreign currency debt to firm-specific characteristics (size, leverage, access to foreign capital markets, ownership, and economic sector) and country-specific factors. Their results suggest that there is a strong correlation between the level of bank loan dollarization and the degree of liability dollarization in the firms in their sample. They also find that the degree to which firms match the currency composition of debt with their sources of income is negatively correlated with the aggregate level of bank loan dollarization.

FIGURE 4.6 Mismatch in Bank Lending in Latin America and the Caribbean
(Percentage of total loans)



*The share of dollar loans over total loans was replaced by the share of dollar deposits over total deposits.
Periods: Argentina 1997–99, Bolivia, 1997–2001, Chile 1996–2002, Costa Rica 1998–2002, Dominican Republic 2000–02, Guatemala 1996–2002, Honduras 1998–2002, Mexico 1996–2002, Nicaragua 1996–2002, Peru 2001–02 and El Salvador 1998–2002.
Source: Bank superintendencies; De Nicoló, Honohan, and Ize (2003); Arteta (2002).

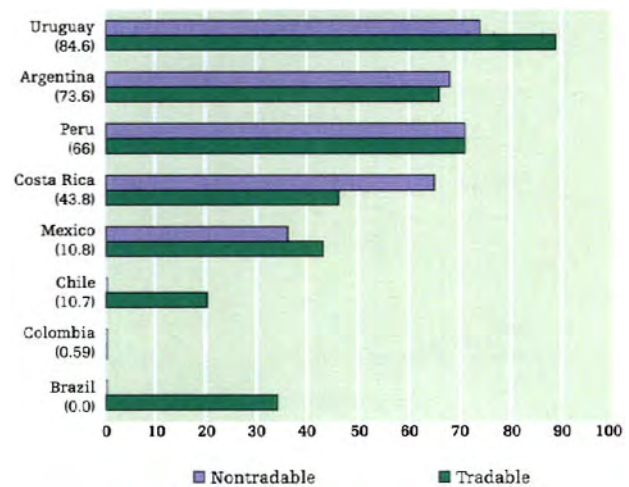
systemic) price risk (see Levy-Yeyati 2003 and Ize and Powell 2003).

A History of High Inflation

Over the past 30 years, Latin America has suffered from endemic high inflation rates. Indeed, in every decade starting with the 1970s, Latin America and the Caribbean has had higher average inflation rates than any other region. Although enormous progress has been made since the early 1990s in overcoming price instability in the region, average inflation during the current decade still remains above the average levels of inflation of middle and high-income economies.⁴

There is a strong positive correlation between the share of dollar deposits in total deposits and previous inflation history in the countries of the region. With the exception of Paraguay, all the countries in which dollarization of deposits exceeds 50 percent have had high levels of average inflation over the past 20 years. This positive correlation is evident in Figure 4.8, which plots deposit dollarization levels in 2001 against average inflation in 1980–2001. Brazil—with a high level

FIGURE 4.7 Firm-Level Liability Dollarization in the Tradable and Nontradable Sectors, 2001
(Median value, percent)



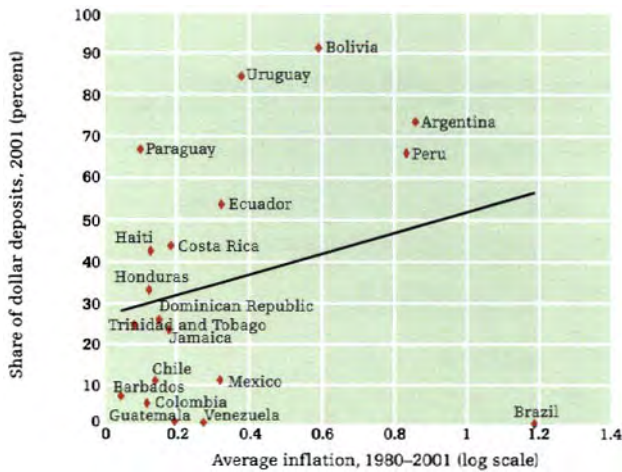
Note: Figures in parentheses denote the percentage of deposit dollarization in each country in 2001.
Source: Cowan and Kamil (2004).

of past inflation but low levels of dollarized deposits—is an outlier in this figure because of restrictions on dollar-denominated deposits. This correlation suggests that monetary policy credibility, captured here by measures of past inflation history, is one of the driving factors in financial dollarization. This is not surprising. It is a well-established fact that high inflation is positively correlated with inflation volatility.⁵ Typically, depositors are unwilling to save in assets with uncertain real returns, as would be the case of deposits in domestic currency, when they believe inflation to be volatile. If indexed instruments are not readily available (as is most often the case), then perceptions that inflation will be high and therefore volatile will lead to financial dollarization.

However, recent inflation outcomes do not tell the whole story. One of the puzzles regarding finan-

⁴ Regional averages hide a wide range of individual experiences. One group of countries has had persistently low or moderate inflation levels; this is the case of most of the Caribbean nations, many of the economies in Central America, and a few South American countries such as Colombia and Chile. A second group of countries has had high inflation rates in at least one of the decades; this is the case of Venezuela, Uruguay, Mexico, and Ecuador. A final group encompasses countries that have experienced periods of hyperinflation over the past 20 years and includes Argentina, Bolivia, Brazil, and Peru.

⁵ Indeed, for a broad set of countries, the correlation between average inflation levels and variances in 1991–2001 was 0.8 (and even higher for Latin American countries).

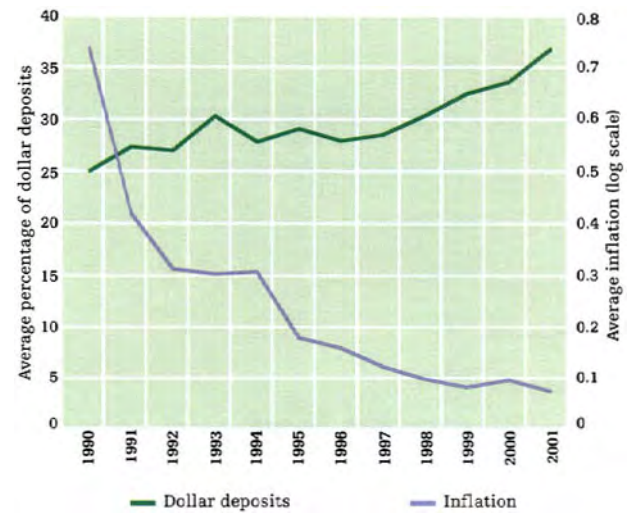
FIGURE 4.8 Dollar Deposits versus Average Inflation, Latin America and the Caribbean

Source: IDB calculations based on De Nicoló, Honohan, and Ize (2003), Arteta (2002), and Bank Superintendency of the Dominican Republic.

cial dollarization that has drawn a lot of attention from academics and policymakers is the persistence of high ratios of dollarized deposits and loans even after periods in which inflation has fallen substantially. Figure 4.9 illustrates this point, plotting average inflation and deposit dollarization for countries in Latin America and the Caribbean since 1990. Over the past decade, average inflation has been reduced considerably; however, deposit dollarization has trended upward. Two explanations have been put forward for this persistence. The first is that current inflation outcomes do not automatically signal high credibility in monetary policy.⁶ The other, introduced in Ize and Levy-Yeyati (1998, 2003), argues that price instability in and of itself is not enough to explain dollarization because dollarized contracts do not provide perfect insurance against price volatility. How much agents gain by denominating debts in dollars depends not only on price instability, but also on the variance of real dollar returns—the real exchange rate variance.

A Framework for Understanding Financial Dollarization

This section focuses on savings and loan decisions and hence on the role of dollarization as a store of wealth, although in some countries, such as Peru, foreign currencies may also play a role in transactions. The section analyzes the variance of inflation not because it is the only systemic risk faced by agents entering finan-

FIGURE 4.9 Dollar Deposits and Inflation in Latin America and the Caribbean, 1990-2001

Note: Simple average of dollarization ratios and inflation.

Source: IDB calculations based on De Nicoló, Honohan, and Ize (2003), Arteta (2002), and Bank Superintendency of the Dominican Republic.

cial contracts in Latin America and the Caribbean, but because of two other reasons. First, existing empirical evidence suggests that inflation plays an important role in determining both the level of domestic financial dollarization and the size of the financial system. Second, high and volatile inflation levels have been endemic in the region until fairly recently.

Consider the decision faced by a risk-averse consumer wishing to make a one-year deposit in a country with a high and uncertain inflation rate. Assume for now that this consumer has access to only two types of deposits—a nominal peso contract or a dollar contract in which payments are indexed to the value of the foreign currency—and that the consumer must choose only one of these contracts. Note that this setup excludes other forms of indexation, such as indexing to the price level as in the Chilean Unidad de Fomento (UF) contracts, and the possibility of shortening the maturity of the deposit.⁷ These assumptions are clearly not realistic; some form of price indexation and short-term debt is prevalent in many emerging market economies. However, the current framework is a simplification of the portfolio decision of a hypothetical consumer.

⁶ Cowan and Do (2003) highlight that high levels of dollarization may indeed restrict the central bank's capacity to generate monetary policy credibility.

⁷ The Unidad de Fomento (UF) is a CPI-indexed unit of account. For a detailed discussion of the use of the UF in Chile, see Herrera and Valdés (2003).

The analysis starts with the assumption that uncovered interest parity holds. Thus, in expectation the local currency value of the payments from the peso deposit and the dollar deposit are identical. Indeed, a risk-neutral consumer would be indifferent between them. Instead, a risk-averse consumer cares about the variance (or risk) of the real repayments of each type of deposit.

For each unit deposited in pesos, the consumer receives R pesos at the end of the period. However, the real value of the savings in units of consumption is $r_p = R - \pi$, where π is the rate of inflation over the year. Because π is uncertain, so also is the real return r_p . If instead the consumer decides to make a deposit in dollars, the real return is $r_d = R^* + dev - \pi$. The consumer receives R^* dollars, which is worth $R^* + dev$ pesos, where dev is the rate of nominal devaluation over the period of the loan. Once again, the real value of payments depends on π . Note that $dev - \pi$ is the change in the real exchange rate (*rer*), so that the real return on the dollar deposit is $r_d = R^* + rer$. Which deposit is riskier therefore depends on how volatile the real exchange rate depreciation is in relation to the volatility of inflation. If the real depreciation is less volatile (more certain), then the consumer prefers the dollar deposit. By contrast, if the real rate of depreciation is more volatile, then the consumer places wealth in a peso deposit.

Figure 4.10 plots the variance of inflation and the variance of the real exchange rate depreciation for Argentina (a highly dollarized emerging economy), Chile (an emerging economy with low financial dollarization), and two small and open high-income countries with low levels of dollarization—Canada and Norway. The variances are calculated over a 10-year window. For both Canada and Norway, the variance of the real exchange rate has been considerably higher than the variance of inflation. Savers wishing to reduce the variance of the real returns on their savings in either country would have been better off saving in Canadian dollars or kroners. The same applies to Chile where, although the difference is smaller, domestic peso deposits have been less risky than dollar deposits over the period. In Argentina, the variance of inflation has been higher than the variance of the real exchange rate for most of the period, suggesting that the saver would have been better off (at least in terms of reducing risk) choosing to save in dollars instead of pesos.

Ize and Levy-Yeyati (1998, 2003) develop this idea in more detail. They model the optimal portfolio choice of risk-averse borrowers and lenders facing more or less the same contracting restrictions as in the simple example presented above.⁸ The equilibrium level of dollarization depends on agents' priors about the

relative variances and covariance of the real exchange rate and inflation. In turn, these priors depend on the underlying characteristics of the economy (for example, whether it is open or subject to large external shocks) and people's perceptions regarding the monetary and fiscal authorities. If they believe that they have a "bad" central bank—one that generates high and unpredictable inflation—then they choose a high share of dollar debt. Box 4.1 expands this simple framework.

Empirically, it is difficult to obtain direct measures of agents' priors. Therefore, the empirical literature has used a combination of past macro outcomes and current institutional factors as proxies for agents' priors regarding price and exchange rate volatility. The next section shows that this evidence broadly supports the empirical predictions of the portfolio model presented here. But first it is important to flag the assumptions behind the simple framework discussed so far.

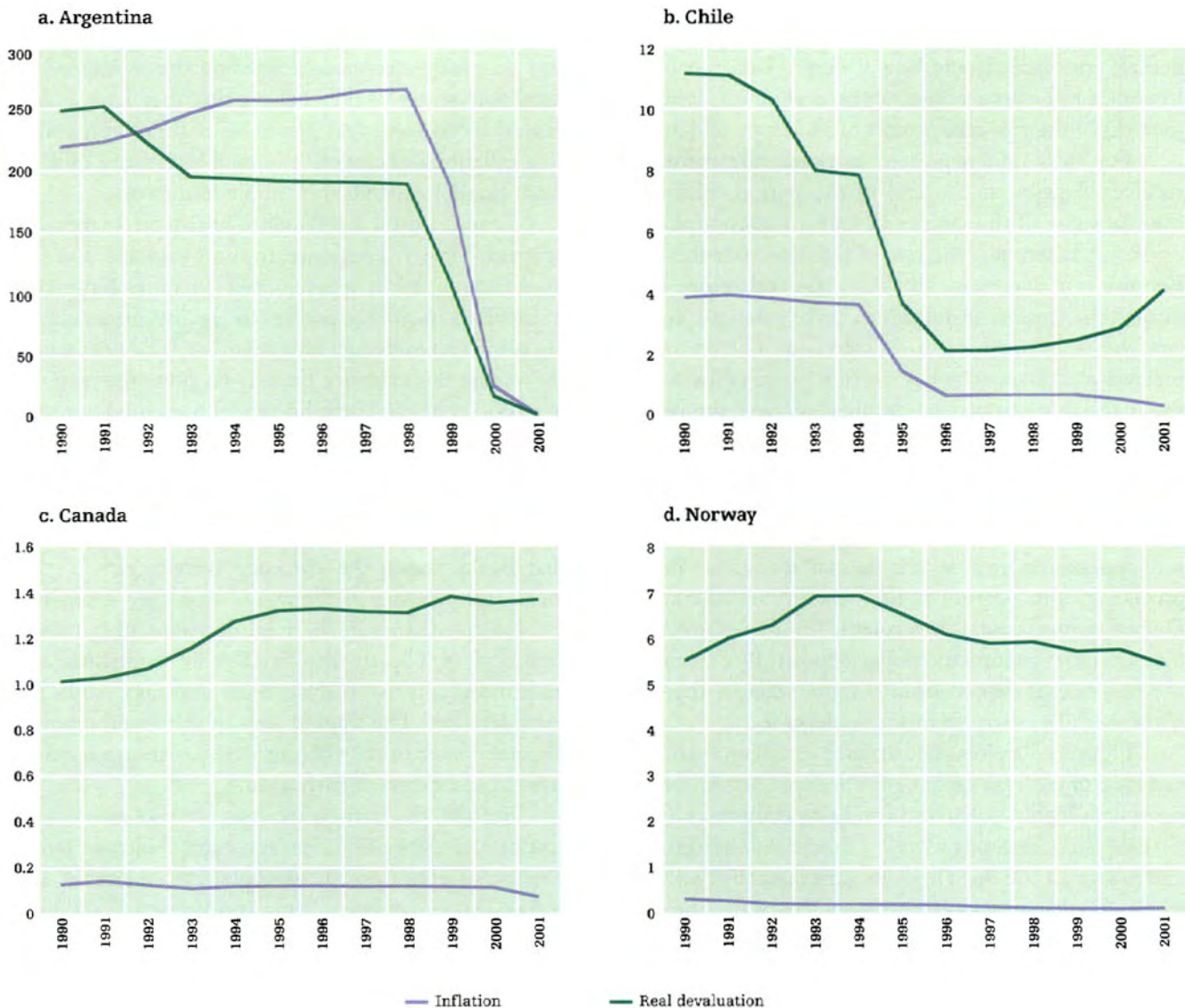
First, the framework assumes that banks are passive agents. In practice, this is equivalent to assuming that banks match the currency composition of their loans and deposits perfectly and that they act as neutral intermediators in the loan decisions of borrowers and lenders. Clearly the latter is an unrealistic simplification, and the analysis must also take banks into consideration. The implications of this assumption are discussed later in the chapter in the section on market failures and excess dollarization.

Second, the framework does not take into consideration the correlation between agents' income stream (real wage earnings, for example) and the price level and real exchange rate. Chang and Velasco (2003) model this carefully and argue that consumers hold a larger share of dollars in their portfolios if the real exchange rate is negatively correlated with their wage income. In this case, dollar deposits provide a real hedge against income drops, paying off high real returns when consumers value them most.

Third, this framework ignores the fact that borrowers may not always be able to honor their debt obligations. Indeed, at center stage in the discussion of dollar debt, foreign currency debt may generate a mismatch between the currency denomination of liabilities and income, that is, between the required payments and the ability to meet them. Following devaluation, agents with a currency mismatch will see the peso value of their debt expand more than the peso value of their assets or income. If the mismatch and devaluation are

⁸ The main difference is that instead of an "all-peso" or "all-dollar" choice as was the case above, borrowers and lenders are allowed to choose a portfolio that contains a mix of both kinds of contracts.

FIGURE 4.10 Variance of Inflation and Real Devaluation, 1990–2001
(Percent)



Note: The real exchange rate is the ratio of nominal \$/US\$ exchange rate to the consumer price index. The variance of real devaluation is calculated over a 10-year window.

Source: IMF (various years).

large enough, agents will be unable to meet their obligations and will default on the debt contract. What happens next depends to a large extent on the bankruptcy mechanisms in place. The framework discussed so far only considers how dollar debt contracts can minimize the variance of real debt payments conditional on these payments' being made. A more general discussion must also take into consideration how the currency denomination of debt affects default risk. This trade-off between price risk and default risk is discussed in detail in the section on market failures.

Fourth, agents take the paths of the real exchange

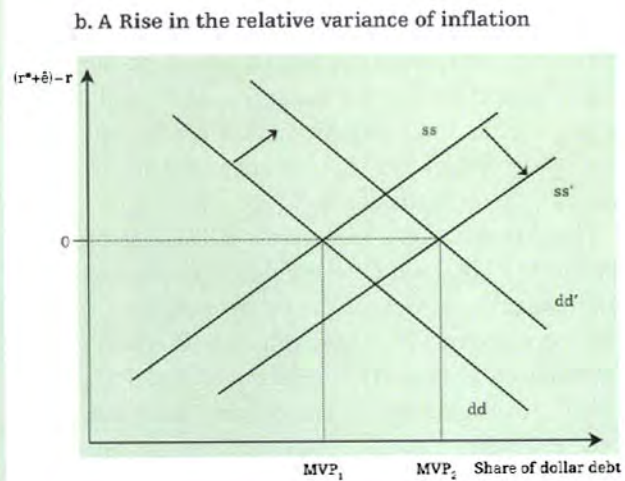
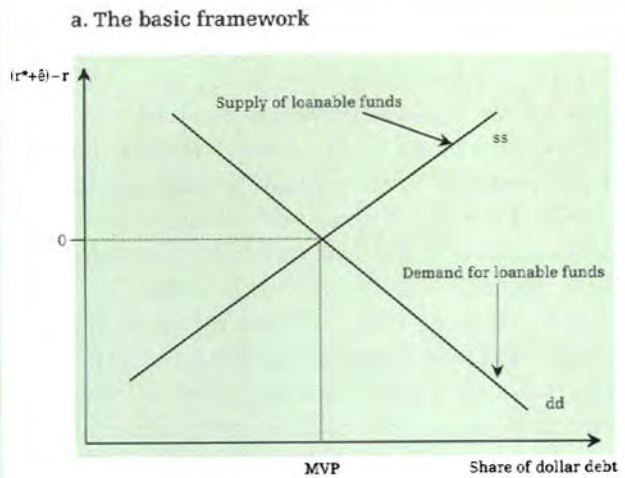
rate and price level as given when choosing their optimal debt portfolio. In practice, financial decisions and the behavior of prices, the real exchange rate, and output are closely related, with two-way relationships between macroeconomic policy and currency denomination decisions. The section on two-way interactions addresses these two-way relationships between macroeconomic policy and currency denomination decisions.

Fifth, although dollarization is an important aspect of the financial systems in Latin American economies, it is undoubtedly not the only way in which agents protect themselves against aggregate price risk. For example,

BOX 4.1 | A FRAMEWORK FOR UNDERSTANDING FINANCIAL DOLLARIZATION

In the figure to the right, panel a shows the demand and supply curves for dollar debt, summarizing the main results of Ize and Levy-Yeyati's (1998, 2003) model. The vertical axis plots the spread between the expected local currency interest rates on peso and dollar-denominated loans. The horizontal axis plots the share of dollar debt in the portfolios of borrowers and lenders.¹ Lenders supply loanable funds (*ss*), and borrowers make up the demand (*dd*). Other things equal, lenders have a higher share of dollar debt in their portfolio if the expected return on dollar loans rises vis-à-vis that on peso loans. By contrast, borrowers shy away from dollar loans if they become relatively more expensive. At zero expected spreads, the optimal choice of debt depends on only the relative variances (and covariance) of inflation and the real exchange rate. This is the minimum variance portfolio (MVP) shown in the figure. The model's key result is that the MVP is increasing in the ratio of inflation variance to real exchange rate variance.

In the figure, borrowers and consumers have identical preferences and hence identical MVPs. The market therefore clears at zero expected spread and the equilibrium level of dollarization is the MVP. Panel b shows what happens in this model with an increase in the variance of inflation, holding all else constant. Both the demand and supply curves shift to the right, and equilibrium dollarization increases from MVP_1 to MVP_2 . The supply curve shifts to the right because peso loans have become relatively riskier assets—so agents prefer to shift their portfolio toward safer dollar loans. Borrowers face a similar decision—as the variance on prices rises, so does the variance on the real values of their peso debt payments. They therefore prefer to have a larger share of their debt denominated in dollars.



¹ Strictly speaking, this representation is accurate if total savings (loans) are fixed in each period so that the share of dollar debt maps one-to-one with the level of dollarized debt.

de la Torre and Schmuckler (2004) argue that dollarization, short-termism, and the use of foreign jurisdictions are all endogenous ways of coping with systemic risks prevalent in emerging markets. In their analysis, short-termism and dollarization of domestic debt contracts are both ways of insuring against systemic price risk, and the use of foreign jurisdictions provides insurance against expropriation and renegotiation. Other forms of coping are indexation mechanisms such as the use

of the UF in Chile, more extensive use of contingent financial contracts such as equity, and the decision to move outside the financial system and store wealth in the form of real assets (real estate, for example) whose value is likely to move in step with inflation. The chapter touches on the issue of endogenous coping mechanisms in the subsections dealing with financial development and dollarization and in the section on policy recommendations.

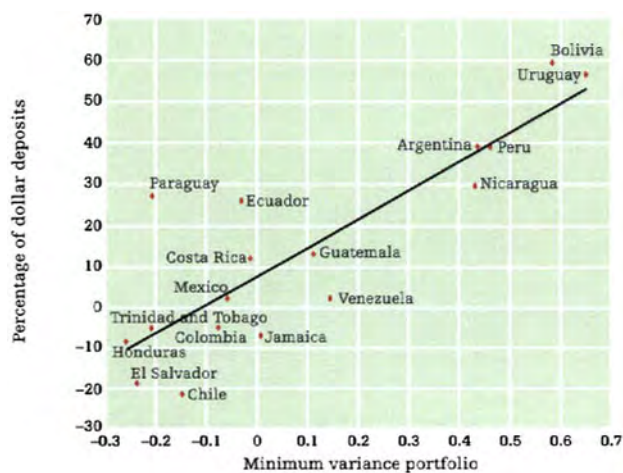
Does the Portfolio View Explain Dollarization in Latin America and the Caribbean?

De Nicoló, Honohan, and Ize (2003) test the basic predictions of the minimum variance portfolio (MVP) model discussed above using cross-section data on deposit dollarization for more than 75 countries in the late 1990s. They find that an MVP (built using information on inflation and real exchange rate depreciation over the previous 10 years) is positively and significantly correlated with observed values of deposit dollarization. Their estimated coefficient is large and implies that a 10 percent increase in the MVP is associated with an increase of close to 4 percent in the observed level of dollarization (see Levy-Yeyati 2003). This result is robust to including institutional variables, dummies for transition economies, the average level of inflation over the past 10 years, and restrictions on dollar deposits.⁹ In addition, the authors find that a dummy for the adoption of an inflation-targeting regime has a negative effect on deposit dollarization—although this coefficient is not always significantly different from zero.¹⁰

These results show that across a broad sample of countries, the observed levels of dollarization respond as anticipated to proxies for the relative domestic price risk vis-à-vis the real exchange rate risk. But how good an explanation is this MVP framework for dollarization in Latin America? To answer this question, this chapter estimates a similar specification to that used by De Nicoló, Honohan, and Ize for countries in Latin America in 1999.¹¹ Figure 4.11 plots deposit dollarization against the MVP constructed using data over the previous 10 years for Latin American and Caribbean economies controlling for two other determinants of deposit dollarization: the measure of restrictions on foreign currency deposits constructed by De Nicoló, Honohan, and Ize and a measure of tradability of output. Both are significant at conventional confidence levels.¹² The correlation is striking: countries with high levels of deposit dollarization, such as Bolivia and Uruguay, have high warranted dollarization levels, as measured by the MVP variable. Indeed, this simple specification explains more than 80 percent of the variance of dollarization in the region in 1999.

Summing up, the evidence suggests that lack of monetary credibility—as proxied by the relative variance of inflation and the real exchange rate—has a significant impact on dollarization. In this sense, dollarization appears to be at least in part the rational response of agents to a lack of monetary policy credibility.

FIGURE 4.11 Correlation between Minimum Variance Portfolio and Deposit Dollarization, Latin America and the Caribbean, 1999



Note: The figure plots the components of the MVP and deposit dollarization that are orthogonal to the set of controls in the regression. See text for additional details.

Source: IDB calculations based on De Nicoló, Honohan, and Ize (2003), Arteta (2002), Bank Superintendency of the Dominican Republic, and IMF (various years).

DOLLARIZATION AND FINANCIAL DEVELOPMENT

If dollarization can be seen as a rational coping device, shielding lenders and borrowers from inflation shocks, it should allow for higher levels of financial contracting in countries with a high level of systemic price risk. In turn, restricting dollarization in those countries may lead to offshoring of deposits and financial disintermediation as lenders seek alternative vehicles to insure

⁹ The restriction index is constructed using information from the International Monetary Fund's *Annual Report on Exchange Arrangements and Exchange Restrictions*.

¹⁰ De Nicoló, Honohan, and Ize also find a negative and significant coefficient on the mean of Kaufman, Kraay, and Zoido-Lobato's (1999) composite of institutional variables. They argue that this negative coefficient suggests that dollarization may be correlated with expected government bailouts.

¹¹ The choice of date is conditioned on data availability; 1999 is the period for which the largest number of observations is available.

¹² The specification includes the share of tradable output in total output to capture the effects of cross-country differences in the productive structure on warranted dollarization. The idea is that the income of firms operating in the tradable sector is more highly correlated with the nominal exchange rate than that of firms operating in the nontradable sector, and hence the optimal level of dollar debt is greater in the tradable sector. Additional details of this estimation are provided in Cowan, Kamil, and Izquierdo (2004).

against price uncertainty. This issue is key in the policy debate on de-dollarization—where the potential dangers of a currency mismatch must be weighed against the costs of a smaller domestic financial system.

Financial dollarization is a part of the broader issue of how inflation and low monetary credibility affect financial development. Typically, depositors will not save in assets with volatile real returns. If indexed instruments are not readily available (as is most often the case), then high and volatile inflation will lead to financial disintermediation. Boyd, Levine, and Smith (2001) provide empirical support for this hypothesis, focusing on the effects of inflation on financial depth. The authors estimate the impact of average inflation in 1960–95 on the average level of financial depth over the same period.¹³ They find a strong negative correlation between inflation and financial development.¹⁴ A limitation of the results reported in Boyd, Levine, and Smith is that they do not control for institutional variables found to be important for financial development, which may be correlated with inflation levels and hence may cause an upward bias in the results (see Beck, Levine, and Loayza 2000).

Therefore, to test the robustness of these results to a broader control set, Cowan, Kamil, and Izquierdo (2004) estimate the impact of inflation, measured by the log of average inflation or the log of inflation variance in 1987–98, on the level of financial development in 1999.¹⁵ In addition to measures of inflation, they include a rule of law measure from Kaufman, Kraay, and Zoido-Lobaton (1999) to control for the overall institutional environment, effective creditor rights calculated as the interaction between creditor rights and rule of law, and the log of per capita gross domestic product (GDP) to control for the level of overall economic development. Their estimated coefficients for the level and variance of inflation are both negative and significant at conventional confidence levels. Indeed, their estimated coefficient on the log of inflation variance suggests that reducing inflation variance in Latin America to the average level in high-income economies is associated with a 15 percent greater share of private credit in GDP.

Focusing exclusively on the level and variance of inflation ignores the role dollarization may play as an insurance device against price fluctuations. Indeed, looking at inflation alone is an accurate measure of the variance of real returns to debt only to the extent that all loans and deposits are denominated in pesos. If dollar debt levels are chosen so as to minimize the variance of real returns, then the correct measure of risk is not inflation variance but the variance of a portfolio containing peso and dollar deposits. This has two implications for financial development. First, a measure of price risk

that combines the variance of the real exchange rate with the variance of inflation should be a better predictor of financial development. Second, restrictions on dollarization, by limiting the portfolio choice of lenders, increase the variance of the real returns on their loans and damage financial sector development.

With this in mind, Cowan, Kamil, and Izquierdo (2004) construct a measure of minimum variance based on a static capital asset pricing model and estimate the impact of this theoretical minimum variance on financial development.¹⁶ They find that the coefficient on the log of the variance of the MVP portfolio is negative and significant at conventional confidence levels. This result is robust to including all the controls mentioned above. More important, the authors obtain a negative and significant coefficient on the MVP variance even after controlling for the log of the variance and the log of the level of inflation. This suggests that cross-country analysis of financial development should take into account more comprehensive measures of systemic price risks, which take into consideration the dual currency nature of financial portfolios.

Recent empirical literature looks at the effect of dollarization on financial development. In particular, De Nicoló, Honohan, and Ize (2003) find that dollarization is associated with deeper financial systems in high-inflation countries. The authors estimate a cross-country regression of financial depth in 2001 (measured as M2 money supply over GDP) and include an interaction between dollarization levels and the log of average inflation over the previous 10 years. They find that this interaction is negative and significant, even after instru-

¹³ In addition to inflation, their baseline specification includes the initial level of income per capita and the initial level of secondary school enrollment as controls for overall development; the number of revolutions and coups during the period to measure political instability; the black market exchange rate premium to control for price distortions; and government expenditure to GDP as a proxy for fiscal deficits over the period.

¹⁴ Burger and Warnock (2003) report similar results for the domestic currency bond market. They find that both the level and variance of inflation in 1990–2000 are strongly negatively correlated with the size of the domestic local currency bond market in 2001 (value of bonds outstanding as a percentage of GDP). These results are robust to the inclusion of GDP per capita, to control for overall economic development, and rule of law, to control for the impact of the contracting environment and legal institutions.

¹⁵ The measures of inflation are included in logs to allow for non-linear effects. The dependent variable is private bank lending over GDP, corrected by the CPI.

¹⁶ The degree of dollarization of the minimum variance portfolio is given by: $[V(\pi)COV(\pi, devRER)] / [V(\pi) + V(devRER) + 2COV(\pi, devRER)]$, where π is the inflation rate and $devRER = (dev - \pi)$ is the rate of devaluation of the real exchange rate.

menting for the level of dollarization.¹⁷ Cowan, Kamil, and Izquierdo (2004) find qualitatively similar results using a slightly different methodology. They argue that the effects of restricting dollarization on financial development depend on how much depositors are set to lose (in terms of a higher variance) by moving from the optimum portfolio to only peso assets. As shown in Figure 4.12, this loss is equivalent to the gap between the variance of inflation and the variance of the MVP. Cowan, Kamil, and Izquierdo then estimate a cross-country regression of private credit over GDP in 1999, which includes the interaction between the calculated loss and a measure of restrictions on foreign currency deposits. They find that, as expected, the negative effects of imposing restrictions on dollar deposits on financial depth are larger in countries that have more to lose from these restrictions.

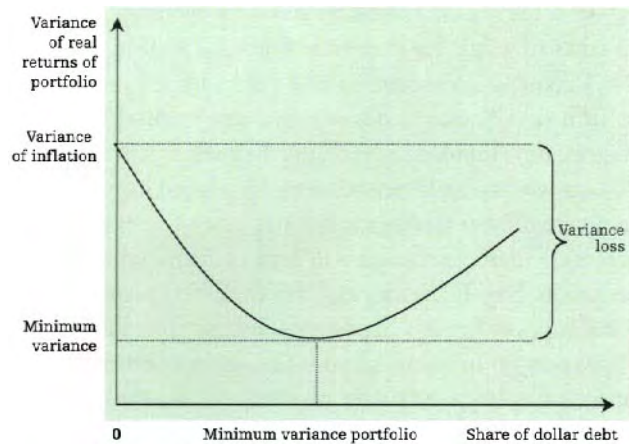
MARKET FAILURES AND EXCESSIVE FINANCIAL DOLLARIZATION

In the discussion so far, dollarization has been an optimal outcome; under price uncertainty, dollarization leads to optimal risk sharing between lenders and borrowers. All of this assumes, however, that the demand for insurance by lenders or borrowers is socially optimal. This may not always be the case, as a series of microeconomic imperfections may distort the choice of currency composition, leading to excess dollarization. This section discusses these distortions, and Box 4.2 provides a framework for understanding the aggregate effects of this “excess” dollarization.

A first source of imperfections (market failures) arises from the presence of implicit or explicit bailouts by the government. These bailouts can essentially be thought of as transfers that take place between the government and firms (or between the government and banks) whenever the firms are unable to pay their debt obligations (or honor their deposits). If firms take this into consideration when choosing the currency composition of their debt, they will become excessively dollarized. Note that these bailout expectations may arise even in the absence of a priori government commitments. This type of implicit bailout is behind the so-called too-many-to-fail view, discussed in Levy-Yeyati (2003), which relies on the assumption that in the case of widespread dollar contracting, governments have no choice but to intervene *ex post* to avoid massive bankruptcies.

A second strand of the literature (Chamon 2001; Broda and Levy-Yeyati 2003) highlights the role that

FIGURE 4.12 Potential Loss from Restricting Dollarization



currency-blind regulatory frameworks may play in exacerbating the incentives for dollarization of assets and liabilities. Chamon (2001) observes that if default occurs when the exchange rate is high, it dilutes local currency claims relative to dollar claims in the event of liquidation. In addition, if banks cannot observe the currency composition of borrowers’ total debt, they demand a compensating premium on local currency loans. Firms then refrain from issuing domestic currency loans as they become more expensive. In equilibrium, incentives for excessive dollar borrowing are thus generated on both sides of the market for loanable funds. Broda and Levy-Yeyati (2003) analyze a special case of a currency-blind regulation, namely, an explicit deposit insurance scheme that applies uniformly across all deposits. The authors show that if there is no discrimination against dollar deposits and a relatively high coverage under the deposit insurance scheme, the banking system will endogenously generate an inefficiently high level of deposit dollarization.

A third source of imperfections arises when firms do not correctly internalize the returns on the insurance provided by matching the currency denomination of income and debt. For example, in Caballero and Krishnamurthy’s (2003a) model, domestic financial underdevelopment leads to excessive dollarization because firms with access to dollar debt (external in this case) do not perceive the social value of providing insurance for other credit-constrained domestic firms.

Although they are appealing from a theoretical perspective and have important policy implications, there is scarce empirical evidence on the importance of these distortions in financial dollarization. An excep-

¹⁷ Levy-Yeyati (2003) finds identical results for a slightly larger sample.

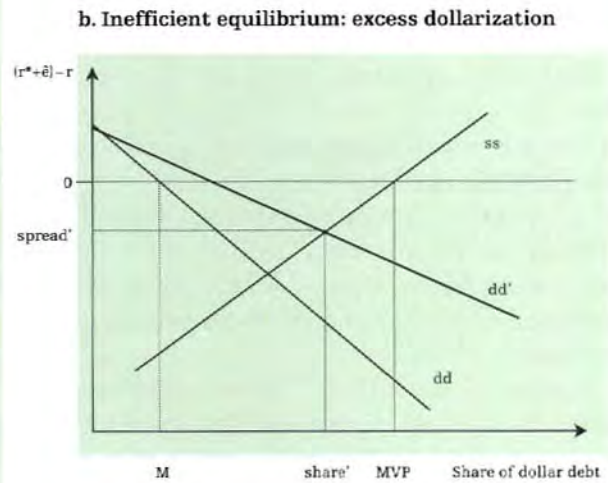
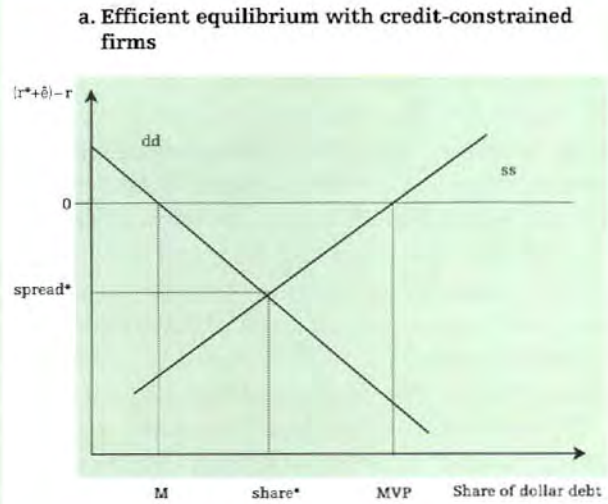
BOX 4.2 | EXCESS DOLLARIZATION

In Box 4.1, if savers and borrowers were identical, they shared the same consumption basket and had the same degree of risk aversion. By contrast, consider the case in which savers are risk-averse consumers and borrowers are risk-averse firms. Firm risk aversion follows directly from credit constraints, such as increased cost of external finance or costly bankruptcy procedures. Firms therefore want to match the currency composition of their income with that of their liabilities and deviate from the matching composition only if there are gains from doing so, say because the interest rates on dollar loans are in expectation cheaper than their peso equivalent.

In the figure to the right, panel a illustrates the equilibrium in the domestic loanable funds markets under these assumptions. In the figure, M is the share of dollar debt at which the firm matches the currency composition of its income and debt. This is the share of dollar debt that minimizes the probability of default. Starting from this point, the firm takes on a higher share of dollar debt as the interest rate spread (plotted on the vertical axis) drops. The supply of loanable dollar funds is given by consumers; in the figure their MVP is greater than M . The loanable funds equilibrium is $share^*$. In this example, firms insure consumers by borrowing more in dollars than their matching level M . The price of this insurance for consumers is the equilibrium spread * .

The distance between M and the equilibrium dollarization ratio is a measure of firm default risk.¹ In this model, it is determined by the slope of the dd curve, which is a function of the degree of firms' risk aversion; by the slope of the ss curve, which depends on consumers' risk aversion; and by the distance between M and MVP.² If firms were risk neutral, then the dd curve would be flat, and uncovered interest parity would hold with firms providing full insurance to lenders. As firm risk aversion increases, equilibrium dollarization approaches M and firm exposure to price risk decreases.³

Microeconomic imperfections can be summarized by the line dd' , which is drawn to the right of dd in panel b of the figure. Firms act as if they were less risk averse—and from a private perspective they are—and the result is an inefficiently high equilibrium level of dollarization.



¹ Levy-Yeyati and Broda (2002) discuss the trade-off between price risk and default risk.

² This is correlated with the tradability of firms and explains the inclusion of the share of tradable output in the specification behind Figure 4.11.

³ From the figure, it should be apparent why de la Torre and Schmuckler (2004) argue that if bankruptcy procedures improve, so that the recovery value of assets is higher after default, then dollarization will actually increase. Higher recovery values and less costly bankruptcy procedures reduce the costs of default on debt, and therefore the degree of risk aversion of firms. In the figure, the dd curve rotates right, and the equilibrium level of dollarization rises. This also explains the finding in the empirical literature that higher legal protection of creditors leads to higher levels of dollarization (De Nicoló, Honohan, and Ize 2003).

tion is deposit insurance schemes. Several studies try to uncover the effects of explicit deposit insurance schemes on the level of financial dollarization in the banking system. The notion behind these studies is that deposit insurance proxies for moral hazard in the banking system: explicit safety nets that provide assistance to banks in distress and protect banks' claimholders from losses increase the propensity of bank managers to take on excessive risk. Given that the interaction between default risk and currency risk is a crucial feature of many Latin American economies, the presence of deposit insurance could lead to a higher level of financial dollarization.

Pooling a sample of 14 Latin American countries between 1995 and 2001, Barajas and Morales (2003) analyze the impact that explicit deposit insurance schemes had on the level of dollarization of bank lending to the private sector. The authors find that the coverage ratio of the deposit insurance scheme (defined as the maximum coverage divided by per capita income) is significantly and positively associated with a higher level of dollarization in bank lending. Luca and Petrova (2003) explore this issue in a sample of 23 transition countries, using a binary annual indicator constructed by Demirgüç-Kunt and Detragiache (2002) for the presence of an explicit deposit insurance scheme and bailout guarantees. Their results suggest, however, that the presence of explicit deposit insurance is not significantly associated with a higher level of credit dollarization in transition economies.

Analysis of the effect of deposit insurance as a mechanism of bailout expectations and excessive risk-taking is subject to several potential shortcomings. First, if the regime before the introduction of deposit insurance already had a safety net, the introduction of explicit deposit insurance could credibly signal a lower and less generous level of coverage. Hence, the introduction of an explicit system may imply a *de facto* reduction in the scope of the safety net and a reduction in banks' risk-taking. Second, as emphasized in Gropp and Vesala (2001), the impact of deposit insurance on risk-taking interacts with at least three other important factors: banks' charter values, the effectiveness of monitoring by nondeposit creditors, and too-big-to-fail considerations. In particular, two factors may influence banks' degree of risk-taking: the amount of uninsured debt they carry on their balance sheets and the ability of the regulatory and legal environment to curb the adverse incentives of deposit insurance. Finally, in countries with no explicit deposit insurance, depositors may still be rescued on an *ad hoc* basis after a crisis occurs, rendering the deposit insurance indicators incapable of capturing (unobserved) perceptions of bailout guarantees.

With these caveats in mind, Cowan, Kamil, and Izquierdo (2004) empirically assess an alternative link between deposit insurance and financial dollarization, namely, whether the extension of insurance to foreign currency bank liabilities drives up the level of dollarization. The authors consistently find that—controlling for the presence of deposit insurance—symmetrical deposit insurance (extended to both peso and dollar deposits) is correlated with greater financial dollarization on both sides of banks' balance sheets.

Macroeconomic policy, in particular monetary and exchange rate policy, may also distort the currency composition decisions of private agents. If agents believe that governments can and will stabilize the real exchange rate, then they have lower incentives to insure privately, and the resulting equilibrium level of dollarization will be greater (Dooley 2000; Burnside, Eichenbaum, and Rebelo 2001a). In the framework presented in Box 4.2, the consumers' MVP and therefore the *ss* curve will shift to the right. In this context, a pegged exchange rate regime provides a form of insurance against exchange rate fluctuations.

MACROECONOMIC POLICY AND FINANCIAL DOLLARIZATION: TWO-WAY INTERACTIONS

The discussion above modeled portfolio choice taking macroeconomic outcomes as given. By doing so, it ignored the fact that financial decisions in turn affect macroeconomic outcomes, and therefore the optimal policy choice. A strand of the macroeconomic literature addressing this issue has developed models to explore the macroeconomic implications of currency mismatches—taking the mismatch as given. This literature assumes that depreciation typically has an expansionary effect, which may be attenuated or even reversed by the effects of devaluation in firms that are highly leveraged in dollar debt. Krugman (1999) and Aghion, Bachetta, and Banerjee (2001) assume the balance sheet effect is large enough to dominate the expansionary Mundell-Fleming effect (see also Céspedes, Chang, and Velasco 2000).

Another strand of the literature explicitly recognizes the two-way interactions between individual agents and the monetary authorities. Chamon and Hausmann (2002) model how the optimal choice of currency of debt depends on the relative variance of interest rates and the exchange rate. If the latter is more variable, then agents will denominate debts in domestic currency. In turn, this will condition the optimal monetary policy. A higher level of peso debt leads the central

bank to pursue interest stability at the expense of higher exchange rate variance, which in turn validates agents' initial choice.¹⁸ This gives rise to multiple equilibria, and may explain why countries get stuck in persistent dollarization levels. Cowan and Do (2003) extend this idea further in a model with imperfect monetary credibility. If agents believe that the central bank has an inflationary bias, they will denominate their loans in dollars. This makes it much more costly for a "good" central bank to reveal its true type—and the economy may become stuck in a high-dollarization trap.

How much empirical support do these models have? There is some evidence that suggests monetary authorities do factor debt composition variables into their exchange rate policies. Although they do not test it empirically, Calvo and Reinhart (2002) argue that pervasive liability dollarization may be a cause of what they term "fear of floating." Hausmann, Panizza, and Stein (2001) investigate this proposition and find a relationship between a country's exchange rate policy and its ability to borrow internationally in its own currency—which they argue is an indicator of a country's ability to avoid currency mismatches. More specifically, they find that countries that can borrow abroad in their own currencies hold lower levels of reserves and allow larger fluctuations in the exchange rate relative to fluctuations in reserves and interest rates. Along the same lines, Levy-Yeyati, Sturzenegger, and Reggio (2003), using a *de facto* and *de jure* exchange regime classification, find that foreign currency-denominated liabilities (measured relative to money stocks) are positively correlated with the probability of pegging the exchange rate against a major currency. Ize and Levy-Yeyati (2003) find a positive correlation between inflation-targeting regimes and dollarization, which suggests that it may be costly to implement an inflation-targeting framework in countries that are highly dollarized.

SUMMARY AND POLICY RECOMMENDATIONS

What is known about the determinants of dollarization in the banking sector? The evidence suggests that a large part of dollarization in Latin America and the Caribbean has macroeconomic causes—mainly the lack of monetary policy credibility. Dollarization is highest in those countries that have experienced high and volatile inflation rates in their recent history. However, analysis is lacking on the importance of bailout expectations and other market failures in explaining financial dollarization.

What are the consequences of dollarization?¹⁹ On the one hand, several recent papers argue that currency mismatches may be an important source of macroeconomic vulnerability. In turn, this chapter has shown that these mismatches are more severe in highly dollarized economies. On the other hand, dollarization is a mechanism by which consumers and firms cope with aggregate price uncertainty. De Nicolás, Honohan, and Ize (2003) and evidence provided in this chapter show that allowing for dollar debt promotes financial deepening, with all the benefits for growth and stability that this entails. Simply restricting dollarization results in offshoring and smaller financial systems.

What should policymakers do about financial dollarization? To a large extent, dollarization has macroeconomic causes, which suggests there should be macroeconomic solutions. The first-best solution is therefore to reduce price uncertainty by creating and strengthening institutions that promote monetary credibility. By doing so, policymakers would reduce the need of consumers and firms to insure against systemic price risk. Thus, policymakers should strengthen the independence of the central bank, but central banks do not operate in a vacuum. Rules that guarantee monetary independence are likely to work well in "normal" scenarios, but they may be severely strained when a large disequilibrium occurs elsewhere in the economy. Indeed, the solution must shield monetary policy choice from government intervention by law, but it should also make the law itself credible. An important lesson from the literature on the fiscal theories of the price level is that irresponsible fiscal policy puts pressure on monetary authorities to monetize debt (Woodford 1995). Therefore, policymakers should move toward ensuring monetary policy credibility by simultaneously putting in place institutions that limit pressure on the independent central bank from other government institutions.

Several authors argue that the adoption of inflation-targeting regimes has institutional effects that go beyond their actual success in stabilizing inflation. These authors claim that inflation targeting might contribute to monetary credibility by increasing informa-

¹⁸ This framework incorporates the relative variance of the exchange rate and interest rates in the optimal debt choice of firms.

¹⁹ Levy-Yeyati (2003) discusses additional policy recommendations—many centered directly on bank regulation. The author proposes a carrot-and-stick approach to de-dollarization, increasing the cost of dollar intermediation while expanding the menu of peso substitutes and enhancing their attractiveness. An early precedent of this dual approach is also put forward in Licandro and Licandro (2003).

tion disclosure on central bank policies and objectives and by contributing to shoring up public support for central bank independence (Mishkin and Posen 1997; Calvo and Mishkin 2003).

These policies should lead to low and stable inflation rates and, in the medium run, to monetary policy credibility and lower financial dollarization. Galindo and Leiderman (2003) argue that this is one of the main policy lessons for Latin America that can be extracted from Israel's successful de-dollarization experience. Starting from levels of deposit dollarization above 50 percent in the mid-1980s, deposit dollarization fell to less than 10 percent by the mid-1990s after a decade of low and stable inflation and a backdrop of fiscal consolidation.

Establishing monetary credibility is a process that is likely to take time. Reforms must be implemented and institutions must be tested before agents update their priors regarding price risk and adjust their saving (loan) portfolio accordingly. In the meantime, governments should put in place the following policies, while authorities build credibility, to minimize the financial vulnerability created by high levels of financial dollarization.

Developing Indexed Debt Markets

The monetary authorities should implement policies that contribute to the development of markets for instruments indexed to other contingencies. These would provide agents with alternative mechanisms to insure against price uncertainty while avoiding the risks associated with currency mismatches. The main example of these contingent claims is debt indexed by the consumer price index (CPI), or price indexation.²⁰ Abstracting from indexation lags and other measurement issues, price-indexed assets are free of inflationary risk, and as such should dominate dollar-indexed instruments. Existing empirical evidence broadly supports this conclusion: using cross-country data, Ize and Levy-Yeyati (2003) find that dollarization of deposits is significantly lower in countries where indexation is prevalent.

If indexed units of account provide better insurance against price risk than dollar deposits and at the same time lead to lower vulnerability, why is it that the private sector does not develop these instruments independently? In other words, why is it that banks in Uruguay do not offer their clients savings accounts or mortgage loans indexed to the CPI? Shiller (1997) argues that coordination problems inhibit the creation of indexed financial instruments. Until a common convention is established, individual agents will find it too costly to come to individual arrangements on index-

ation mechanisms. This being the case, there is a role for the public sector in creating a common indexation mechanism. The government may also play a role in the development of indexed debt instruments by issuing indexed public debt. The purpose of this debt is twofold. On the one hand, it completes the market by providing agents with an asset that, because of initiation costs, the private sector has not provided.²¹ On the other hand, public bonds can serve as a benchmark for private indexed debt instruments. However, public bonds may make it more difficult for the government to establish a credible indexation regime because the government itself may gain from changes in the indexation regime.

Latin American economies have had many unsuccessful experiences with CPI indexation. Indeed, the data show that the only country in the region with a significant share of CPI-indexed debt is Chile, where 58 percent of loans are denominated in UFs. Currently, Bolivia and Uruguay are pursuing policies aimed at developing CPI-indexed debt instruments. Other countries, such as Peru, have focused on the development of nominal bonds (Galindo and Leiderman 2003). Box 4.3 discusses lessons from the Chilean experience.

Matching and the Distribution of Dollar Debt

In addition to limiting the level of dollarization by developing indexed debt markets, authorities should ensure that existing policies minimize the currency mismatches within the economy for a given level of dollarization. For a start, prudential regulation must take into account the credit risks associated with lending in dollars to firms in the nontradable sector.²² In addition, macroeconomic policy in general, and exchange rate policy in particular, must bear in mind the impact on the level and distribution of dollar-denominated debt.

²⁰ Although indexation may constitute an alternative to dollar debt for agents wishing to escape price uncertainty, it is certainly not the only one. Other financial contracts provide firms and consumers with alternative sources of funding or investment opportunities; equity is one such market.

²¹ Fischer (1977) examines theories that explain the lack of indexed bonds in the private sector in developed economies. He rejects explanations based on tax treatment, correlations between utilities and the price level that would transform nominal bonds into sources of implicit insurance for firms, and the problem of a call clause option.

²² According to Galindo and Leiderman (2003), prudential regulation in most countries in the region does not deal with the credit risks arising from currency mismatches.

BOX 4.3 | LESSONS FROM INDEXATION IN CHILE

Herrera and Valdés (2003) draw policy lessons from the Chilean experience for countries wishing to promote the development of markets for debt indexed to the consumer price index (CPI).¹ The first of these is the importance of establishing a strong and credible unit of indexation.² By construction, enforcing indexation rules implies gains for either borrowers or lenders, and therefore a transfer of wealth across groups. As a result, the indexation mechanism must be credibly shielded from the renegotiation pressures of the “losing” party. This may be particularly difficult if this turns out to be the public sector itself, as would be the case in the presence of indexed public debt.

The second lesson is the importance of monetary and fiscal policies oriented toward achieving low inflation, or at least avoiding hyperinflation. Because of information constraints, indexation mechanisms will only incorporate changes to price levels with a lag. In the case of Chile, the Unidad de Fomento (UF) is adjusted daily on the basis of the previous month’s inflation rate. At high and accelerating levels of inflation, these lags may have important effects on the real value of assets, so that dollar-denominated assets may actually become safer (in terms of volatility of real returns) than CPI-indexed assets.

To illustrate this point, consider the monthly volatility of the returns to instruments denominated in UFs and dollars in Brazil and Chile in 1990–95. Over this period, inflation in Chile was moderate; Brazil experienced a hyperinflationary episode. In Chile, the variance of UF-indexed instruments (0.9 percent) was lower than that of dollar instruments

(1.8 percent). In the case of Brazil, dollar deposits (var = 5.5 percent) would have proven less risky than UF instruments (var = 9.8 percent).

Herrera and Valdés (2003) also argue that the demand for long-term debt assets—in particular by institutional investors—played an important role in the development of CPI-indexed financial markets. In Chile, the private pension system absorbed a large portion of the indexed financial instruments.³ Other institutional investors, such as insurance companies, also played a part.⁴

¹ Jiménez (1993) draws similar lessons for successful financial indexation by looking at the difficulties Argentina, Brazil, and Uruguay faced during past indexation experiences. He argues that failure to develop markets for indexed debt in these countries in the 1980s and 1990s was due to the following: (i) lack of deep secondary markets for this type of instrument, (ii) difficulties in agreeing on a common indexation measure, (iii) weak legal support for the unit of indexation, and (iv) agents’ preference for foreign assets in foreign currency vis-à-vis local assets.

² In Chile, the basic indexation rule has not changed since the UF was adopted in 1975.

³ In the case of Chile, the share of Pension Fund Administrators (AFP) portfolio in fixed-income instruments reached 72 percent in 1990, dropping to 51 percent in 2001.

⁴ Although the nature of the pension fund and insurance industry creates a natural demand for long-term assets, regulation of these institutional investors also played a role in generating demand for long-term indexed debt. By law, insurance companies in Chile must contract their obligations in UFs, not in pesos or foreign currency. So the assets they hold must be in UFs as well. As a result, 80 percent of insurance company portfolios are in UF-denominated instruments. Pension funds are also affected by regulatory norms that restrict their open foreign currency positions.

Policies that are perceived by agents as providing implicit insurance—in the form of stable real exchange rate regimes—may potentially lead to more severe currency mismatches. Caballero and Krishnamurthy (2003a) raise this point in a theoretical analysis, and Martínez and Werner (2002) do so in an empirical study. Using firm-level data, they find that currency mismatches in Mexican corporations decreased after the Mexican crisis in late 1994. The authors argue that the flexible exchange rate regime adopted by Mexico following the crisis increased the costs of mismatches and therefore the demand for hedging.

Restricting Dollarized Debt

Governments have the option of directly restricting dollar-denominated debt in the interim. Brazil, Colombia, and Venezuela have taken this path. Restricting dollarization may reduce financial fragility and help establish monetary credibility. However, if the systemic risks that lead to dollarization are not reduced, these restrictions will lead to offshoring of deposits or other alternative coping mechanisms, all of which have costs.

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Banking Crisis Resolution

DEALING with a systemic banking crisis surely ranks among the most difficult challenges for policymakers around the globe, but especially for those in Latin America. As illustrated in Chapter 3, Latin America stands out for the frequency, depth, and costs of its banking crises. Multiple factors combine to produce this result, ranging from sharp macroeconomic imbalances that have severely weakened the operating capacity of the banking system, to inadequate regulatory and supervisory frameworks that have allowed an incipient problem to reach systemic proportions. As financial globalization continues to deepen, contagion has been added to the list of factors that contribute to the eruption of profound banking crises in the region, as testified by the recent distress in the banking system of Uruguay following the Argentine crisis.

Moreover, in a large number of cases, when a banking crisis hits a Latin American country, authorities find that they lack sufficient and adequate (economic, financial, and political) policy tools to effectively set in place a banking crisis resolution program. Not surprisingly, resolution is delayed, further increasing the overall cost of the crisis as the deterioration of asset quality is not contained and depositors flee the banking system, fearing that the absence of an effective program for resolution of the crisis will hurt them the most. Unfortunately, the long list of poorly resolved banking crises in the region has proven depositors right, leading to the low observed level of financial intermediation in the region.

This chapter derives lessons from recent experiences of banking crisis resolution in Latin America. The chapter shows that, even under very stringent constraints, countries can indeed put in place successful programs for restoring the solvency of the banking system. Moreover, the chapter argues that the process of banking crisis resolution is an indicator of a financial system's capacity to avoid future crises. Countries with successful programs of banking crisis resolution have in most cases been able to maintain financial soundness for extended periods of time. Conversely, countries where the resolution of crises has ended in severe bank disintermediation show a pattern of recurrent eruption of crises.¹ The explanation is straightforward: successful

bank restructuring programs set up the right incentives for avoiding excessive risk-taking by banks in the future. Because an adequate resolution process improves the public's confidence in the capacity of the authorities to deal with future problems, the banking system becomes more resilient to upcoming adverse shocks and contagion.

MAIN OBJECTIVES

Two seemingly contradictory facts are often present during the process of resolution of systemic banking crises in emerging market economies. The first is that regulators and supervisors announce their intentions to contain the scope of the crisis and promptly bring the banking system back to solvency. The second is that long delays are observed in fully recognizing the extent of the problem and the difficulties in setting up a credible program for crisis resolution. A central explanation behind this apparent paradox lies in the scarcity of funds available to deal with the problem. After all, facing severe deficiencies in priority areas for development, why should the congress approve the allocation of resources for the resolution of banking crises? Although it is certainly undeniable that avoiding the eruption of a systemic banking crisis is a first-best solution, if the authorities find themselves facing a crisis, the critical questions that need to be answered have to do with costs and benefits. Why should restoring the banking system to solvency be given the highest priority, and at what cost to society?

To answer these questions, it is important to go back to the basic distinction between banks and other financial intermediaries. In developed and emerging market economies alike, the uniqueness of banks, namely their franchise value, lies in their special power to provide means of payments in noncash transactions (Corrigan 1991; Garber and Weisbrod 1992; Rojas-

¹ For the issue of avoiding banking crisis recurrence, see Rojas-Suárez (2002).

Suárez and Weisbrod 1995). When a bank customer withdraws funds from a bank account or writes a draft against that account, the bank delivers good funds—reserves on deposit held at the bank or the central bank, or cash—to the customer or to the bank of the payee named on the draft. In fact, when other liability issuers, such as money market mutual funds, promise to deliver payments, they promise to deliver bank deposits. Thus, as no other financial institution, banks are at the core of the payments system.

A disrupted or nonfunctioning payments system resulting from a systemic banking crisis is extremely costly to society because it severely inflates the costs of doing business and might even prevent the execution of essential transactions during the production/distribution/consumption process, with consequent detrimental effects on overall economic activity. *Therefore, restoring the functioning of the payments system needs to be the first objective of banking crisis resolution because an adequate payments system is essential for the appropriate operation of a market economy.*

What resources should be used to resolve a banking crisis? When a large portion of a country's banking system is threatened with insolvency, funds set aside to resolve isolated bank failures, such as deposit insurance funds and emergency central bank credit, are usually inadequate for the task at hand.² In other words, deposit insurance may be an adequate tool for preventing crises, but it will typically be insufficient for funding crisis resolution processes. In systemic crises, if the integrity of the banking system is to be maintained or restored, public funds must often be used to resolve bank failures. That is, a systemic banking crisis becomes a fiscal problem.

It should be clear, however, that the use of public money to solve a systemic banking crisis belongs to the family of second-best solutions. Ideally, systemic banking crises would be avoided by allowing some weak banks to fail, letting them be absorbed by other healthy institutions, perhaps from abroad, in a timely manner. If unsustainable policies at the macroeconomic level induced a crisis, financial transactions would migrate abroad. But the use of public funds to solve systemic banking crises may be justified on two grounds. First, mobility of bank capital across the world may be imperfect and slow due to uncertainties about the true value of the portfolio of banks in trouble. Second, given that banks play a crucial role in the payments system (and this system still remains in the national domain in most countries), public funds must be used to resolve individual bank problems to ensure that a banking system survives the crisis.

Regardless of whether the regulatory system has an explicit deposit insurance program, maintaining the integrity of the banking system requires that some bank liability holders be protected from the consequences of bank failure. Hence, the commitment of public funds for restructuring implies a transfer of resources from the public sector to the banking system. The objective of public policy is to ensure that the transfer is limited only to those parties whose protection from bankruptcy is necessary to preserve the integrity of the banking system. In other words, *the second objective of systemic banking crisis resolution should be to minimize the amount of public funds used in the restructuring process.*

PRINCIPLES AND CONSTRAINTS

As has been extensively documented, banking crises in Latin America have resulted in highly disintermediated financial systems in which depositors prefer short-term maturities and flee at the first sight of trouble. To provide a framework for comparing crisis management strategies across countries, this section identifies basic principles for effective banking resolution and discusses how these principles need to be adapted in the presence of the various constraints faced by emerging markets relative to developed countries.

Basic Principles

Analysis of several case studies suggests that reliance on three basic principles for bank restructuring programs has been a common factor in successful experiences of banking crisis resolution (Rojas-Suárez 2004). These principles are consistent with bringing the banking system back to solvency while minimizing the use of public funds. In all three principles, the common thread is the preservation or restoration of the payments system (Dziobek and Pazarbasioğlu 1997; Enoch, Garcia, and Sundararajan 1999; Hawkins and Turner 1999; Claessens, Klingebiel, and Laeven 2001).

Principle 1 is that a society should exert strong political will to make bank restructuring a priority, allocating genuine, noninflationary public funds to the resolution of the crisis. The importance of avoiding drastic increases in inflation during a restructuring program for the

² García (2000) discusses cases in which the establishment of a full deposit insurance guarantee during a banking crisis is warranted. However, the author recommends extreme caution because the guarantee needs to be credibly known as a temporary policy to avoid a deepening of moral hazard problems.

purpose of preserving the payments system cannot be overemphasized. Bank claims to deliver means of payment are more credible than claims of other liability issuers, partly because banks maintain deposits at the central bank and have access to a central bank facility, usually referred to as discount window privileges.³ If the central bank were to extend large amounts of credit to banks to keep bank deposits liquid during a banking crisis, inflation would follow and the franchise value of banks would be severely curtailed because the real value of bank deposits would decrease. Hence, funding for successful banking crisis resolution needs to come from noninflationary sources.⁴

Principle 2 is to ensure that parties that have benefited the most from the risk-taking activities of the banking business bear a large portion of the cost of restructuring the banking system. For example, bank stockholders should be the first to lose their investment along with large holders of long-term liabilities such as subordinated debt. In addition, delinquent borrowers must not be given favorable treatment at public expense. In this regard, debtor programs need to be minimized. Excessive use of debtor programs in a number of Latin American countries has unnecessarily increased the fiscal cost of banking crisis resolution.

Indeed, a central component of a successful bank restructuring program consists of enhancing the ability of banks to recover problem loans. Regulators and supervisors of the banking system must ensure that banks develop procedures to monitor the ability of their loan customers to deliver cash. Proof of liquidity by borrowers is a requirement for achieving bank solvency on a sustainable basis. Thus, reconstructing or establishing a good monitoring system for borrowers both enhances banks' capacity to extend sound credit and protects their franchise value by helping to restore their credibility regarding the capacity to deliver liquid means of payment. In sum, executing the second principle not only limits current restructuring costs by forcing private parties to bear part of the loss, but also creates incentives to restrain risk-taking in the future, which strengthens the banking system in the long term by reducing potential moral hazard problems.

Principle 3 is that prompt action should be taken to prevent problem institutions from expanding credit to highly risky borrowers or capitalizing unpaid interest on delinquent loans into new credit. Execution of this principle implies implementing policies that distinguish between banks by quality and, therefore, reduces the moral hazard risk in bank restructurings that arises when institutions with low and declining net worth continue to operate under the protection of public policies designed to main-

tain the integrity of the banking system. This principle also implies that, when possible, insolvent institutions should be removed from the hands of current owners, through closure or sale.

To execute a successful rescue program, policy-makers must faithfully adhere to all three principles. However, the ability of regulators to carry out these principles is affected by the economic environment in which they operate. Even if a society has mustered the will to fund a bank rescue, it may face a resource constraint that is so severe that it jeopardizes the success of the restructuring program. For example, an economy may not be able to access debt markets for funds. In this case, to finance bank restructuring it may be necessary to reduce fiscal expenditures in other areas. Obviously, as the funding constraint becomes tighter, the task of assigning priorities becomes more difficult.

Another constraint affecting the implementation of the principles is the availability of markets for financial institutions or for financial assets held by these institutions. The existence of such markets can be useful for minimizing public expenditure because they allow private investors to recognize the franchise value of a failed bank's customer base and its distribution system. Revenues from the sale of these valuable assets can be used to offset public absorption of credit losses.

If markets are large and funding is abundant relative to the size of the problem, regulators have a wide variety of choices available to resolve banking problems that can be classified into three broad categories: private sector merger or sale; takeover and management by the regulatory authorities; and, as a last resort, bailout of an existing institution with ownership left largely in place. These options are described in more detail in Box 5.1.

Differences in Constraints between Developed and Emerging Market Economies

Regulators in emerging market economies face more extreme constraints for banking crisis resolution than

³ In dollarized economies, the credibility of banks to deliver means of payments is largely related to the dollar reserves they keep (either at the bank, at the central bank, or in other financial institutions). In this situation, a central bank's overall ability to provide liquidity to banks is constrained by its holdings of net international reserves.

⁴ Honohan and Klingebiel (2000) conclude that open-ended liquidity support to banks during a banking crisis has significantly contributed to the escalation of fiscal costs of crisis resolution around the world.

BOX 5.1 | OPTIONS FOR RESTRUCTURING BANKS*Option 1. Private Sector Merger or Sale*

Under a private sector merger or sale, irrecoverable loans are charged off, which may require a write-down of bank capital if loan loss reserves are inadequate, often to the point where the value of liabilities exceeds the value of assets. When the institution is sold or merged, the price a buyer is willing to pay may not result in an adequately capitalized institution. Hence, public money often needs to be used to pay off the excess liabilities or to extend credit to the private sector to finance acquisitions.

When private investors are unwilling to pay a positive price for the customer base and distribution system of the failed bank, the regulator may divide the bank into two institutions: a "good" bank formed by the best assets of the troubled bank, and a "bad" bank composed of the rest of the (troubled) assets. The liability (deposit) size of the good bank is of course determined by the value of assets in good standing. Because of the high quality of the good bank, this institution is easier to sell or be managed by the private sector, limiting the fiscal cost of paying off the remaining insured liabilities of the bad bank.

Option 2. Takeover and Management by the Regulatory Authority

Takeover and management by the regulatory authority is used when the market for impaired institutions is not large enough to absorb the supply of such institutions. This may happen either because the market is underdeveloped or because the crisis has made banking properties unattractive even

at very low prices, and regulators have sufficient know-how to operate financial institutions. If delinquent loans are to be charged off and capital written down, this option usually requires a greater injection of public funds than option 1 does, because regulators do not receive an up-front payment for the franchise value of the customers and distribution network.

If regulators have experience in managing failed banks, they may eventually be able to recoup the franchise value through earnings on the investment. The government can postpone some of the cost by permitting seized institutions to operate temporarily at capital levels that would be inadequate for privately owned banks. This policy has risks, however, as governments, like private owners, may take excessive risks with inadequately capitalized institutions. Moreover, the success of this alternative lies in ensuring that banks are returned to private ownership as soon as market conditions permit.

Option 3. Bailout

Bailout must be used when funds that can be committed quickly are scarce, markets are undeveloped or illiquid at the time of the crisis, or regulators do not have the know-how to manage banks. Bailout is the most complicated method of resolution to execute according to the principles of sound restructuring because insolvent institutions must be left in the hands of their present owners, who are given public funds to maintain the viability of the institutions.

their counterparts in developed economies. Consistent with the discussion above, constraints can be divided into three categories: (i) availability of financing resources, (ii) availability of markets to sell banking institutions and their assets, and (iii) regulatory independence. Table 5.1 presents differences in constraints between developed and emerging market countries.

Even if an emerging market economy has followed a conservative fiscal policy before the onset of a banking crisis, policymakers face a daunting task in obtain-

ing adequate funds for a restructuring program. For example, in contrast to developed countries, emerging market economies rarely possess a domestic long-term bond market, although many have access to international bond markets. However, access to long-term bond markets usually dries up when international markets perceive that a crisis is imminent.

This would seem to leave the issuance of short-term debt as a more common funding option in emerging market economies. However, the risk in the short-

TABLE 5.1 | DIFFERENCES IN CONSTRAINTS ON BANKING CRISIS RESOLUTION: DEVELOPED VERSUS DEVELOPING COUNTRIES

Constraint	Developed countries	Developing countries
Financing sources	Access to markets continues during the crisis.	Access to international capital markets disappears.
Markets	Domestic capital markets and secondary markets for long-term assets exist.	Lack of adequate legal and judicial infrastructure and repeated financial crises prevent the development of markets for secondary assets.
Regulatory independence	Subject to strict standards, although scandals may occur.	In some cases, lack of independence is so severe that regulators and supervisors cannot do their jobs, even if adequate tools are available.

term market is that the government must cover not only interest payments, but also principal payments if the debt cannot be rolled over. Thus, the slightest hint of deterioration in the government's capacity to service its debt may shut the government out of the market, which in turn increases the pressure for inflationary finance.

Constraints on the size and depth of the market for bank assets are likewise tighter in emerging market economies that lack the legal and market infrastructure necessary for secondary markets to develop. Moreover, regulatory know-how is sometimes in short supply in emerging market economies. However, even in markets with skilled professionals in bank supervision, if bank regulators do not have political independence, they may not be able to sell banking properties through arm's-length transactions. This problem also arises in developed countries, but it is less important than in emerging markets because other constraints are less severe.

Thus, the constraints on bank supervisors in emerging market economies make it much more likely that the bailout option will be taken in these countries than in developed countries. Nonetheless, restructurings, even under the most severe constraints, are more likely to be successful if policymakers attempt to enforce the three general principles outlined above. It is the capacity of the authorities to adapt principles to local conditions, more than the severity of the constraints, which often determines whether a bank restructuring effort will be successful. Box 5.2 provides examples of crisis resolution under ideal conditions, as is the case in developed countries, where funding, markets for bank assets, and regulatory independence are strong, and contrasts these experiences with those of Latin American countries facing substantial constraints.

CRISIS OF CONFIDENCE

As suggested by the extensive literature describing the characteristics of Latin American financial systems, they are fragile, and even relatively mild shocks to the banking sector can quickly result in sharp reductions in the deposit base. An indicator of this fragility is presented in Figure 5.1, which displays the percentage change in the ratio of deposits to gross domestic product (GDP) for selected Latin American and developed countries during the early phases of a systemic banking crisis. The evidence indicates that depositors in Latin America are much more prone to flee the banking system when bank borrowers' capacity to pay is adversely affected than are depositors in other regions. The data suggest that, to a large extent, depositors in Latin America fear that they will suffer a real financial loss following a systemic banking crisis, whereas depositors in developed countries and emerging Asian economies believe that, even in a crisis, the real value of their deposits will be preserved.

Thus, investors in other regions believe that banking crises, while severe, are temporary events and that the long-run viability of the system will soon be restored. This contrasts with the beliefs and behavior of depositors in Latin America. This evidence is consistent with both the severe constraints facing policymakers in Latin America to resolve systemic banking crises and, even more important in a number of countries, with the perceived lack of trust in the authorities' capacity to solve banking problems without the depositors being the bearers of resolution costs (lack of trust in the commitment to the principles for banking crisis resolution). A long history of poorly resolved banking crises in a number of countries has resulted in large bank runs at the onset of problems, further aggravating the severity of the crisis.

BOX 5.2 | CRISIS RESOLUTION UNDER OPTIMAL AND CONSTRAINED CONDITIONS

Savings and Loan Rescue in the United States

The case of the U.S. savings and loan rescue and restructuring plan provides a typical example of how access to funding and the availability of markets permit bank supervisors to apply principles to good effect. However, this example also shows that, unless policy objectives are clearly defined and political will can be mustered to commit funds, relatively lenient constraints do not necessarily lead to good policy.

During the late 1970s and early 1980s, many U.S. savings and loan institutions lost their net worth. The magnitude of the problem exceeded the resources of the insurance fund available to insulate small depositors from the impact of bank failures. Political will to provide additional public funds to cover the loss was absent. Hence, regulators initially attempted to solve the problem by manipulating accounting rules and allowing institutions in trouble to expand their activities. Thus, principles 1 and 3 were violated.¹

Even with lack of funding, regulators could have controlled the expansion of credit of savings and loan institutions with zero market net worth had they established supervisory guidelines for asset growth relative to an institution's capital base. However, the political power of the real estate industry and regulatory lethargy acted against this. Because principles 2 and 3 were not followed, the owners of these institutions, having nothing to lose, took additional risks in hopes of recovering their investment.²

By the late 1980s, when it had become obvious that the program in place magnified the cost of restructuring, the authorities obtained sufficient public funds to deal with the situation in accordance with sound restructuring principles. For example, they were able to seize and sell failed institutions. Bidders assessed the value of banks' assets as well as the franchise value of their distribution network. If bids were too low, regulators paid off depositors from the sale of assets and government funds and closed the institution.

The policy accomplished two objectives consistent with principle 2: it forced stockholders of failed institutions to take losses, and it forced bor-

rowers in default to lose their collateral. (However, it failed to force large liability holders to take losses because they had left during the prolonged period of political indecision.) The policy worked because the authorities were able to raise sufficient funds to close failed institutions without generating inflationary fears, and there was a market for the seized assets.

Constraints in Latin America

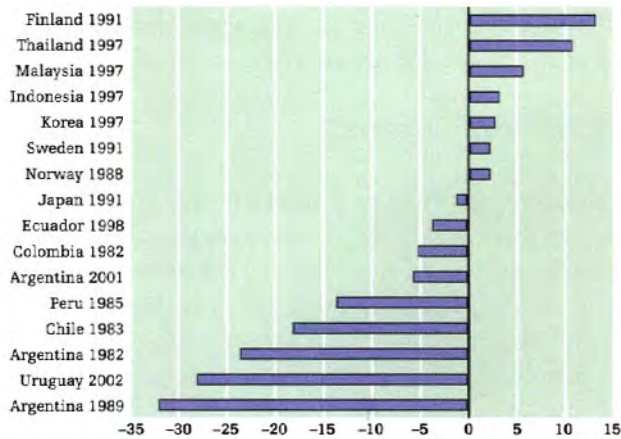
Experiences with bank rescue efforts in Latin American countries indicate that in the past regulators have often resorted to inflation, freezing deposits, and imposing interest rate controls to resolve bad debt problems. One or all of these tools have been utilized because countries entered a banking crisis with significant fiscal problems and with no political will to address them, in violation of principle 1. Prominent examples are Argentina in the early 1980s and early 2000s, Mexico and Peru in the mid-1980s, and Ecuador in the late 1990s. Depositors suffered severe losses, and it took drastic adjustment policies (as well as a long time in most crisis countries) for investors to recover confidence in the financial system.

Other examples in Latin America demonstrate that, even under tight constraints, regulators have sometimes been able to fashion a policy that has remained sufficiently close to the principles to be successful. The most noted example of this is Chile in the early and mid-1980s. Although there were limited funds for closing failing banks and markets were not available for selling large impaired institutions, regulators fashioned a recapitalization and loan re-scheduling program that minimized incentives to capitalize unpaid interest or expand balance sheets through increased risk-taking.

¹ Principle 1 is that a society should exert strong political will to make bank restructuring a priority, and principle 3 is that prompt action should be taken to prevent problem institutions from expanding credit to highly risky borrowers or capitalizing unpaid interest on delinquent loans into new credit.

² Principle 2 is to ensure that parties that have benefited the most from the risk-taking activities of the banking business bear a large portion of the cost of restructuring the banking system.

FIGURE 5.1 Percentage Change in Deposits to GDP on the Eve of a Banking Crisis, Selected Countries
(Percentage change)



Source: Rojas-Suárez (2002); IMF (various years).

The sharp drop in confidence in Latin American financial systems that follows initial signals of banking distress is common to both domestic and foreign investors. As a result, periods of banking difficulties are also associated with loss of access to international capital markets, and countries in Latin America have not been able to raise sufficient funds in international capital markets to finance the cost of the crises.⁵ This shows the severity of the funding constraint facing policymakers. As indicated in Chapter 3, countries are sometimes forced to run current account surpluses and/or to lose a significant amount of foreign exchange reserves.

Sovereign bonds placed in the international capital markets provide an indicator of investors' confidence. Periods of banking crises are manifested in sharp declines in the price of these bonds. For example, in late 1994 and early 1995, the drop in confidence in the financial systems of Argentina and Mexico coincided with a 30 percent drop in the bond indexes for these two countries. Similar behavior was observed during the eruption of the banking crisis in Ecuador in 1998 and in Argentina in 2001.⁶ In contrast to the experience of Latin American countries, the balance of payments position of developed countries like Norway and Sweden was largely unaffected during the Nordic banking crises in the late 1980s and early 1990s. Moreover, long-term government bond prices in Norway and Sweden were largely unaffected by the crises.⁷

Not surprisingly, the severe constraints faced by Latin American policymakers and the long experience of nonadherence to the basic principles of effective crisis resolution in a number of countries in the region have

translated into high costs associated with restructuring banking systems after a crisis.⁸ As mentioned in Chapter 3, the fiscal cost of banking crises in Latin America has been greater than in other regions; the costs of most crises in developed countries remain at the low end of the spectrum.

The facts presented here are the legacy of a long history of recurrent crises and the inadequacy of the resolution process in many countries in the region. The popular belief that “depositors forget” and that, regardless of the manner in which a crisis is resolved, they will return to domestic banks after a while is not supported by the evidence. On the contrary, depositors can react swiftly to crises and may drastically reduce intermediation levels.

FAILURES AND SUCCESSES

This section analyzes bank restructuring programs in Latin America during the past two decades. In each case, several fundamental questions are answered. First, given the constraints faced by regulators, to what extent did they abide by the three basic principles for successful resolution of banking crises? Second, what mechanisms did the authorities put in place to deal with the constraints? And third, what factors determined the final outcome of the restructuring program?

The experiences chosen here come in pairs of countries facing similar shocks at about the same time. This choice is useful for contrasting how economies under similar pressures may change the outcome of banking crises, depending on the compliance of selected policies with the basic principles of crisis resolution, and on the ability to obtain external funding once these principles are evident in the crisis resolution strategy.⁹ These experiences provide evidence that validates the utility of these principles in separating good from bad crisis resolution processes.

⁵ This limits the ability of a central bank to work as a lender of last resort, given that it cannot become a borrower of last resort when international capital markets close (see Chapter 6, Box 6.1).

⁶ The sharp drop in deposits (around 20 percent) in Argentina in 2001 signaled the eruption of its banking crisis.

⁷ It should also be noted that there was a sharp increase in short-term interest rates in the Nordic countries in 1992 during an attack on the exchange rate. Rates quickly fell after a devaluation.

⁸ Data and information on features of banking crisis experiences and their resolution around the world can be found in Caprio and Klingebiel (1996) and del Villar, Backal, and Treviño (1997).

⁹ This was the case, for example, in Argentina in 1995 and in Uruguay in 2002.

Argentina and Mexico in the Mid-1990s

Having implemented strong stabilization programs as well as financial and other economic reforms in the early 1990s, many Latin American countries experienced large capital inflows. However, in December 1994, large outflows of capital from Mexico resulted in a balance of payments crisis and a sharp devaluation of the Mexican peso (Sachs, Tornell, and Velasco 1995). The crisis of international investors' confidence in Mexico expanded to several other Latin American countries, most notably Argentina. In order to stem capital flight, Argentina and Mexico increased domestic interest rates, which led to concerns that bank borrowers would not be able to meet their obligations.

By early March 1995, the peso interbank interest rate in Argentina reached a peak of almost 70 percent, and in late March 1995, the repurchase agreement rate on government securities in Mexico reached more than 80 percent. Fears concerning the quality of the banking systems in these two countries were further fed by the realization that both systems contained pockets of institutions that were weak even before the exchange rate crisis. The loss in confidence, combined with tight monetary policy, resulted in banking crises that required major restructuring programs.

Constraints

Despite investors' reduced confidence in the financial systems in Argentina and Mexico in 1995, regulators faced banking problems under much more favorable conditions for successful resolution than was the case in the early 1980s for a number of Latin American countries. Policymakers had improved their know-how in designing effective restructuring programs as a result of absorbing the lessons of success and failure from the 1980s. And progress had been made in bank reporting and supervisory conditions, although they were still below developed country standards.

On the funding side, the fiscal situation in each country was better than in the early 1980s. Moreover, since the fight against inflation had become a priority, each country had committed itself to solving crises with noninflationary policies. Nevertheless, just as in the early 1980s, private funding for restructuring efforts practically vanished with the onset of the crisis, when perceptions about country risk remained fragile, as indicated by the sharp dip in the Emerging Markets Bond Index (EMBI) for both Mexico and Argentina. Moreover, despite the reforms of the early 1990s, markets

for long-term funds remained underdeveloped, and the market for insolvent banks remained thin. Although constraints on resolving bank problems had eased compared with the early 1980s, funding constraints were still relatively severe, in particular when compared with conditions in developed countries.

Restructuring Programs

In determining whether a restructuring program follows the three principles, it is necessary to consider the following aspects of the program: whether it controls the growth of impaired institutions, who bears the cost of resolution, and how the program is funded. The assessment here is that while both countries were successful in quickly constraining the growth of banks' balance sheets (principle 3), Argentina's rescue program was superior to Mexico's in distributing the costs of solving the crisis (principle 2) and finding adequate sources of (noninflationary) funds over a short period of time (principle 1). By 1996, a consensus emerged that the Argentine banking crisis was over. By contrast, in Mexico even in 1999, almost five years after the eruption of the crisis, there were discussions about unresolved weakness in the banking sector.

Constraining the expansion of weak banks. As early as 1995, there was ample evidence that principle 1 had been followed in the design and execution of programs in both countries: regulators had not resorted to inflationary finance to resolve the crisis. The authorities in the two countries relied on very different tools to accomplish these tasks. In Argentina, they used stringent controls on monetary base growth through the convertibility law and on bank deposit growth relative to the monetary base through reserve requirements. In Mexico, they enforced a capital to risk asset ratio standard. To evaluate how these alternative methods of controlling the expansion of bank balance sheets restrained the growth of weak banks, it is useful to consider the behavior of two groups of banks in each country between late 1994 and early 1995. Banks that were candidates for restructuring make up one group, and those that were not make up the other.

For Argentina, the banking data for the mid-1990s are aggregated for large provincial banks, which were relatively weak, and large private banks, which were relatively strong. To analyze the Mexican restructuring program, banks are categorized by whether they met supervisory standards for capital and provisions through their own resources or needed a capital infusion as of December 1994. For expositional purposes, provincial

TABLE 5.2 | **GROWTH OF BANK LOAN PORTFOLIOS IN ARGENTINA AND MEXICO, 1995**
(Percent)

Country	Nominal loans	Interest credited	Loans net of interest credited
Argentina			
Strong banks	6.5	12.9	-6.4
Weak banks	-9.3	17.0	-26.3
Mexico			
Strong banks	25.8	47.7	-21.9
Weak banks	21.8	50.6	-28.8

Note: Growth rates and interest credited are annualized based on data through March 1995 for Argentina and through June 1995 for Mexico.

Source: *Superintendencia de Entidades Financieras y Cambiarias* (Argentina), *Estados Contables de las Entidades Financieras*, and *Comisión Bancarias y Valores* (Mexico), *Boletín Estadístico de Banca Múltiple*, reproduced from Rojas-Suárez and Weisbrod (1996).

banks in Argentina and banks that required a capital infusion in Mexico are designated weak banks; other banks in both markets are referred to as strong banks.

An important issue is whether the authorities in each country prevented the weak banks from expanding credit. Specifically, were these banks capitalizing interest on nonperforming loans into new loans? To answer this question, it is necessary to determine whether loan portfolios were growing at a slower rate than the rate at which interest was being credited to the portfolio.

Table 5.2 presents annualized growth rates of loan portfolios for each class of bank by country. Based on 1995 data, the rate of growth of loans for both categories of banks in the two countries was less than the rate at which interest was credited, indicating that credit growth was severely constrained.¹⁰ In both countries, the negative growth rate in loan portfolios after accounting for interest earned was greatest for weak banks, at about -29 percent in Mexico and -26 percent in Argentina. Strong banks in Argentina experienced a growth rate of -6 percent, whereas the strong banks in Mexico experienced a growth rate of -22 percent. The evidence indicates that both countries made tremendous strides in controlling the growth of credit to bad borrowers that capitalized interest payments. The success in constraining the growth of bank balance sheets was consistent with neither country resorting to inflation to rescue weak banks.

Program design and funding: Who paid the cost of restructuring? In designing restructuring programs in Mexico and Argentina, the authorities attempted to comply with principle 3. The main difference was in implemen-

tation. Policymakers in Argentina quickly moved to close insolvent institutions and minimized public funds used to solve the crisis; authorities in Mexico extended the rescue operation.¹¹ Dealing with the Mexican banking crisis took a long time and resulted in a large fiscal cost because the regulatory system imposed constraints that prevented the Mexican regulators from tapping adequate sources of funding, and the fiscal authorities delayed in recognizing the extent of their liabilities.

In Argentina, the government decided that a large part of the risk of adjustment would be borne by the private segment of the banking system. It established a safety net fund, supported by large private banks and multilateral institutions and managed by state-owned Banco Nación, which was used to provide liquidity assistance to banks that were losing funds. In addition, the central bank provided liquidity assistance to banks through swap arrangements. However, the scope of these programs was limited because the convertibility law severely restricted the central bank's authority to act as lender of last resort.

Similar to Chile's successful crisis resolution in the 1980s, structural constraints (high foreign indebtedness in Chile, and the convertibility law in Argentina) were

¹⁰ Data are through June 1995 for Mexico and through March 1995 for Argentina. For Argentina, interest credited is for all interest-earning assets, and for Mexico, data are for interest and fees received on loans.

¹¹ A relevant factor that may lie behind this delay is that the crisis in Mexico brought a major exchange rate depreciation and bankruptcy of nontradable sectors indebted in foreign currency, a feature absent from the crisis in Argentina in 1995.

at the core of designing programs and funding sources. As in the case of Chile, funds for resolving the crisis came from domestic and foreign sources. Another similarity was that international capital markets dried up at the eruption of the crisis. Therefore, multilateral organizations and foreign institutions operating in Argentina were important sources of funds. In contrast to Chile, however, Argentina did not have a well-developed pension fund system as a source of funding to recapitalize banks. Instead, the authorities came up with an ingenious alternative. The government issued a patriotic bond amounting to US\$2 billion with a three-year maturity, paying a below-market floating interest rate. This bond was sold to domestic private investors and foreign financial institutions that were established in the country.¹² To channel noninflationary sources of funds to resolve banking problems, the government established a trust fund to recapitalize banks. One of the duties of the fund was to purchase subordinated debt in banks with a maturity of three years, which was to be converted to equity if a bank failed to repay interest and principal. This feature of the program enforced principle 2.

However, early in the crisis, authorities in Argentina recognized that they could not raise sufficient funds for a prolonged bailout program. More important, they understood that the crisis provided an opportunity to deepen the banking system reform that they had initiated in 1991 after the hyperinflation period and that a sustainable solution would have to involve closing many troubled banks. Therefore, a significant portion of the resources from the fund established to inject capital into banks was used to finance mergers and acquisitions, which, by taking control of banks away from bad managers, reduced the expansion of bad credit. Indeed, the strong commitment of the authorities to these reforms (principle 2) led to the success of the restructuring operations (Carrizosa, Leipziger, and Shah 1996; Burdisso, D'Amato, and Molinari 1998). In a nutshell, Argentina dealt with the lack of funding, a constraint typical of emerging markets, by internationalizing the banking system.

The establishment of a private deposit insurance system funded by banks was an additional element that reinforced credibility in the commitment of the authorities to solve the crisis with minimal use of public funds. This encouraged depositors to keep their funds in troubled institutions while they were being restructured. Since the insurance fund was independent of the government, its commitment to insure deposits could not be perceived as a potential source of inflationary finance.

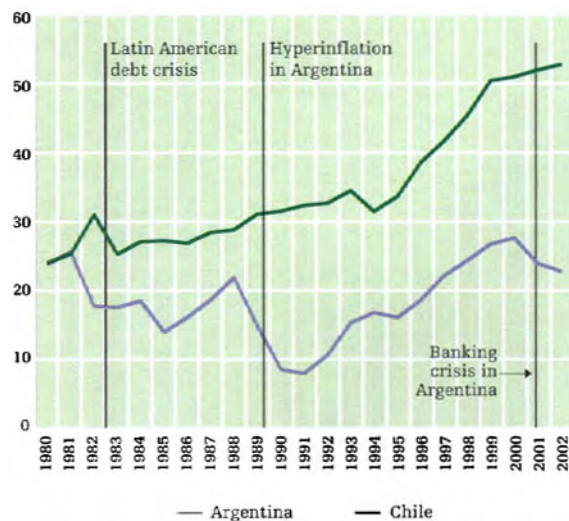
The success of the Argentine restructuring program can be summarized by two indicators. First, as shown in Figure 5.2, the ratio of deposits to GDP was barely affected by the crisis. This contrasted significantly with two previous episodes of bank disintermediation in Argentina: the crisis of 1982 and the crisis of 1989. Second, the authorities were able to attract significant amounts of foreign capital to the banking system. By 1996, Argentina displayed one of the highest ratios of foreign participation in the banking system in the region, reaching about 35 percent. This process continued during the late 1990s, and by 2000 the ratio reached about 45 percent (see Figure 5.3).

Mexico's program also started with the intention of complying with principles 2 and 3. The recapitalization program was sophisticated and designed to ensure that private parties that benefited from excessive risk-taking activities would bear the largest portion of the restructuring costs. A major problem, however, was that in its implementation it soon became apparent that there were no clear benchmarks for crisis resolution, and that the authorities had not mustered the necessary political will to minimize the cost of the crisis. As a result, a number of support programs for debtors raised the cost of dealing with the crisis.

The government's complex banking system rescue package consisted of four parts (Deutsche Bank 1998). First, there was intervention in insolvent banks, which were liquidated, merged, or sold. The government absorbed their loan portfolios. Second, the government funded temporary capitalization programs, which involved the provision of loans against subordinated debt. Banks that were not capitalized when the loans came due would become government property. This rule was intended to comply directly with principle 2. Since all the banks repaid their loans, this part of the program was considered successful. Third, loan portfolios were exchanged for government-guaranteed 10-year zero coupons at face value, minus reserve provisions. Commercial banks retained administration of their loan portfolios, but at the end of the 10-year period, proceeds from loan recovery were to be deducted from the repayment of the principal. Fourth, the government implemented a series of support programs for debtors, which involved reduction and/or interest rate cuts. The government used cash payments or securities to subsidize part of the cost of debt reduction and/or interest rate cuts.

¹² The government was able to raise funds at below-market interest rates by appealing to private investors' stake in the success of economic reforms.

FIGURE 5.2 Deposits to GDP, Argentina and Chile, 1980-2002 (Percent)



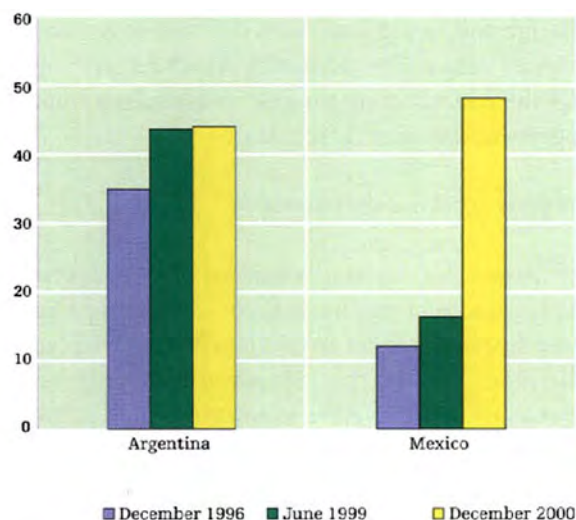
Source: IMF (March 2004); central bank publications.

Despite the prompt response to the crisis and a program with many features pointing in the right direction, a number of problems arose during the implementation of the program. First, the size of the nonperforming loans was severely underestimated. This was mainly due to debtors' successful lobbying of the congress to negotiate postponement or elimination of loan repayments. The end result was the development of a culture of "no debt repayment" that aggravated the extent of the banking crisis, in violation of principle 2. Indeed, by the end of 1998, the government acquired through its crisis fund (FOBAPROA) liabilities of 550 billion pesos in exchange for almost half of all bank gross assets.

Second, more than 50 percent of the bonds placed in banks in exchange for bad loans were nontradable, 10-year zero coupon bonds. As a result, banks had significant cash flow problems, and their profitability was severely affected. The reason for this was the refusal of the government for a long time to recognize that FOBAPROA debt was indeed public debt that needed to be part of the fiscal budget and become an interest-bearing asset. The lack of government commitment to allocate the needed real fiscal resources to resolve the crisis was in strong contradiction with principle 1.

Third, in contrast to Argentina, Mexico's legal constraints prevented a much needed injection of foreign capital into the banking system. In particular, rules about ownership control and the lack of bankruptcy laws with sufficient protection for creditors were at the core of the problem. Thus, as shown in Figure 5.3,

FIGURE 5.3 Foreign Effective Control of Banking Systems in Argentina and Mexico (Percentage of total loans)



Source: Salomon Smith Barney; foreign financial institutions in Latin America.

by mid-1999, the effective foreign control of Mexico's banking system remained among the lowest in the region, reaching only about 15 percent. By delaying the removal of funding constraints, these developments also violated principles 1 and 3.

Indeed, the impasse of the Mexican restructuring program was resolved only when the government adopted the recommendations of principles 1 and 3, undertaking two key measures at the end of 1999 and early 2000. First, FOBAPROA debt was recognized as interest-bearing public debt, and the flow of interest payments was incorporated into the budget. Second, an effective bankruptcy law was approved. As a result of these developments, there was a significant increase in the participation of foreign capital in the banking system, which by 2000 reached almost 50 percent (Figure 5.3). The Mexican crisis illustrates how political will makes a difference. Although mistakes were eventually corrected, they unnecessarily elevated the cost of the rescue operation. The estimated fiscal cost of the crisis was more than 20 percent of GDP.

Argentina and Uruguay in the Early 2000s

The banking crisis resolution processes in Argentina and Uruguay in the early 2000s were contrasting events in terms of adherence to the basic principles. Since the eruption of the banking crisis in Argentina at the end of 2001, authorities have consistently departed from

the principles of effective crisis resolution. As a result, the banking system remains largely insolvent when asset valuation is measured at market prices. By contrast, although still facing important difficulties, regulators in Uruguay better adhered to the principles, and by early 2004 the restructuring program was making important progress in the right direction.

Origins and Constraints

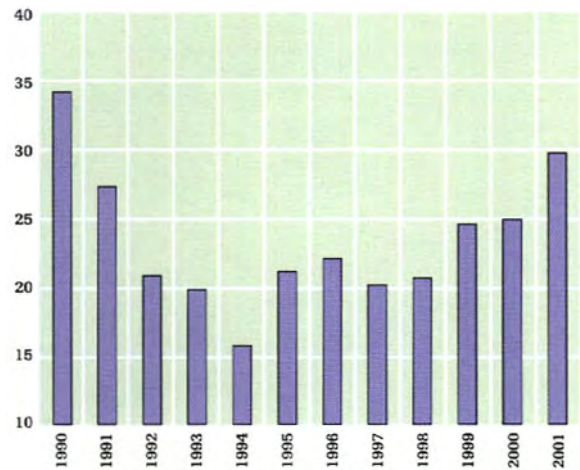
The Argentine banking crisis of 2001–02 materialized because of a combination of underlying fragilities in the banking system in the late 1990s, coupled with policies in 2001–02 that destroyed the franchise value of banks by rendering the payments system ineffective. Two types of fragilities emerged during the late 1990s. First, the soundness of the banking system depended on maintaining a fixed exchange rate because of the large amounts of bank dollar lending to borrowers with peso-denominated sources of income.

Second, there was increased bank exposure to government risk. Figure 5.4 shows the evolution of the share of government paper in banks' balance sheets since 1990. This share declined significantly until 1994; increased temporarily as a result of the banking crisis resolution in 1995–96; after a partial correction in 1997–98, resumed an upward path; and by the end of 2001 reached a level close to that in 1990. Among all types of banks, public banks had the largest share of government paper in their assets. Although there was a compulsory sale of government bonds to banks, this only happened in late 2001. Thus, partly as a consequence of attempting to stay profitable in a recessionary period, banks held increasing amounts of government paper and underestimated the risks of holding government liabilities. This risk increased during the late 1990s and into 2001 as the fiscal balance deteriorated and public sector indebtedness increased.

The combination of a growing stock of public debt, increasing overall fiscal deficits, and no sign of economic recovery during 2001 fueled perceptions of government default and abandonment of convertibility. As these perceptions threatened to expose the risks in banks' balance sheets, a significant withdrawal of deposits took place that year. By the end of 2001, the banking system had lost about 20 percent of deposits. As a response to the deposit loss, in December 2001, the government imposed limits on withdrawals of deposits. Moreover, depositors' fears were validated in January 2002 when the government declared default and depreciated the peso by 29 percent.

Thus, in early 2002, Argentina found itself with a

FIGURE 5.4 Government Liabilities Held by Banks, Argentina, 1990–2001
(Percentage of total assets)



Source: Rojas-Suárez (2002); IMF (various years).

currency crisis, a debt crisis, and a banking crisis. On top of the economic and financial difficulties, the country was in the middle of a severe political crisis that had manifested itself in, among other events, the resignation of the president in December 2001. This complex situation meant that any process of banking crisis resolution would face unusually severe constraints. The funding constraint was particularly severe because the default on external obligations implied a total exclusion of Argentina from international capital markets. The recession deepened in 2002 and reached a decline in the rate of growth of economic activity of more than 10 percent. In addition, the funding constraint meant the government was unable to collect sufficient revenues to allocate to the resolution of the crisis.

The initial steps taken by the authorities after the default further tightened the constraints for banking crisis resolution, especially with regard to the treatment of foreign banks, which in the past (in 1995) had played an important role in bringing the system back to solvency. Moreover, regulatory independence—a necessity for credible restructuring programs—had been significantly weakened during 2001 with the limitations imposed on the autonomy of the central bank and the dismissal of its president.

The effects of the crisis in Argentina had adverse consequences on Uruguay's banking system, mainly because about 40 percent of bank deposits in Uruguayan banks were held by Argentines. Following the imposition of the deposit freeze in Argentina, Argentine depositors began to withdraw their funds in Uruguay. This led to about a 12 percent decrease in total deposits during the first two months of 2002.

Although the Uruguayan banking system did not have significant exposure to government risk (government debt as a ratio of total assets was less than 3 percent in 2001), it suffered from the same problem of currency mismatches as in the Argentine case. About 80 percent of total loans were dollar denominated and half of the dollar loans were extended to borrowers with Uruguayan peso-denominated income. An additional source of fragility was political interference in the lending practices of the two large state-owned public banks, which also had the largest credit exposure in dollar loans to nontradable sectors.

The initial withdrawal of deposits resulting from contagion in Argentina was followed by additional withdrawals by Uruguayan residents who feared that the banking system was experiencing solvency rather than liquidity problems. These fears were exacerbated by Uruguay's downgrade from investment-grade status and by the depreciation of the exchange rate that followed the capital outflows associated with the withdrawals by Argentine depositors. By the end of July 2002, total withdrawal of deposits had reached 42 percent.

Did the Uruguayan authorities face constraints as severe as those in Argentina for implementing a banking crisis resolution program? The major differences were not in terms of traditional macroeconomic indicators. For example, by the end of 2001, both countries were in a sharp recession and had severe fiscal imbalances. By the end of 2002, the consolidated fiscal deficit as a percentage of GDP was 5.9 in Argentina and 4.1 in Uruguay; the ratio of public sector debt to GDP was about 60 percent in Argentina and 54 percent in Uruguay. The data indicate that neither country was in a sound position to allocate fiscal funds to the resolution of the banking crisis.

The crucial difference between Argentina and Uruguay regarding access to sources of funds for crisis resolution was in the willingness of the multilateral organizations to provide financial support to Uruguay. There were two major reasons for this outcome. First, the crisis in Uruguay was perceived as contagion from Argentina. Second, and perhaps more important, Uruguay did not default on its external debt obligations with the private sector but instead maintained a market-friendly approach to creditors that eventually culminated in a successful debt exchange in May 2003. Another important difference in terms of funding constraints was that the Uruguayan authorities were able to persuade the headquarters of foreign banks to recapitalize their branches and subsidiaries, while policy decisions by the Argentine authorities penalized foreign banks.

Initial Responses

The payments system is at the core of the business of banks and defines their franchise value. Policy actions in Argentina during the pre-devaluation/default period significantly weakened the effective functioning of the payments system by freezing deposits and imposing tight controls on cash withdrawals. Banks' soundness was also hampered by an exchange of government bonds held by banks for illiquid government bonds in November 2001 (see LASFRC 2002). As a full-blown banking crisis became apparent following the devaluation/default, policy actions further accentuated the problem and violated all principles for effective crisis resolution (Gutiérrez and Montes-Negret 2004; De la Torre and Schmukler 2002).

First, the government of Argentina imposed an asymmetric exchange of dollar bank assets and liabilities into pesos. Dollar-denominated loans were converted into pesos at the pre-devaluation exchange rate of 1 to 1, while dollar-denominated deposits were converted into pesos at the rate of 1.4 pesos per dollar, a much lower rate than the market exchange rate. This policy clearly benefited borrowers and placed the burden on depositors and banks (with severe consequences for banks' capital), and drastically violated principle 2. Moreover, since the foreign obligations that banks were facing remained in foreign currency, while the loans banks had given were converted to pesos, a large foreign currency exposure was introduced into banks' balance sheets.

Second, a tighter freeze was imposed on time deposits because the authorities focused on containing deposit losses rather than restoring the solvency of the banking system. The use of time deposits in transactions was limited and their maturity was forcefully restructured. These actions contradicted principle 2 by severely penalizing depositors. In addition, banks lost their franchise value as the payments system became impaired.

Penalizing depositors through freezing accounts is not new; Mexico used a similar strategy with dollar-denominated deposits (known as *petro-dollars*) during the debt crisis of 1982. The financial disintermediation that followed contributed to a series of consecutive crises that culminated in a major disruption in 1995. By contrast, also in the early 1980s, the Chilean program attempted to recover depositors' confidence in the banking system by preserving the real value of deposits. As Figure 5.2 shows, this policy, coupled with Chile's prudent fiscal management and low fiscal dominance of monetary policy, may have been behind the successful

increase in banking intermediation and banking crisis avoidance throughout the late 1990s, in a context of severe external pressures.

Third, in February 2002, the government of Argentina introduced exchange and capital controls in an attempt to contain deposit losses and limit the effect of the outflows on the exchange rate. This further complicated banks' operations because payments abroad needed the approval of the central bank.

The combination of all the measures described above implied a breach of existing contracts and significant legal uncertainty, which prompted the headquarters of foreign banks to deny financial support to their branches and subsidiaries. By mid-2002, the payments system was completely inoperative and banks' loan portfolios continued to deteriorate because no restructuring program was in place.¹³ Adhering to principle 1 was not a priority for the authorities.

In contrast to developments in Argentina, and with a clear example of the costs of inappropriate crisis resolution at hand, the Uruguayan authorities made it a priority to preserve the payments system and contain depositors' loss of confidence. However, an important mistake of the initial policy response was to treat the crisis as a liquidity problem rather than a systemic solvency problem. Thus, the main efforts focused on the provision of liquidity to the banks through a variety of instruments at the disposal of the central bank in its role as a lender of last resort.¹⁴ During the three waves of bank runs from February to June 2002, the central bank provided significant liquidity assistance, especially to those banks identified as critical for the functioning of the payments system. This group of banks included the two public banks, four private banks, and some co-operatives. Foreign banks self-financed their deposit outflows with liquid assets held abroad.

However, despite a widening of the crawling exchange rate band, the provision of liquidity translated into large losses in foreign exchange reserves, a weakened exchange rate, and an increase in the inflation rate. As international reserves experienced a sharp fall, market fears of a potential outcome similar to that in Argentina intensified. Moreover, the role of the central bank as an effective lender of last resort lost credibility as the ratio of international reserves to deposits plummeted. Throughout this period, the Uruguayan authorities made significant efforts in differentiating their policies from those in Argentina. Thus, Uruguay did not impose conversion of dollar deposits into pesos, freeze deposits, or default on external debt.

Still thinking that they were dealing with a liquidity crisis, the authorities created the Fund for Fortify-

ing the System of Banks (FFSF) in June 2002. Initially funded with International Monetary Fund (IMF) resources, this fund aimed at complementing the liquidity provision of the central bank. Because some banks were experiencing solvency problems, the fund was also designed to provide capitalization support. However, soon after its creation, it became apparent that the size of the FFSF was not sufficient to deal with the problems at hand. With international reserves below US\$1 billion, it became apparent that the banking system was experiencing a systemic solvency crisis. In July 2002, the central bank had to intervene in several banks and eventually declared a bank holiday to begin a comprehensive restructuring program.

A Restructuring Program for Uruguay, but Not for Argentina

The initial measures taken by the authorities in Argentina aggravated rather than improved the solvency of banks. As discussed in Gutiérrez and Montes-Negret (2004), the run on banks stabilized in mid-2002 because of a number of measures, including capital controls, the gradual lifting of the deposit freeze, and voluntary swaps of time deposits for government bonds. However, the authorities did not put in place a serious and comprehensive program for bank restructuring to address the solvency issues the banks still faced. In violation of principle 2, Argentina did not discriminate in the treatment of banks according to quality. Indeed, the central bank's early provision of liquidity and rediscounts supported public banks, which, as shown in Table 5.3, were the weakest group of banks in the system at the onset of the crisis. Consistent with these incentives, there was a significant shift, in terms of market share, of deposits from private and foreign banks to public banks, indicating that depositors were not exercising market discipline in their choice of financial institutions. Instead, depositors based their actions on recent experience and the belief that the government would favor public banks. The lack of a restructuring program therefore led to an adverse selection problem and intensified the moral hazard problem typical of banking systems where adequate regulatory and supervisory practices are not in place.

¹³ In early 2002, the congress temporarily suspended legal actions by creditors to collect on their debts. This further undermined the value of contracts and creditors' rights.

¹⁴ These instruments included advances in pesos, an automatic overdraft facility, rediscount of central bank certificates of deposit, and sales of government and central bank paper.

TABLE 5.3 ARGENTINA'S BANKING SOUNDNESS INDICATORS BY OWNERSHIP OF BANKS, 1997-2001
(Percent)

Indicator	December 1997	December 1998	December 1999	December 2000	March 2001	June 2001	September 2001	December 2001
Public banks								
Past-due loans/total credits	15.97	14.03	16.76	18.08	20.37	13.30	15.70	16.86
Loan loss reserves/ past-due loans	52.00	68.89	59.31	58.36	59.50	61.46	70.97	68.57
Liquid assets/deposits	15.40	13.26	12.61	11.15	10.14	13.43	14.08	7.49
Net interest margin	3.03	3.38	3.29	3.71	0.67	2.04	2.84	3.36
Equity/assets	11.84	9.64	8.77	9.51	9.58	9.42	10.52	9.50
Return on assets	0.53	-0.03	0.10	0.19	-0.57	0.02	0.01	-0.48
Loans in dollars/total loans	63.95	70.42	71.54	73.37	74.11	68.95	70.25	77.50
Private domestic banks								
Past-due loans/total credits	6.97	6.29	6.52	8.17	8.82	8.28	9.86	9.68
Loan loss reserves/ past-due loans	75.52	89.14	83.41	75.11	71.42	77.78	75.21	76.25
Liquid assets/deposits	18.60	17.33	12.89	9.54	11.39	18.51	22.63	17.54
Net interest margin	4.03	5.06	4.57	4.21	4.42	4.75	5.33	3.50
Equity/assets	18.23	17.44	16.73	13.26	13.80	15.13	16.63	18.53
Return on assets	1.30	1.39	1.31	-0.96	1.27	1.41	1.41	0.55
Loans in dollars/total loans	61.53	62.60	63.05	67.61	66.95	67.05	63.77	75.65
Private foreign banks								
Past-due loans/total credits	3.83	4.29	4.41	5.59	5.66	5.80	6.19	5.89
Loan loss reserves/ past-due loans	64.67	85.40	89.94	85.51	84.91	85.88	83.79	100.56
Liquid assets/deposits	18.73	10.96	10.75	9.09	10.86	19.80	17.44	22.50
Net interest margin	4.01	3.97	4.17	4.26	4.47	4.55	5.25	5.66
Equity/assets	13.19	8.61	8.20	8.33	8.24	8.53	10.20	9.91
Return on assets	1.21	0.64	0.61	0.87	0.92	0.87	0.86	0.01
Loans in dollars/total loans	69.42	68.85	68.86	55.60	67.13	68.50	48.29	70.65

Source: Salomon Smith Barney, Central Bank of Argentina.

In contrast to the experience in Argentina, the authorities in Uruguay were able to secure “credible funds” to finance the implementation of a comprehensive restructuring program. The success of the strategy to stabilize deposits was rooted in the ability of the Uruguayan authorities to quickly negotiate an IMF program. The program aimed to do the following: (i) provide the Fund for the Stability of the Banking System with sufficient resources to fully back U.S. dollar sight and saving deposits of the major domestic banks; (ii) reprogram the maturities of U.S. dollar time deposits in public banks; and (iii) restructure intervened domestic banks. Another key difference was the fact that the “rules of the game” for foreign banks remained intact. That is, the authorities did not impose conversion of deposits into pesos or a deposit freeze but

instead effectively allowed foreign banks to fulfill the role of lender of last resort that they claimed to have.¹⁵

The shift in gears in the policy actions of the Uruguayan authorities from a program designed to use central bank liquidity as a major source of funding to a program aimed at restructuring the banking sector with noninflationary funds was in compliance with principle 1 for successful crisis resolution. In addition, the actions taken to liquidate insolvent banks without unduly penalizing depositors were in adherence with principle 2. In early 2003, a new bank was created with the good assets of three liquidated banks. The new bank was de-

¹⁵ The relatively smaller size of the claims for the case of Uruguay may have had a bearing on the nature of banks' responses compared with the case of Argentina.

signed as a fully commercial bank, temporarily owned by the government, but under private management. If, as planned, the bank were successfully privatized in the near future, principle 2 would be reinforced.

The extent to which principle 3 is fully achieved will depend on the pending issues regarding the restructuring of the public banks and the disposal of the remaining assets from the liquidation of insolvent banks. Improving the soundness of public banks in Uruguay is essential for the restoration of the banking system to become a permanent achievement.

In the meantime, markets have rewarded Uruguay's compliance with the principles for effective banking crisis resolution. After skyrocketing in mid-2002, spreads on sovereign bonds decreased significantly and began to approach pre-crisis levels. Moreover, in October 2003, Uruguay regained access to international capital markets and was able to place a peso-denominated, inflation-indexed bond. These developments sharply contrast with those in Argentina, where sovereign spreads remain at extremely high levels.

LESSONS FROM EXPERIENCE

The experiences analyzed in this chapter indicate that the process of banking crisis resolution is crucial in battling financial disintermediation and assessing the capacity of a banking system to avoid future crises. The reason is straightforward: A successful bank restructuring program provides the right incentives for avoiding excessive risk-taking by banks. Because an adequate resolution process improves public confidence in the capacity of the authorities to tackle future problems, the banking system becomes more resilient to future adverse shocks and contagion. Still, the establishment of resilient institutions represents a challenge for Latin America. Although, as in the case of Argentina, a country may have successfully battled a crisis in the past by adhering to crisis resolution principles, ensuring financial intermediation, and providing the right incentives, it is clear that strong political pressures can change all that.

In reviewing the experience of several banking crisis episodes in Latin America over the past two decades, six major lessons emerge. First, good banking crisis management must begin with three basic principles: muster the political will to channel noninflationary funds to solve the crisis, ensure that parties responsible for the crisis bear most of the costs of restructuring, and take prompt action to prevent problem banks from expanding credit to delinquent borrowers. An examination of experiences of restructuring banks in Latin America in-

dicates that the key for a successful program is strong commitment to adherence to these three principles.

Second, experience shows that attaining sufficient political will to give priority to prompt and effective resolution of the banking crisis is the most difficult challenge to overcome. As the experiences of Mexico in 1995 and Argentina in 2001–02 demonstrate, political pressures tend to impede the implementation of a successful restructuring program. The delays and failures of implementation simply raise the cost of crisis resolution.

Third, while the three basic principles for banking crisis resolution are the same for developed and developing countries, constraints differ significantly and are much more severe in developing than in developed countries. These constraints include availability of funding, availability of markets to dispose of nonperforming assets and institutions, and lack of regulatory independence to put in place a restructuring program. An important constraint present in all crisis resolution episodes in Latin America is the loss of access to international capital markets.

Fourth, although Latin American policymakers face similar obstacles in resolving banking crises, there is no unique formula for success. For example, extension of loan maturities to give borrowers time to return to solvency is a common element of banking crisis management in the region. Because banks in the region face volatile short-term funds markets, regulators must find ways of removing the risks created by maturity extension policies from bank balance sheets.

Fifth, a crisis should be used as an opportunity to strengthen supervision and improve the quality of bank management. This was the strategy followed by Argentina in 1995. In this regard, it is extremely disappointing to see the backslide in depositors' confidence due to the current process of resolving financial difficulties.

Sixth, foreign banks can play an important role during a systemic banking crisis in two ways. One, to the extent that foreign banks are perceived as relatively stronger than local banks, bank runs might be contained to a shift of deposits from local to foreign banks, limiting capital flight. And two, experience demonstrates that if the policies of the local authorities aim at preserving the payments system and achieving a rapid resolution of the crisis without changing the rules of the game (such as the forced currency conversion of deposits and loans), headquarters of foreign banks could provide lender of last resort facilities to their subsidiaries and even capitalization funds, limiting the cost of the crisis. This was the case in Uruguay in the early 2000s.

These conclusions lead to the following policy

question: What can the authorities do to ease constraints in order to reduce the cost of resolving banking crises? The only certain means of loosening constraints in Latin America is to build credibility in policies and institutions, which takes time. Even policies that are designed to reduce constraints directly, such as forced savings schemes, can work only when authorities pursue policies to build credibility. For example, mandatory pension funds can be useful as a means of relaxing funding constraints. However, these programs will

work only if investors have confidence in the economy. If policies are volatile and institutions are weak, some investors will react to forced savings plans by removing funds from voluntary savings vehicles, such as bank deposits.

How can authorities know that they have been successful in relaxing constraints for resolving banking difficulties? This will happen when funds markets do not dry up in a crisis—a feature present today primarily in developed countries.

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Bank Regulation and Supervision

THE regulation and supervision of banks are key elements of a financial safety net. By providing well-defined prudential guidelines and enforcing them, the safety net can guarantee that risk-taking is limited or at least provided for in a proper manner and hence can reduce the likelihood of systemic crises.

There are two classic arguments for banking regulation. First, it protects small and unsophisticated depositors. Given their small size and fragmentation, individual depositors do not have the ability to monitor whether bank managers are acting prudently and on their behalf. The regulator in such cases represents the depositors. Capital regulation and the requirement to inject new capital when necessary or face closure may be a way to (re)create the incentives present in nonfinancial firms for managers to act on behalf of shareholders, or depositors in the case of a financial firm (see Dewatripont and Tirole 1994).

The second rationale stems from the need to protect the payments system and the financial system more generally. On certain occasions, otherwise solvent banks may be subject to pure liquidity runs (see Diamond and Dybvig 1983). Moreover, if depositors run against a weak bank, they may also run against healthier banks in the system, in what is frequently referred to as contagion. Contagious bank runs may have significant negative effects on the rest of the economy and hence are generally thought to be costly, especially if they affect otherwise healthy banks or prevent the normal functioning of the payments system. In particular, if otherwise healthy banks fail, their private client information may be lost and the economy may suffer a general “credit crunch.”

One way to prevent such runs is for the central bank to promise liquidity to solvent banks—that is, for the central bank to provide lender of last resort services (see Box 6.1). However, the promise of such liquidity may weaken banks’ incentives to reduce risks. A second mechanism to prevent liquidity runs is the provision of deposit insurance. However, if depositors are insured, the link between the required rate of return and the underlying risk of the bank is broken, and once again the incentives of bank owners and managers may change.

These shifts in incentives are normally referred to as moral hazard. Capital regulations may then be seen as an attempt to counteract the moral hazard created by the existence of a safety net.

It remains difficult to justify the complex web of banking regulations present in most countries solely on the basis of these theories. One view is that banking regulators respond to managerial incentives toward “empire building.” However, the official sector appears to place greater stress on the overall costs of systemic banking crises. From this perspective, intervening through prudential regulation and supervision is justified on the basis of reducing general banking sector risks to avoid the potential negative externalities of crises on the rest of the economy.

Indeed, there is a wide and well-established body of literature, largely from the official sector, that develops a best-practice tool kit of banking regulation and supervision. Perhaps the most coherent official report promoting banking stability remains that produced by the G22 in 1988.¹ The G7’s formation of the Financial Stability Forum and its focus on financial systems further underlines the importance of developing good banking regulations. This body officially endorsed the Basel Core Principles for Effective Banking Supervision and the 1988 Basel Capital Accord as two key financial standards with which countries should aim to comply as minimum requirements.² The Basel Core Principles cover a wide terrain, including supervisory independence powers and resources, actual regulations (including capital regulations), and the process of banking supervision. These principles represent the most highly developed checklist of internationally accepted good practice produced to date.

Despite the existence of such accepted best practices and the large number of official reports extolling their virtues, there is a surprising deficiency of empirical analyses as to whether they truly deliver the adver-

¹ Available on <http://www.imf.org/external/np/g22/>.

² The changes to the 1988 accord that are underway, encapsulated in what is now known as Basel II, and their implications for Latin America are discussed in Chapter 16.

BOX 6.1 | PRINCIPLES FOR AN EFFECTIVE LENDER OF LAST RESORT

The lender of last resort, usually the central bank, plays a key role in the financial safety net. It provides liquidity to banks in case of temporary liquidity shortages in order to minimize possible disruptions in credit, the payments system, and the stability of the banking sector. The main driving principle for the lender of last resort is known as Bagehot's principle, which states that liquidity assistance should be provided to illiquid but solvent banks in order to avoid bank failure.¹

Liquidity risk is derived from the fact that banks transform short-term liabilities (deposits) into long-term assets (loans). Usually banks hold a small fraction of their assets in short-term instruments (10–20 percent). The mismatch between the maturity of assets and liabilities implies a risk, given that if depositors were to withdraw more deposits than what the bank holds in short-term assets, the bank would not be able to pay those deposits immediately because it would need to liquidate long-term assets. Management of liquidity risk is further complicated by the fact that deposits have to be paid at face value, while loans are illiquid and more difficult to value, especially in times of financial distress.

If a bank faces a liquidity shortage, depositors may panic and a bank run may occur. Despite difficulties in managing liquidity risks, banks have dealt effectively with liquidity risk, and bank runs are scarce episodes. However, when bank runs happen, they can be extremely traumatic. The main concern for authorities is that a run on an individual bank can lead to a systemic run. By providing liquidity to banks that have a temporal shortage, this type of panic can be avoided.

Banks can cover liquidity shortages in the interbank market or by using the lender of last resort.

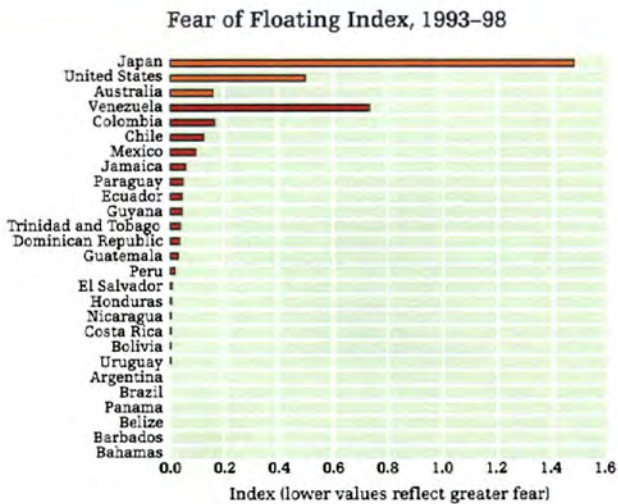
The interbank market works well when liquidity requirements are small, short term, and needed by only a few banks. In episodes of turmoil, this type of provision of liquidity fails because it becomes difficult for liquid banks to assess whether banks in need are really facing a liquidity problem or, on the contrary, are insolvent. Moreover, given that there is a risk that the problem might be generalized, liquid banks tend to act more conservatively and protect their own liquidity instead of lending it to others.

Given that there is a risk that the market will refuse to lend to a healthy bank and thus destabilize the system, there is justification for public intervention through the provision of lender of last resort services. However, the existence of a lender of last resort can lead to moral hazard and excessive risk-taking, which has led analysts to suggest that the lender of last resort must not announce its liquidity provision policy beforehand. Instead it should follow a relatively ambiguous policy and motivate banks to adopt conservative liquidity management strategies. This is known as following a policy of "constructive ambiguity."

Aside from following a relatively ambiguous policy, central banks usually provide last resort liquidity at high interest rates in order to discourage banks from accessing this source of liquidity unless they truly need it. If a bank is suffering from solvency rather than liquidity problems, the solution should not go through the lender of last resort, but rather through the mechanisms for bank liquidation and crisis resolution that the banking authority has at its disposal. In practice, distinguishing between liquidity and solvency problems is a nontrivial task. Nonetheless, the banking authority usually has enough information and qualified staff to assess the solvency status of a bank.

tised benefits. A notable exception is an empirical paper based on a recent survey by the World Bank that raises "a cautionary flag regarding reform strategies that rely on checklists of regulatory and supervisory practices that involve direct government oversight" (Barth, Caprio, and Levine 2004). The next section of this chapter reviews the available literature.

One potential explanation for the results obtained is that while countries may claim to have a version of best-practice regulation and supervision, actual implementation is far from ideal. This chapter analyzes recent data from the IMF and World Bank Financial Sector Assessment Program specifically regarding the implementation of the Basel Core Principles. The anal-



Note: Values are averages based on monthly data.
Source: IDB calculations.

In many cases the central bank faces severe constraints on its ability to act as the lender of last resort. The central bank's mandate is to control inflation, and in some cases the provision of liquidity may affect that goal, particularly when a crisis is systemic. In such a case, there is a trade-off between financial and price stability.

The literature describes a related issue of concern, the "fear of floating," that is, central banks' possible reluctance to let the nominal exchange rate substantially accommodate shocks. This behavior can be rationalized as a response to the fear that swings in the exchange rate may destabilize domestic prices (and inflation targets), or to the concern that balance sheet effects, particularly in economies with dollar liabilities, may introduce bankruptcy pressures on borrowers. The figure above displays a fear of floating index akin to that used by Calvo and

Reinhart (2002), which compares countries in Latin America and the Caribbean with developed countries that are known for being exchange rate floaters (as is the case of Australia, Japan, and the United States). The low values for the former set of countries relative to Japan or the United States indicate that, before the effects of the Russian crisis of 1998, fear of floating was common in Latin America.

Countries that experience fear of floating (a common feature of emerging markets) may have limited room to work as a lender of last resort under systemic crises. The large monetary expansion typically needed to contain bank illiquidity may put substantial pressure on the exchange rate, especially if the additional liquidity ends up depleting the central bank's international reserves as depositors flee the banking system for safer havens abroad.

The inability of central banks to act as a lender of last resort under systemic banking crises reflects their inability to become borrowers of last resort (see Calvo 2000). Capital markets may remain closed for emerging market governments in times of crisis. When authorities cannot borrow to finance the needed liquidity of troubled banks, their only available option is monetary expansion, which may very well lead to a macroeconomic crisis. This is not the case in developed countries, where governments can effectively borrow in times of crisis to assist troubled banks without generating macroeconomic pressures.

¹ Walter Bagehot was a British economist who wrote *Lombard Street: A Description of the Money Market* (in 1873) and who, according to Goodhart and Illing (2002), is the classic reference on dealing with banking crises.

ysis supports the view that implementation, rather than regulations (or de jure supervisory power), remains a serious issue.

At the same time, there may be issues particularly pertinent to Latin America and the Caribbean that international best practices do not cover explicitly or do not stress sufficiently. Two such issues relate to the

treatment of dollar lending and the exposure of the banking sector to government risk. However, traditional problems of related lending, poor supervision, and delayed action persist, as illustrated by the recent case of the Dominican Republic. The chapter discusses these issues together with actual and potential regulatory responses.

BEST-PRACTICE BANKING REGULATION AND SUPERVISION

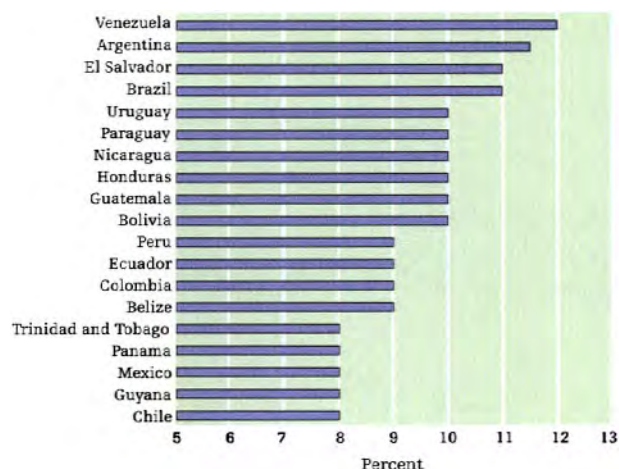
The World Bank has developed a comprehensive database on regulatory practices, based on a survey of bank regulators around the world, in an effort to fill the gap between policy advice and empirical evidence.³ The data allow interesting comparisons across countries or groups of countries with respect to regulatory standards and supervisory practices. For example, one of the most remarkable features of the data is that there appears to be no difference in the overall measure of official supervisory power in developed and developing countries.⁴ Furthermore, developing countries appear to have lower supervisory forbearance discretion, greater loan classification stringency, and greater provisioning stringency—although lower capital stringency—relative to developed countries.⁵

Although the responses of regulators suggest that the official supervisory powers of developing country regulators are similar to their developed country counterparts, IMF and World Bank assessments tell a different story. These external assessments of compliance with the Basel Core Principles show that developing countries perform significantly worse than developed countries when it comes to supervisory autonomy and powers. The comparison between the assessments and the survey data suggest that de jure powers may differ from de facto powers.

The World Bank survey shows that *all Latin American and Caribbean countries* state that they follow a Basel methodology for calculating and expressing capital requirements, and 16 countries out of 31 respondents say that their requirements are stricter than Basel's 8 percent recommended minimum.⁶ Actual capital requirements across the region are illustrated in Figure 6.1.

Barth, Caprio, and Levine (2004) use regression analysis to test the significance of various regulatory measures and supervisory practices in explaining cross-country observations of the following outcome variables: bank development, bank profitability, overhead costs, nonperforming loans, and banking crises. The striking result is that few of the regulations and supervision practices analyzed are significant in explaining any of the outcome variables. The two variables that do appear as significant in the empirical analysis are private sector monitoring and, to lesser extent, restrictions on bank activities. In their analysis of banking crises, the capital regulatory index is significant in most specifications. The study also attempts to test whether countries that have more generous deposit insurance schemes

FIGURE 6.1 Capital Requirements in Latin America



Source: World Bank, Bank Regulation and Supervision online database.

control moral hazard through stricter capital regulations; it concludes that they do not.⁷

The measures of official supervisory power used in the Barth, Caprio, and Levine study do not seem to explain the outcome variables, but it is not clear whether this indicates that real supervisory power is irrelevant or simply that de jure power is irrelevant. As the macroeconomic literature on central bank independence

³ See Barth, Caprio, and Levine (2001, 2004). The database was updated in 2003 and is available at http://www.worldbank.org/research/projects/bank_regulation.htm.

⁴ Official supervisory power measures the extent to which official supervisory authorities have the authority to take specific actions to prevent and correct problems. See Barth, Caprio, and Levine (2004).

⁵ Developing countries also appear to have a much lower moral hazard index based on variables related to deposit insurance schemes.

⁶ Interestingly, two economies—Mexico and Puerto Rico—state that subordinated debt is a required part of capital.

⁷ However, this does not negate the fact that in the regression the simple capital regulatory index coefficient is significant. Independent of the generosity of the deposit insurance scheme in place, stricter capital requirements appear to reduce the likelihood of banking crises. Barth, Caprio, and Levine (2004) state that the relationship between the probability of banking crises and the capital requirement stringency variable is not robust. In their analysis, this variable always has a negative sign and tends to be significant at least at the 10 percent level in specifications that include the moral hazard index. Although the interaction between capital requirement stringency and moral hazard is not significant, the two variables tend to become significant when each is included in the regression (the correlation between the two is not high), indicating that capital requirements help to diminish the likelihood of crises, but not more strongly when deposit insurance is more generous.

stresses, there may be little correlation between legal and actual independence.

Another issue is that while some banking crises may have been due to problems within the banking sector or deepened by underlying fragilities in the financial system, others have clearly resulted from macroeconomic events. Empirical analyses have not captured this distinction; they have labeled all banking crises as the same in constructing the dependent variable for these analyses. The point is that while banking regulations may not reduce the probability of a macroeconomic-induced banking crisis, they may reduce the probability of a crisis that emanates from the banking system itself.

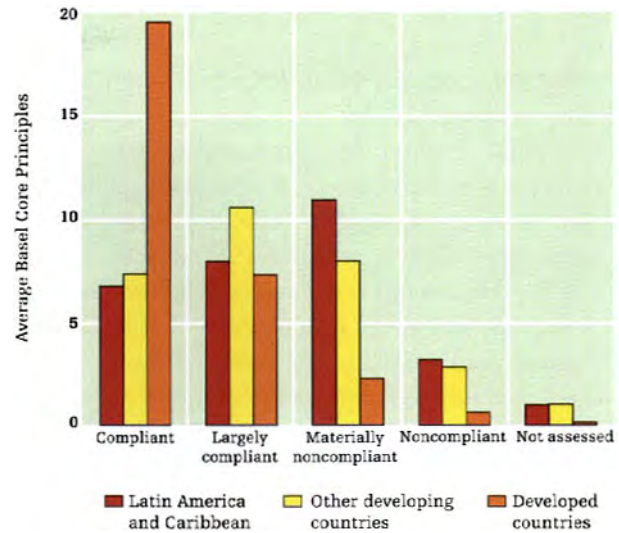
The preliminary conclusions from the work undertaken to date are that while more stringent capital requirements appear useful in reducing the likelihood of banking crises, and restricting banking activities may also help, most other measures of de jure regulations do little to improve bank performance or reduce banking fragility. In particular, how supervisors' powers are defined appears to be almost irrelevant. Interestingly, although private sector discipline appears significant in improving bank performance, it is not significant in reducing the likelihood of crises. However, a moral hazard index related to the generosity of deposit insurance is highly significant in explaining banking crises.

BANKING REGULATION AND SUPERVISION IN LATIN AMERICA

The previous section focused on the responses to a survey of official bank supervisors. This section considers data from external assessments, which were performed by the IMF and the World Bank as part of the Financial Sector Assessment Program and relate specifically to compliance with the Basel Core Principles. In terms of many indicators, the Latin America and Caribbean region lies between the average developing country and the average developed nation. Compared with the survey data, the external assessment data give a less optimistic picture.

There are a total of 30 Basel Core Principles for Effective Banking Supervision.⁸ Box 6.2 describes the principles, which are normally divided into seven chapters: objectives, autonomy, powers, and resources; licensing and structure; prudential regulations and requirements; methods of ongoing supervision; information requirements; formal powers of supervisors; and cross-border banking. The assessment finds a country compliant, largely compliant, materially noncompliant, or noncompliant for each principle that is assessed.

FIGURE 6.2 Compliance by Average Country Type



Source: World Bank/IMF Financial Sector Assessment Program.

Figure 6.2 illustrates that the average country in Latin America and the Caribbean is compliant with only 6.8 of the 30 principles and largely compliant with only another 8. Latin America and the Caribbean is compliant and largely compliant with fewer of the principles than other developing countries, and both Latin America and the Caribbean and other developing countries lag considerably behind developed countries.

Figure 6.3 gives a more detailed picture of the degree of Latin America and the Caribbean's compliance by principle. The region does particularly poorly in three key areas:

- Only 10 and 20 percent of the countries included are compliant with principles 1(2) (operational independence and resources of the regulatory agency) and 1(5) (suitable legal framework and legal protection for supervisors), respectively, and only 20 percent are compliant with principle 22 (remedial measures).
- Only 10 percent of the countries are compliant with principles 6, 8, 9, and 12, and none is compliant with principle 13. These principles refer to prudential regulations and requirements, including capital adequacy (principle 6), loan evaluation and loan loss provisioning (principles 8 and 9), and market risks and other risks, including interest rate and liquidity risk (principles 12 and 13).
- An area that has proven to be an Achilles heel for the region is the link between banks and other fi-

⁸ Strictly speaking there are 25 core principles, but principle 1 is subdivided into six subprinciples.

BOX 6.2 | BASEL CORE PRINCIPLES FOR EFFECTIVE BANKING SUPERVISION*Chapter 1. Objectives, Autonomy, Powers, and Resources (CP 1)*

Principle 1. Objectives, Autonomy, Powers, and Resources. An effective system of banking supervision will have clear responsibilities and objectives for each agency involved in the supervision of banks. Each such agency should possess operational independence and adequate resources. A suitable legal framework for banking supervision is also necessary, including provisions relating to authorization of banking establishments and their ongoing supervision, powers to address compliance with laws as well as safety and soundness concerns, and legal protection of supervisors. Arrangements for sharing information between supervisors and protecting the confidentiality of such information should be in place.

Principle 1(1). An effective system of banking supervision will have clear responsibilities and objectives for each agency involved in the supervision of banks.

Principle 1(2). Each such agency should possess operational independence and adequate resources.

Principle 1(3). A suitable legal framework for banking supervision is also necessary, including provisions relating to authorization of banking establishments and their ongoing supervision.

Principle 1(4). A suitable legal framework for banking supervision is also necessary, including powers to address compliance with laws, as well as safety and soundness concerns.

Principle 1(5). A suitable legal framework for banking supervision is also necessary, including legal protection for supervisors.

Principle 1(6). Arrangements for sharing information between supervisors and protecting the confidentiality of such information should be in place.

Chapter 2. Licensing and Structure (CPs 2–5)

Principle 2. Permissible Activities. The permissible activities of institutions that are licensed and subject to supervision as banks must be clearly defined, and the use of the word “bank” in names should be controlled as far as possible.

Principle 3. Licensing Criteria. The licensing authority must have the right to set criteria and reject applications for establishments that do not meet the

standards set. The licensing process, at a minimum, should consist of an assessment of the banking organization’s ownership structure, directors, and senior management; its operating plan and internal controls; and its projected financial condition, including its capital base. Where the proposed owner or parent organization is a foreign bank, the prior consent of its home country supervisor should be obtained.

Principle 4. Ownership

Principle 5. Investment Criteria

Chapter 3. Prudential Regulations and Requirements (CPs 6–15)

Principle 6. Capital Adequacy

Principle 7. Credit Policies

Principle 8. Loan Evaluation and Loan Loss Provisioning

Principle 9. Large Exposure Limits

Principle 10. Connected Lending

Principle 11. Country Risk

Principle 12. Market Risks

Principle 13. Other Risks

Principle 14. Internal Control and Audit

Principle 15. Money Laundering

Chapter 4. Methods of Ongoing Supervision (CPs 16–20)

Principle 16. On-site and Off-site Supervision

Principle 17. Bank Management Contact

Principle 18. Off-site Supervision

Principle 19. Validation of Supervisory Information

Principle 20. Consolidated Supervision

Chapter 5. Information Requirements (CP 21)

Principle 21. Accounting Standards

Chapter 6. Formal Powers of Supervisors (CP 22)

Principle 22. Remedial Measures

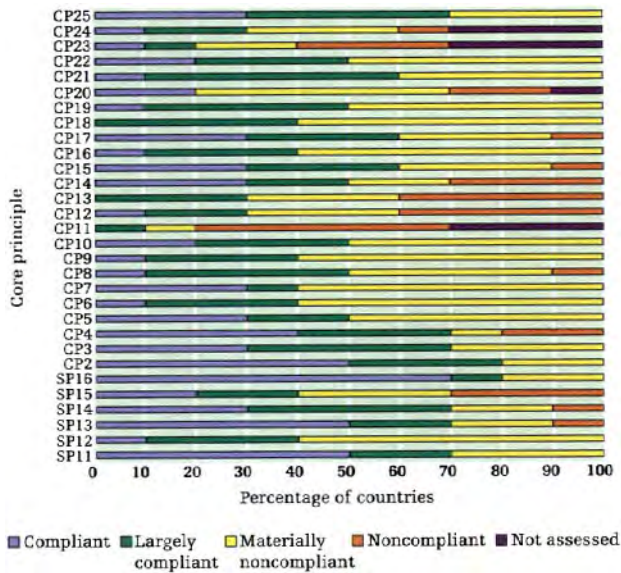
Chapter 7. Cross-Border Banking (CP 23–25)

Principle 23. Globally Consolidated Supervision

Principle 24. Host Country Supervision

Principle 25. Supervision over Foreign Banks’ Establishments

FIGURE 6.3 Latin America and the Caribbean's Compliance with Basel Core Principles



Source: World Bank/IMF Financial Sector Assessment Program.

financial companies, including offshore entities. Unfortunately there is also a pattern of noncompliance with core principles 20 and 23, related to consolidated supervision on a national and global basis, respectively.

Principles 1.2 (supervisory independence and resources) and 1.5 (suitable legal framework and legal protection for supervisors) and remedial measures (principle 22) are related in that, frequently, supervisors do not take appropriate remedial measures precisely because of a lack of supervisory independence. In turn, there may be a lack of supervisory independence because supervisors lack effective legal protection. In common with debates regarding the independence of central banks, the issues are whether supervisors are legally independent and whether they can act independently in practice. Without effective legal protection it is questionable how independent a supervisory agency can really be.

A lack of real supervisory independence can affect how all regulations function. Political or legal pressures may cause officials to overlook noncompliance regulations (forbearance) and may produce loose monitoring of sensitive issues, such as lending to companies or individuals related to the bank or with political connections. Moreover, there is often a relation between lack of political independence and adoption of inefficient resolution measures when problems arise. Inefficient resolution measures that may favor particular groups or leave problems unresolved because of political or oth-

er constraints can ultimately be costly for society as a whole. The resources, political independence, and legal protection of bank supervisors remain key areas for improvement of banking oversight in the region.

The combination of Latin America and the Caribbean's high stated capital requirements and the poor assessment of principle 6 (capital adequacy) at first sight also appears somewhat inconsistent. However, capital adequacy according to compliance with the Basel Core Principles does not necessarily imply just being compliant with Basel I. First, although all countries state that they follow a Basel methodology to calculate assets at risk, there are various interpretations of what a Basel methodology implies. Second, an assessment of whether capital is adequate must first determine whether accounting practices value assets appropriately, non-performing loans are treated appropriately, and banks have reasonable provisions.⁹ Third, although countries may state a headline Basel I capital requirement, the reality may be quite different if exceptions are granted frequently or remedial action is weak. Fourth, the assessment may conclude that Basel I's 8 percent is not enough and that capital requirements should be higher than the recommended minimum, given the risks of banks in the country concerned.

Furthermore, it appears that risk analysis is also inadequate. Poor compliance with the core principles regarding loan analysis and loan evaluation and the regulation of market and other risks is of grave concern. Credit risk remains perhaps the most important risk faced by banks in the region, but liquidity, interest rate, and currency risks have also proven to be highly significant. Clearly this is an area that urgently requires improvements.

The lack of consolidated supervision in many countries implies that supervisors do not have the legal authority (assuming they have the resources) to properly analyze the risks facing regulated institutions. Moreover, the lack of consolidated supervision may prove to be a significant hurdle if the region wishes to adopt Basel II. This is an area where banking supervisors must attempt to gain political support to increase their authority and ensure adequate resources for the task at hand. Moreover, as banking becomes ever more globalized, this is an area that will increase in importance in the future.

Empirical results to date, with the possible exception of results for capital requirement stringency, do

⁹ More modern theory would recommend provisions that would cover expected losses such that capital would cover unexpected losses to a reasonable level of statistical tolerance.

not point to bank regulation or supervisory powers as being critical in improving bank performance or preventing banking crises. However, these results must be tempered by the fact that assessments of compliance with the Basel Core Principles find that supervisory independence, effective legal protection, and remedial measures are very poor for developing countries and for Latin America and the Caribbean in particular. Indeed, the data on compliance with the Basel Core Principles indicate that while all countries claim to follow a Basel methodology for capital, few actually have adequate capital for the job at hand. It is unclear whether the problem lies with the regulations themselves or inadequate implementation of the regulations.

KEY VULNERABILITIES IN BANKING SECTORS IN LATIN AMERICA

Recent financial crises in the region, from Argentina to the Dominican Republic and from Ecuador to Uruguay, have brought attention to a set of key vulnerabilities regarding appropriate bank regulation and supervision. This section discusses two such issues: loans to the public sector and dollarized lending. However, at the same time, bank regulators and supervisors cannot be complacent regarding the more traditional risks of concentrated and related lending that were largely behind the recent crisis in the Dominican Republic. Box 6.3 presents a brief summary of how that crisis unfolded and its subsequent effects.

The question of loan concentration and related lending is addressed in Basel Core Principle 10. Compliance in Latin America and the Caribbean continues to be poor (only 20 percent of countries are compliant, although another 30 percent are largely compliant). However, there is no mention of related lending for the calculation of Basel I capital requirements, and Basel II's proposals on this issue are relatively lax compared with the current rules in many countries in the region. Basel II allows lending to related parties, but any lending above a certain fraction of bank capital to one related party (or above a second fraction to all related parties) must be subtracted from capital. Many Latin American and Caribbean countries simply impose strict limits (as a percentage of bank capital) on lending to a related party. The limit varies, with the tightest rule in Ecuador, where the figure is zero. Only seven of the 31 Latin American countries have quantifiable rules on lending concentration.¹⁰ Assessments of the Basel Core Principles indicate poor compliance indeed with Basel Core Principles 9 and 13, which cover this area (large

exposure limits and other risks, respectively). Given the experience in the Dominican Republic and previously in other countries with banking crises in the region, this is an area that urgently requires some type of international standard—above and beyond the Basel Core Principles and the current drafts of Basel II.

Two of the major risks faced by Latin American banks are related to issues not covered explicitly in the Basel Core Principles or the Basel Capital Accords. On the one hand, Latin American banks are highly exposed to own-government risk; on the other hand, in most countries currency risk remains a major threat.

Lending to the Sovereign

During the past several years, bank lending to national governments has increased dramatically. Figure 6.4a plots the trend of the ratio of bank loans to the public sector (including direct lending and holding government bonds) to total assets in the banking system. In the mid-1990s, bank holding of public debt was around 9 percent of the banking system's total claims; by 2002 the ratio averaged 16 percent. As shown in Figure 6.4b, in Mexico, Argentina, Jamaica, and Brazil, it reaches more than one-third of total claims. In Colombia and Venezuela, the ratio is nearly one-fourth of total claims.

It is natural that in times of crisis banks look for safe assets in order to reduce the risk of their portfolio. What is troublesome is that the risks of taking such positions are not dealt with efficiently, and regulation induces the holding of government debt by assigning low-risk weights to assets that, at least in the view of the markets, are far from risk-free. When negative shocks hit the economy, banks substantially increase their holdings of government debt, the riskiness of which also tends to increase with the crisis.

Table 6.1 summarizes legislation on the treatment of public debt in 11 Latin American countries. It is remarkable that in virtually none of the countries in the sample is there any consideration of the risk levels of government debt. In all countries except for Chile and Ecuador, the central government is given a zero risk weight.¹¹ Moreover, in most countries government

¹⁰ The exact wording of the question in the Barth, Caprio, and Levine (2004) survey is, "Are there explicit, verifiable, and quantifiable guidelines regarding asset diversification (for example, are banks required to have some minimum diversification of loans among sectors, or are there sectoral concentration limits)?"

¹¹ Subregional government debt is given a higher risk weight almost everywhere, but bank holdings are primarily central government debt.

BOX 6.3 | THE BANKING CRISIS OF THE DOMINICAN REPUBLIC

Throughout the 1990s, the Dominican Republic was the fastest growing economy in Latin America and the Caribbean. The country achieved fast economic growth in an increasingly stable macroeconomic environment, characterized by low inflation, manageable fiscal deficits, and declining public sector debt. During 2001–02, a combination of external factors (the global economic slowdown and the events of September 11, 2001) and domestic policy weaknesses contributed to a slower economic growth rate. The government responded with increased public spending, which led to worrisome but still manageable deficits, largely financed by foreign borrowing. Waning confidence in the adequacy of macroeconomic policies in the face of external pressures led to a weakening of the peso, which depreciated by 27 percent against the dollar between December 2001 and December 2002.

In 2003, a massive banking crisis shattered the already weakened economy. In April 2003, the third-largest commercial bank, Baninter, collapsed. To avoid the spread of a crisis of confidence to the rest of the financial sector, the central bank stepped in by guaranteeing all of Baninter's deposits. In the months following this intervention, two medium-size banks, Bancredito and Banco Mercantil, experienced large deposit withdrawals.

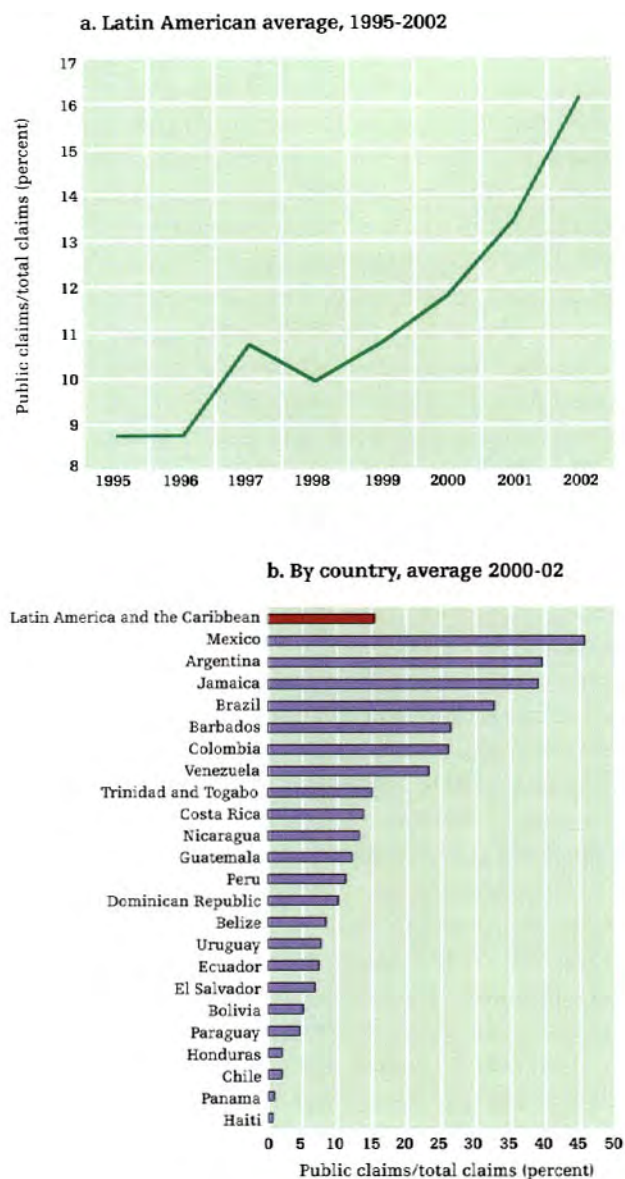
The Baninter collapse was the outcome of mismanagement and fraudulent banking practices as well as a weak banking supervision framework. The circumstances permitted perpetration of massive fraud in the banking system over an extended period, which revealed serious supervisory and regulatory weaknesses in the financial system and institutional failures in key government institutions. The banking system was suffering from systemic vulnerabilities resulting from major weaknesses in all supervisory agencies, insufficient levels of capitalization and provisioning, significant exposure to credit risks resulting from a large concentration of loans among a small group of borrowers, insufficient safeguards against related lending, and a substantial proportion of loans to unhedged foreign currency borrowers. Imperfections in the interbank market compromised the capacity of banks to respond quickly to deposit runs.

Compliance with the Basel Core Principles

was incomplete and weak. Increased dollarization of bank assets and liabilities had increased credit risk due to lending in foreign currency to non-earners of foreign exchange, and distortions in the foreign exchange market created uncertainty about the timely availability of foreign exchange for individual banks. Multiple linkages between certain private and public financial entities compromised the efficiency of financial intermediation and impaired the transparency of financial operations. Furthermore, a complex network of nonbank financial institutions had resulted in a wide variety of regulations that engendered regulatory arbitrage, due to gaps in the institutional framework and poor financial practices.

The macroeconomic implications of the 2003 banking crisis have been dramatic. The approach pursued by the government may have helped limit contagion in the banking system, but it also increased resolution costs and placed macroeconomic stability at risk. The central bank's quasi-fiscal deficit amounted to 2.5 percent of GDP as a consequence of the banking crisis, and the deficit of the nonfinancial public sector has grown to 2.7 percent of GDP. Public debt more than doubled from 27.5 percent of GDP in 2002 to an estimated 58.4 percent in 2003. The central bank's assistance to the troubled banks is estimated to amount to 21 percent of GDP so far. Since part of the liquidity support was not sterilized, the higher monetary expansion fueled currency depreciation and inflation.

In August 2003, the authorities started implementing an economic stabilization program in the context of an IMF-supported 24-month stand-by arrangement. The economic stabilization program includes measures aimed at ensuring banking sector reform, sound fiscal policy, sound monetary policy, and flexible management of the currency. It also includes structural measures to implement a new organic budget law and a new, integrated financial management system law. In the monetary sector, the program will implement a competitive auction for the placement of central bank paper, a rediscount window to provide liquidity to central bank paper, a plan for the recapitalization of the central bank, and the unification of the foreign exchange market.

FIGURE 6.4 Bank Holdings of Public Debt

Note: Latin American countries included in Figure 6.4a are Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela.

Source: IDB calculations based on IMF and World Bank data.

debt is valued at face value rather than at market value, clearly an improper valuation of government risk in banks' balance sheets.

While there are complex political economy problems involved in changing regulations on the treatment of public debt in bank balance sheets, given

that bank funding represents an important source of revenue for troubled governments across the region, it is certainly a problem that bank regulators need to face. Unfortunately, international standards do not provide effective ways of dealing with this, particularly in developing countries. It remains exclusively in the hands of local regulators to guarantee the safety of the deposits that back government bond holdings.

Currency Mismatches

As shown in Figure 6.5a, financial dollarization has been growing in Latin America over time despite a major reduction in inflation and a shift toward fiscal consolidation and central bank independence. Although in principle dollarization can exacerbate a typical Latin American economy's vulnerability to adverse shocks (for example, sudden stops), it is likely to remain a key feature in the region. In fact, it is difficult to think of political economy incentives strong enough for policymakers to come up with explicit policy programs designed to actively reduce dollarization in the region in the near future. As dollarization seems likely to remain significant in the region, it is important to discuss how to cope with it while mitigating its potentially harmful effects. Current international regulatory practices do not deal with this risk explicitly.

Dollarization of private and public sector assets and liabilities is widespread throughout Latin America. As part of a comprehensive set of structural reforms—some of which came in the aftermath of financial crisis and hyperinflation—many Latin American countries liberalized and reformed their financial markets. In the process, strong linkages to the U.S. dollar were developed, frequently through the adoption of fixed or quasi-fixed exchange rate arrangements, in a context of increased capital mobility. In many countries restrictions on holding financial assets abroad, moving assets freely across the border, or issuing liabilities in foreign currency both locally and across the border were lifted, and competition between domestic and foreign currencies increased. In many cases this led to the dollarization of deposits and loans in the domestic financial system, significant holdings of financial assets abroad, and in general the issuance of foreign-denominated liabilities of the private and public sectors.

Figure 6.5b shows several countries in Latin America with less than full dollarization, that is, those that have not adopted the dollar as legal tender. A first pass at the data reveals that in some form or another dollarization is a generalized phenomenon throughout

TABLE 6.1 REGULATION ON TREATMENT OF PUBLIC DEBT
(Percent)

Country	Risk weight on central bank debt	Risk weight on central government debt	Risk weight on debt of subnational governments or other public institutions
Argentina	0	0	100
Bolivia	0	0	75–100
Brazil	0	0	100
Chile	0	10	10–100
Colombia	0	0	0
Costa Rica	0	0	0
Ecuador	10	10	0
Mexico	0	0	0
Peru	0	0	100
Uruguay	0	0	0
Venezuela	0	0	20–100

Source: Central banks and bank superintendencies.

the region.¹² Compared with other emerging market countries, financial dollarization in Latin America is high. On average, in non-Latin American emerging markets the share of dollar-denominated deposits is around 22 percent; in Latin America the corresponding figure is around 37 percent. Moreover, in some countries, such as Bolivia, Costa Rica, Nicaragua, Paraguay, Peru, and Uruguay, more than 40 percent of deposits and loans are denominated in dollars.

Several concerns regarding the vulnerability of the financial system emerge with dollarization. Although empirical evidence suggests that dollarization can reduce the adverse effects of high inflation on financial intermediation, there are valid concerns with respect to its impact on financial fragility (De Nicoló, Honohan, and Ize 2003). Dollarized financial systems are particularly subject to solvency and liquidity risks. The main source of fragility is through currency mismatches in the event of large exchange rate depreciations. Regulations have limited the extent to which banks can have currency mismatches in their balance sheets, but the indirect effects of portfolio deterioration remain. In a way, the currency mismatch is transferred to borrowers, but the financial institution still bears the currency mismatch risk, especially if the borrower is unhedged.¹³ This form of credit risk may be associated with an increased risk of deposit withdrawals that can lead to bank runs in response to or anticipation of a devaluation (De Nicoló, Honohan, and Ize 2003).

Despite the fact that the risks of dollarization have been felt strongly in most of the region, regulation

has not dealt efficiently with the potential risks. In fact, Galindo and Leiderman (2003) show that prudential regulation directly addresses risks related to dollarization in only a few cases. Table 6.2 presents some of the most important findings of a survey conducted by Galindo and Leiderman (2003) to identify how banking regulation deals with dollarization risks.

In all of the countries in the study, regulation imposes restrictions on direct exchange rate risk exposure in the balance sheets of financial institutions; however, it does not deal with the possible deleterious effects of borrowers' dollarization on the quality of loans. Only in Costa Rica and Uruguay are the authorities studying the possibility of assigning specific provisions or capital requirements to dollar-denominated loans. Argentina, Chile, Colombia, Costa Rica, Peru, and Uruguay have

¹² While some countries, such as Brazil, Chile, Colombia, and Venezuela, have successfully contained the degree of dollarization in the domestic financial sector, financial dollarization tends to appear in the form of dollarization of public sector liabilities or dollar-denominated offshore deposits and loans. Hence, even in cases of moderate domestic dollarization (following the terminology of Reinhart, Rogoff, and Savastano 2003), such as Colombia, vulnerabilities associated with dollarization may arise because the corporate sector may be exposed to balance sheet effects of exchange rate fluctuations via foreign indebtedness. This vulnerability can also lead to banking sector problems given that agents that are indebted abroad in foreign currency are also indebted to local banks.

¹³ De Nicoló, Honohan, and Ize (2003) show empirical results suggesting that in fact highly dollarized economies are more prone to solvency problems and high deposit volatility.

encouraged banks to incorporate exchange rate risk into the valuation of credit risk. However, there are no systematic guidelines for doing so and no specific criteria for attaching specific provisions to these risks. Because in most countries provisioning rules are determined based on accruals rather than forward-looking criteria, there is no systematic way to deal with borrowers' currency mismatches and reduce the impact of exchange rate fluctuations on banking stability.

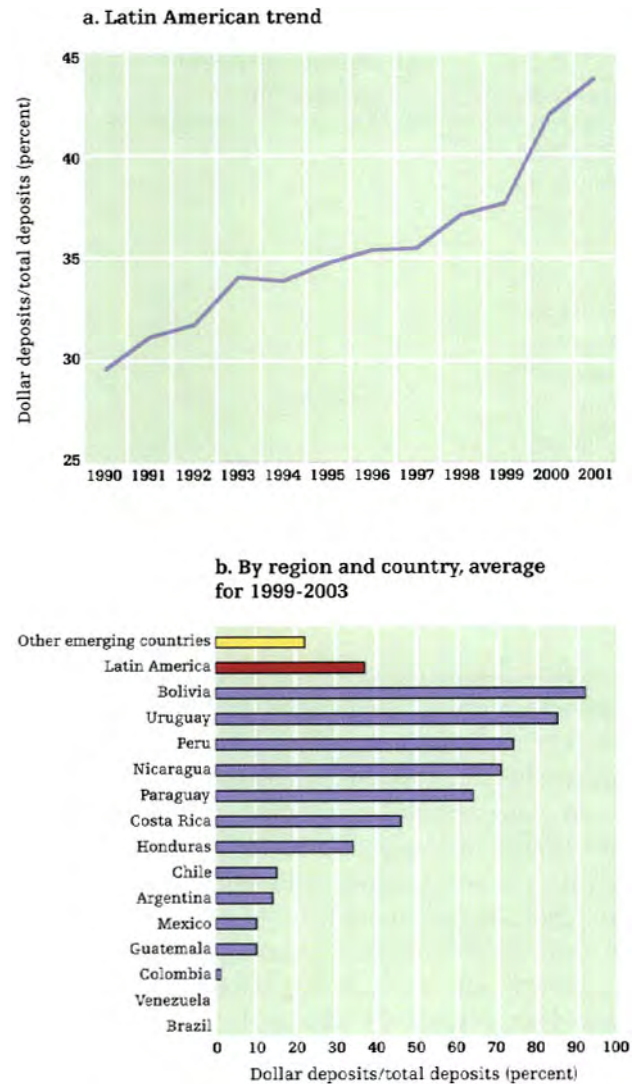
Although the adoption of Basel II (which is discussed in Chapter 16) could ease the current lack of direct prudential action with respect to currency mismatches, it is unlikely that the use of internal credit risk assessment models will be generalized throughout the region. Given the lack of data in some countries and questionable technical quality at some banks and banking superintendencies, it is unlikely that in the near future most banks will have the methods and mechanisms to adequately assess such risks. In addition, financial systems need to develop a prudential framework that deals with the risks of domestic dollarization. Therefore, countries should consider introducing tighter prudential requirements on foreign currency loans in the form of specific rules, such as ceilings on certain exposures, or general provisions on foreign currency loans. In more sophisticated markets, or at least for more sophisticated banks, such as foreign banks from developed countries that operate in the region, the use of internal credit risk models could be allowed as long as domestic regulators effectively deal with the currency mismatch problem.

The most dollarized countries have tried to deal with liquidity risk by imposing higher reserve requirements on dollar-denominated liabilities. In this sense regulation has been aimed at letting banks bear the full risk and cost of assuming dollar-denominated liabilities.

In Bolivia, for example, differential reserve requirements have been in place for a long time. Virtually no fixed-term deposits in domestic currency or inflation-indexed units with maturity of less than 720 days have a reserve requirement. All deposits in foreign currency have a 10 percent reserve requirement, except those with maturity greater than 720 days. Demand deposits in either currency have a 10 percent requirement.

The Peruvian case is similar. In order to reduce liquidity risk, maintaining relatively high levels of reserves is a policy objective. As in Bolivia, there are differential reserve requirements for foreign currency and domestic currency deposits. On average, domestic currency deposits have an 8 percent requirement, while foreign currency deposits have a 20 percent require-

FIGURE 6.5 Financial Dollarization



Note: Values are U.S. dollar deposits/total deposits in the domestic financial system. The sample for Latin America in Figure 6.5a includes Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Guatemala, Mexico, Nicaragua, Peru, Paraguay, Uruguay, and Venezuela. Other emerging economies include: Bulgaria, Czech Republic, Hungary, Israel, Korea, Malaysia, Morocco, Nigeria, Philippines, Poland, Russia, Slovak Republic, Thailand, and Turkey.

Source: Arteta (2003); Honohan and Shi (2002); bank superintendencies.

ment. These rates have been effective since 1998; however, differential requirements have been in place since the 1980s.

As in Bolivia and Peru, Paraguay has adopted differential reserve requirements. It is notable, however, that aside from this measure, the country has done little to deal with the financial vulnerabilities associated with dollarization.

TABLE 6.2 PRUDENTIAL REGULATION AND CURRENCY MISMATCHES IN LATIN AMERICA

Question	Costa										
	Argentina	Bolivia	Brazil	Chile	Colombia	Rica	Mexico	Paraguay	Peru	Uruguay	Venezuela
Does regulation impose restrictions on foreign currency deposits?	No	No	Yes	No	Yes	No	Yes	No	No	No	Yes
Does regulation impose restrictions on foreign currency loans?	Yes	No	Yes	No	No	No	Yes	No	No	No	No
Does regulation impose restrictions on banks' currency mismatches	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Does prudential regulation provide explicit guidelines for different provisions or capital requirements for dollar-denominated assets vis-à-vis local currency-denominated ones?	No	No	No	No	No	Under consideration	n.a.	No	No	Under consideration	No
Does regulation deal with borrowers' mismatches?	Partially	No	Partially	Partially	Partially	Partially	No	No	Partially	Partially	No

Source: Galindo and Leiderman (2003).

CONCLUSIONS

This chapter has focused on the rationale for banking regulations, how they have been implemented, their effectiveness, and what may be missing from banking regulations to date in the region. Banking regulations are normally justified on theoretical grounds to protect small depositors, the system of payments, and the financial system more generally. Preliminary empirical work based on data from a new survey of bank regulations in countries around the world offers a sanguine portrait of how they may be working in practice.

There is some evidence from a survey of official supervisors in each country that countries with stricter capital requirements and restricted bank activities have improved bank performance and reduced vulnerability to crisis. However, the evidence is mixed and other

indicators—including official supervisory power—appear to have little effect. The IMF and World Bank's external assessments of the Basel Core Principles find significant problems with the effective implementation of the standard checklist of internationally recognized best practices.

Clearly there is an urgent need in developing countries—and in Latin America and the Caribbean in particular—to focus attention on the appropriate implementation of banking regulations and the real power and independence of bank supervisors as opposed to their narrow legal authority. At the same time, there is evidence that moral hazard through generous deposit insurance increases the likelihood of banking crises and that private sector disciplinary techniques can improve bank performance if not stability.

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Designing Deposit Insurance

THE banking crises that ravaged the region during the past decade led to a reevaluation of the regulatory and institutional framework. To what extent could the bank runs in Argentina, Ecuador, and Uruguay have been avoided had there been a stronger financial safety net? Is it possible to design institutions that will foster a sound safety net and lower systemic risks? The previous chapter discussed the role of prudential regulation and banking supervision in attaining such goals. This chapter discusses the role of an institution that complements regulation and supervision in the search for a solid and stable banking system: namely, deposit insurance. Most modern financial systems have a deposit insurance scheme whose goal is to avoid speculative runs and protect depositors (especially small and medium-size account holders). This chapter analyzes the objectives, range, and limitations as well as the design characteristics of a sound deposit insurance scheme and describes the role of deposit insurance in the region.

FINANCIAL SAFETY NETS

Deposit insurance should not be viewed as an isolated instrument, but rather as a part of a coherent and consistent set of instruments for banking safety that includes an adequate prudential regulatory framework, banking regulatory and supervisory institutions to enforce the regulations, a lender of last resort to provide liquidity when needed, effective and efficient resolution institutions, and a suitable environment for depositors to bring the behavior of banks into line with their own interests through market discipline. (Chapter 8 discusses private oversight and market discipline.)

The main objectives of banking safety nets are the prevention and resolution of systemic crises and the protection of depositors. When using financial safety net instruments, it is important to distinguish between the treatment of liquidity and solvency problems. Although in many instances it is not easy in practice to distinguish between the two, an explanation of the conceptual difference regarding the primary use of each financial

safety net instrument is useful. From a preventive (*ex ante*) viewpoint, all financial safety net instruments play a relevant and complementary role in decreasing the risks of individual and systemic financial crises, both for liquidity and solvency. Nevertheless, as regards problem resolution (*ex post* treatment), it is useful to make a conceptual distinction. Deposit insurance thus plays a primary role in the care of depositors in the event that individual banking entities have solvency problems. By contrast, the role of lender of last resort is the principal role played in cases of liquidity problems.

International experience, in particular that of Latin America and the Caribbean, shows that deposit insurance is useful at times of relative normality in the banking system. In periods of systemic crises, however, its capacity is considerably reduced for a variety of reasons. In such cases, as discussed in Chapter 3, the crisis becomes primarily a fiscal problem.

OBJECTIVES AND DESIGN OF DEPOSIT INSURANCE

Deposit insurance is an institution designed to take care of depositors in the event of solvency problems. It reimburses depositors for part or all of their deposits in case a bank fails. A main objective of deposit insurance is to contribute to the stability of the banking system by preventing bank runs in the wake of announcements or rumors that suggest possible problems at one or more banks and raise doubts about the solvency of the system. Deposit insurance also protects small depositors when banks go bankrupt.¹ And deposit insurance contributes to facilitating the restructuring or closing of a bank in an orderly manner by establishing explicit procedures for accessing the resources of the insurance fund.

Despite the clearly defined objectives of deposit insurance, achieving them is no easy task because the very existence of deposit insurance encourages unde-

¹ Usually small depositors have little ability to interpret the available information and tend to keep only limited amounts on deposit.

sirable behavior on the part of depositors and banks that can lead to weakening the banking system. This behavior is known as the problem of moral hazard. It is also possible that any incentive that depositors may have to monitor the operations of their bank is lost or, in other words, market discipline is relaxed, that is, depositors may not exercise their power to affect the behavior of bankers (see Chapter 8). Deposit insurance, by guaranteeing the reimbursement of funds in the event a bank fails to meet its obligations, lessens the concern on the part of depositors to learn about the financial situation of their banks and to demand yields in accordance with the potential risks assumed by those banks.

Moral hazard is also manifested in the behavior of the banks. If banks perceive that deposit insurance funds are available to bail out banks with problems, then banks might have an incentive to engage in high-risk activities.

It is precisely the presence of moral hazard problems that makes it so crucial to properly design deposit insurance. International experience analyzed in detail in Cull, Senbet, and Sorge (2001) and Demirgüç-Kunt and Detragiache (2002) reveals that although properly designed deposit insurance may contribute to the stability of a banking system, a deficient design scheme that allows moral hazard problems to materialize can lead to banking crises. The great challenge therefore is how to properly design such a scheme. International experience has highlighted a number of factors to be considered.²

To reduce moral hazard, it is first and foremost recommended that deposit insurance be explicit and that coverage be low and restricted to certain types of deposits. The existence of implicit deposit insurance (that is, situations in which authorities cover depositors in the event of problems and fulfill the functions of deposit insurance even when no formal insurance exists) has contributed to the emergence of banking crises (Demirgüç-Kunt and Sobaci 2001). If regulations are not clear, both bankers and depositors tend to assume that authorities will bail out the banks and that deposits are therefore protected. This leads to excessive risk-taking by bankers and inefficient monitoring by depositors. These problems are increased when, as in the past, authorities in effect repeatedly bail out banks and when there is the perception that certain banks will always be protected because of their large size (known as the “too big to fail” doctrine). Thus there is a need for clear recommendations regarding the need for deposit insurance to have transparent rules and be free of ambiguity.

The main recommendation for deposit insurance coverage is that it be limited and inexpensive. The greater the coverage, the less will be the desire on the part of depositors to monitor their bank and exercise discipline to prevent the bank from taking excessive risks contrary to the interests of the depositors. International recommendations suggest that deposit insurance must be limited to deposits of individuals in the country, excluding all other types of deposits, especially all offshore and interbank accounts. In addition, setting maximum amounts of coverage per depositor, not per separate deposit account, is recommended. This ensures that a depositor has no incentive to divide deposits into multiple accounts in order to gain greater coverage in the event of problems. Another reason of no less importance is to avoid regressive transfers through distribution of income, as has happened in the past (see de Ferranti and others 2004).

The principle to be observed regarding the maximum amount of insurance per depositor is to establish coverage in such a way that it covers a high proportion of the number of deposit accounts while covering a low proportion of the total value of the deposits. The coverage may also be differentiated according to the type of deposits (for example, coverage of foreign currency deposits could be excluded) as well as according to the type of institutions (for example, only banks).

An additional element for mitigating moral hazard is co-insurance. Strictly speaking, co-insurance is understood as a situation in which the depositors must share in the losses in the event coverage of the insured deposits is needed (for example, when the system covers only a percentage of the amounts on deposit). The existence of co-insurance, although it offers a lesser benefit, may nonetheless serve as an incentive for the exercise of market discipline.

Although the problem of moral hazard surfaces immediately when analyzing deposit insurance, the design of a sound deposit insurance scheme must also deal with the management of problems of adverse selection. The problem of adverse selection arises when there are deposit insurance characteristics that cause only weak banks to participate in the scheme. Should this situation arise, it would weaken the banking system precisely because it would end up protecting only the riskiest institutions.

These problems can materialize when enrollment in deposit insurance is voluntary and when the premium

² See García (1999) for a more detailed discussion on the lessons to be learned from international experience and CAN (2001) for an in-depth discussion on Andean countries.

charged to banks for participating in insurance is not adequate for the risk involved. To guard against only weak banks joining the system, membership must be compulsory. If membership is voluntary and only weak banks join, the fragility of the banking system is increased as a whole because depositors may be more attracted to deposit their money in insured banks, which will tend to be the weaker banks.

Adjusting the premium to the risk contributes to controlling the potential subsidizing of weak banks by strong banks, which is what could happen in a system in which all pay the same premium. Collection of a higher premium for risk may act as a disciplinary mechanism that in turn may limit excessive risk-taking on the part of banks. There are various methods for evaluating risk and setting premiums. In some countries, risk rating agencies establish the categories; in others, the rules of banking supervision set the asset risk classifications.

The design of a sound deposit insurance scheme also requires dealing with what is known as agency risk, that is, the risk that the entity managing the deposit insurance will not represent the interests of the depositors but rather those of the banks. To avoid this risk, the deposit insurance entity must be an independent institution and must not have in its senior management representatives from the banking system. However, it should be stressed that independence must not go against the need to cooperate with all other institutions in the banking safety net.

Finally, it is crucial that deposit insurance be credible. Even if all the recommendations are implemented and it becomes possible to reduce moral hazard, adverse selection, and agency risks, deposit insurance may still not be credible if it does not demonstrate that it can act quickly and efficiently when a bank fails. Deposit insurance must have clear and precise procedures to reimburse the deposits covered in the event of a bank intervention.

To be credible, deposit insurance requires fundamental financial stability. Deposit insurance must have an adequate fund and must demonstrate that it has access to additional resources in case that fund becomes insufficient. With respect to the fund, a resources goal must be established to guarantee that payments will be made during normal times. The goal amount must be calculated on the basis of an estimate of the value of a banking problem in normal times, and based on that estimate, a fund may be set up through the collection of premiums from banks participating in the insurance scheme. Regarding access to resources, it is possible that nonsystemic situations may arise in which the de-

mand for payments is greater than the amount the insurance fund has available. To exit such a situation, the insurance system must have access to financing sources, for example, an emergency line of credit with the central bank or the treasury that will enable it to access these resources through loans from temporary funds. If such a mechanism is in place, it is equally important that there be clearly defined rules that will avoid temporary access to public funds resulting in a loss of independence or causing deposit insurance to become managed for political purposes.

As regards the ownership structure of deposit insurance, a distinction may be made among public, private, and mixed systems. Generally speaking, greater public participation could be associated with greater availability of resources, on top of those already accumulated in the fund in order to take care of insured deposits.

DEPOSIT INSURANCE IN LATIN AMERICA

The balance between the benefits and costs of deposit insurance schemes depends on the design characteristics of those schemes and the particular situation of each country. The most relevant design characteristics for the region as regards the risk coverage and recommendations suggested in the previous section are concentrated in the following areas: system formalization, membership, coverage, premiums, co-insurance, institutionality and administration, and funding (Financial Stability Forum 2001; Demaestri 2001). These characteristics are summarized below, focusing on the countries of the region and comparing them with experience in the rest of the world.³

System Formalization

For the most part, countries in Latin America and the Caribbean have explicit deposit insurance schemes. Table 7.1 shows that of a total of 26 countries in the region, 19 have explicit deposit insurance.⁴ Around the world, approximately half the countries have explicit systems.

³ This section is based on Demaestri and Farfán's (2004) research on the treatment of deposit insurance schemes in Latin America and the Caribbean. In comparing the characteristics of deposit insurance schemes worldwide, Barth, Caprio, and Levine's (2001) database of 151 countries was taken into account.

⁴ Uruguay has established a system, although it is not yet regulated. Bolivia has a Financial Restructuring Fund that acts as deposit insurance.

TABLE 7.1 DEPOSIT INSURANCE REGIMES IN LATIN AMERICA AND THE CARIBBEAN

Country	Explicit?	Date of creation	Type of institution	Type of participation	Maximum amount insured ^a	Deductible	Uniform or differentiated by risk premium
Argentina	Yes	1995	Private	Mandatory	10.3	No	Differentiated
Bahamas	Yes	1999	Public	Mandatory	50	No	Uniform
Barbados	No						
Belize	No						
Bolivia	Yes	1999	Public	Mandatory	10		Uniform
Brazil	Yes	1995	Private	Mandatory	5.7	No	Uniform
Chile	Yes	1986	Public	Mandatory	2.8		Does not apply
Colombia	Yes	1985	Public	Mandatory	6.9	Yes	Differentiated
Costa Rica	No						
Dominican Republic	Yes	2002	Public	Mandatory	23.6	No	Uniform
Ecuador	Yes	1999	Public	Mandatory	8	Yes	Differentiated
El Salvador	Yes	1999	Mixed	Mandatory	7	No	Differentiated
Guatemala	Yes	2002	Public	Mandatory	2.6	No	Uniform
Guyana	No						
Haiti	No						
Honduras	Yes	2001	Mixed	Mandatory	8.9	No	Uniform ^b
Jamaica	Yes	1998	Public	Mandatory	5.9	No	Uniform
Mexico	Yes	1999	Public	Mandatory	130	No	Differentiated
Nicaragua	Yes	2001	Public	Mandatory	20	No	Differentiated
Panama	No						
Paraguay	Yes	2003	Public	Mandatory	10.2	No	Uniform
Peru	Yes	1992	Mixed	Mandatory	19.5	No	Differentiated
Surinam	No						
Trinidad and Tobago	Yes	1986	Public	Mandatory	7.9	No	Uniform
Uruguay	Yes	2002	Public	Mandatory	^c	No	Differentiated
Venezuela	Yes	1995	Private	Mandatory	7.1	No	Uniform

^a Values are in thousands of U.S. dollar equivalents.
^b Can be changed annually.
^c The specific amount has not yet been specified.

Source: World Bank (2003).

Although there were earlier experiences in the region, the systems currently in force were for the most part implemented during the 1990s and at the beginning of this century. Chile (1986), Colombia (1985), and Trinidad and Tobago (1986) have the oldest systems. The deposit insurance system in Paraguay, established in December 2003, is the most recent in the region. Also noteworthy is the date of creation of the deposit insurance systems, which in 17 of the 19 cases identified were implemented on a date close to a systemic banking crisis (see Table 7.2).

Membership

The 19 countries with an explicit deposit insurance scheme have established compulsory participation of institutions that accept deposits from the public.⁵ Worldwide, almost 90 percent of the explicit systems have compulsory institution participation.

⁵ In Uruguay the executive branch was authorized to exempt from contribution to the insurance fund those institutions with sufficient insurance or support from other institutions or parent companies abroad.

TABLE 7.2 FINANCIAL CRISES AND CREATION OF EXPLICIT DEPOSIT INSURANCE REGIMES IN LATIN AMERICA AND THE CARIBBEAN

Country	Date of creation	Date of financial crisis
Argentina	1995	1989–90 and 1995
Bolivia	1999	1999
Brazil	1995	1994
Chile	1986	1981–86
Colombia	1985	1982–87
Dominican Republic	2002	2003
Ecuador	1999	1998–present
El Salvador	1999	1989
Guatemala	2002	1990s
Jamaica	1998	1996
Mexico	1999	1994–97
Nicaragua	2001	1980s to 1996
Paraguay	2002	2001
Peru	1992	1992
Trinidad and Tobago	1986	1982–83
Uruguay	2003	2002
Venezuela	1995	1994–95

Source: For year of creation, World Bank (2003); for financial crisis for Uruguay and Dominican Republic, central bank data; for other countries, Caprio and Kinglebiel (1999) and World Bank data (<http://econ.worldbank.org/view.php?id=16172>).

Coverage

Currently the 19 countries with explicit systems in the region offer limited coverage.⁶ Particular attention should be paid to the cases of Ecuador and Mexico, which until recently offered unlimited guarantees. However, Ecuador has just completed the process of transitioning to limited coverage, while Mexico is in a gradual process of reducing the amount insured.⁷

Table 7.1 shows that 12 countries have established deposit coverage for amounts less than US\$10,300. By contrast, Peru, Nicaragua, the Dominican Republic, the Bahamas, and Mexico insure deposits for more than that amount, with Mexico insuring the greatest amount. Table 7.3 shows that coverage in Latin America and the Caribbean is comparable to that observed around the world.⁸

Figure 7.1 shows that Mexico has the highest ratio of maximum amount insured to per capita GDP of the countries studied. Considering the coverage goal for 2005 (US\$130,000), the maximum coverage will be close to 14 times GDP per capita.⁹ Chile has the lowest ratio at 0.3. Nicaragua has a relatively high ratio in comparison with the rest of the countries at 9.3.

All the countries in Latin America and the Caribbean are establishing nearly all deposits as insurable.

Nevertheless, some countries have restrictions, chiefly on foreign currency deposits or interbank deposits. Of the 19 countries with explicit schemes, four exclude coverage for foreign currency deposits, while 11 exclude interbank deposits.

Premiums

There is a growing tendency to set premiums differentiated by level of risk. Seven countries in the region have differentiated premiums. Worldwide, 30 percent of the countries have this type of premium.

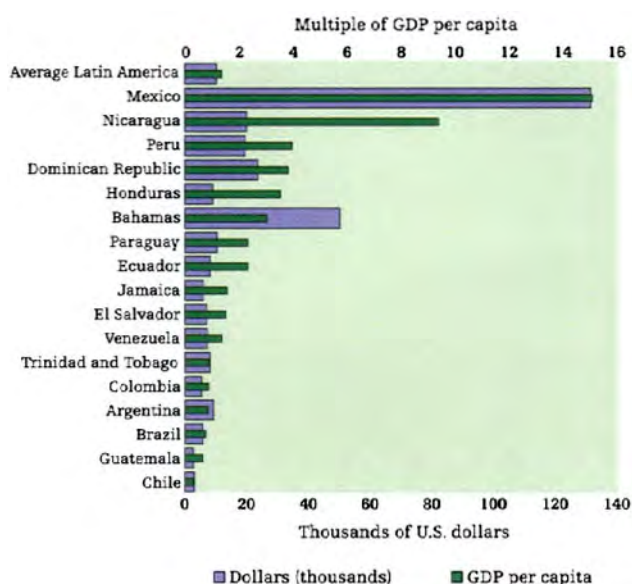
⁶ In the case of Bolivia, the Financial Restructuring Fund does not establish a maximum amount. In the case of Uruguay, regulations for the system have not yet been drawn up. The Financial System Restructuring Act in Uruguay authorizes the executive branch to set aside part of its resources to cover deposits up to US\$100,000.

⁷ In 2004 the maximum amount insurable was up to 5 million Unidades de Inversión (UDIS), which is approximately US\$1.6 million, and it is anticipated that the amount will drop to 400,000 UDIS (approximately US\$130,000) in 2005.

⁸ Of the total 151 countries in the database, 75 have explicit systems, and of these, 45 countries have data referring to the maximum insurable amount on which the statistics in this chapter were prepared.

⁹ Data on per capita GDP are from the World Bank's World Development Indicators (in current 2002 U.S. dollars).

FIGURE 7.1 Maximum Insured Bank Deposits in Latin America and the Caribbean



Note: For Mexico, the amount in thousands of dollars is the value proposed for 2005 (around US\$130,000).
Source: World Bank (2003).

TABLE 7.3 MAXIMUM INSURED DEPOSITS IN LATIN AMERICA AND THE CARIBBEAN AND THE WORLD, 2003 (Percentage of countries)

Maximum insured amount (U.S. dollars)	Latin America	World
5,000	11.1	31.0
10,000	55.6	20.0
20,000	16.7	15.6
100,000	11.1	31.1
More than 100,000	5.6	2.2

Source: World Bank (2003).

Co-insurance

Colombia and Chile are establishing co-insurance systems in a strict sense. In the case of Colombia, the system establishes a co-insurance of 25 percent. Chile is establishing a co-insurance scheme for term deposits in which they will be insurable up to a maximum of 90 percent, provided the account holder is a private individual and the account holds term registered instruments.

Of the total sample of 151 countries, 75 have an explicit scheme, and of these, 49 percent have established co-insurance as a characteristic of the explicit deposit insurance scheme. The percentage participation is greater than in the case of countries in Latin America and the Caribbean (20 percent).

Institutionality and Administration

Explicit deposit insurance schemes in the region are for the most part administered by the state (14 of 19). Only two have a private scheme (Argentina and Brazil), and three have a mixed scheme (El Salvador, Honduras, and Peru). Public schemes are in the main attached to and administered by the central bank or are independent public law entities.

Funding

Of the 19 countries with explicit deposit insurance schemes in the region, most have a system primarily funded by banks. Only Chile has a clearly publicly funded system, while five countries (El Salvador, Guatemala, Honduras, Mexico, and Trinidad and Tobago) have a system with mixed sources of financing. This follows the international pattern closely. Excluding Latin America and the Caribbean, in the rest of the world, around 65 percent of countries with deposit insurance systems fund them using private sources only, nearly 5 percent use only government funding, and 30 percent use both sources of funding.

Thus, with respect to the basic characteristics, there are no great differences between deposit insurance schemes in Latin America and the Caribbean and those in the rest of the world. In fact, the available empirical evidence suggests that in Latin American and Caribbean countries, deposit insurance has not decreased market discipline on the part of depositors (See Martínez Pería and Schmukler 2001). Despite the existence of deposit insurance, depositors move their bank deposits when they see that the risk posture of the bank is excessive, or when they demand higher returns from their deposits in order to offset risks. Therefore, this aspect of moral hazard seems to have been limited in Latin America.

CRISES

To better understand the range and limitations of deposit insurance schemes, it is essential to distinguish between their effects in times of financial “normality” and

in times of crises. In normal times, deposit insurance plays a preventive role by increasing the confidence of depositors and limiting the possibilities of bank runs and makes it possible to take care of depositors in the event of closings of isolated institutions that are not large enough to constitute a systemic risk. Deposit insurance can function efficiently up to the point where a risk of generalized collapse exists. However, from that point on, owing to the usual magnitude of crises, bank failures become a fiscal problem. Deposit insurance cannot possibly cover the systemic risk of countries. Rather, deposit insurance is an institution established to attempt to contain risks and prevent such risks from becoming systemic.

The case of Argentina illustrates this point perfectly. In 1995 at the time of the Tequila crisis, Argentina did not have deposit insurance. It was put into place just after the crisis in 1995 and was designed based on international best practice. The insurance offered significant financial assistance and helped to successfully resolve the liquidation of banks with solvency problems during the period between financial crises (1995–2001). This was achieved chiefly through the creation of financial trusts set up with the assets of liquidated banks after transferring their deposits and assets in equal amounts to other entities. When the crisis in 2001 began, due to its large size, depositors were rescued for the most part by the National Treasury (with liquidity assistance to the institutions by the Central Bank), and thus the role of deposit insurance was relatively marginal.

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Private Oversight of the Banking Sector: The Role of Market Discipline

DEPOSITORS play a crucial role in guaranteeing the soundness of the banking system. When banks assume excessive risks, depositors may respond by going to other banks or other financial systems, or by demanding higher interest rates on their deposits. Since deposits are the major source of funds for banks, depositors' actions may lead the banks to align their risk-taking incentives with those of depositors. This is known as market discipline, a key complement for the discipline imposed by supervisors.

Chapter 6 outlines the justifications for banking regulation. These explanations center on the protection of small depositors and the moral hazard created by the presence of a safety net to protect the payments system and the financial system as a whole. Unfortunately, banking regulation and supervision can fail and hence may not always provide the necessary discipline for banks.

Assuming that supervisors have appropriate powers and regulations are appropriately written, supervisors may still lack the required information to effectively monitor those regulations. There is an unavoidable informational asymmetry between the bank and its supervisor. Banks may not always truthfully reveal the required information and, as witnessed recently in major corporate scandals in the United States and Europe, auditors do not always ensure that even fully audited information is completely reliable. Moreover, although the supervisor may have periodic information on the basic facts and activities of banks, the supervisor may lack finer information, for example, on intraday market transactions.

Supervisors may not act appropriately on the information that they possess because they may be subject to particular incentives and conflicts of interest. Bank failures have, perhaps unfairly, often been linked to supervisory failures. In some countries in Latin America and the Caribbean, bank failures may even place supervisors in a vulnerable legal position because they

frequently lack the legal protection that is normally awarded in developed countries and is advised in the Basel Core Principles for Effective Banking Supervision. Hence, supervisors may attempt to avoid declaring a bank insolvent or may seek means to ensure that bank weaknesses are not fully revealed. This is generally known as forbearance.

These types of regulatory and supervisory failures indicate the usefulness of harnessing the market to discipline banks as a complementary form of supervision. Market discipline has typically been considered the reaction of bank creditors (depositors and other liability holders) to increases in bank risk. This chapter extends this definition to include the reaction of bank creditors to risk and the subsequent reaction of banks to the actions of creditors. Discipline is then seen as effective if banks take prompt remedial actions to curb any actual or potential negative actions on the part of their creditors.

At first sight, market and supervisory discipline may be considered substitutes, but in fact, in the terminology of modern microeconomics, they are strategic complements. This means that appropriate regulations can enhance the disciplining power of markets and markets may enhance the disciplining power of supervisors. Together they may imply greater discipline and more prudent risk-taking on behalf of banks, compared with the simple sum of the two components.

First and foremost, the market and the supervisor may have different information. Although the market and the supervisor have the same basic information published by the bank, the market may not have confidential information reported only to the supervisor. The supervisor may lack the fine transactional information that comes from repeated market interactions.

Second, information disclosure is not independent of the regulations in force. Some countries have strong rules on what banks must disclose to the market in terms of their underlying financial ratios, how they match up to their peers, and how they match up to the

regulations in force. The quality of this information is critical, and hence the role of auditors is crucial. The regulations that govern the auditing profession are then also highly significant for market discipline.¹ In some countries, bank regulators have gone further than simply strict disclosure and auditing rules, requiring banks to have a credit rating, ensuring that the rating is published, and even making highly transparent the interest rate a bank must pay on its noninsured liabilities.

The market may enhance supervisory discipline. For example, if it detects a weakness, the market will act, making that weakness generally known. Armed with this information, the supervisor may be forced to act, even if otherwise there are incentives to “wait and see.” Hence, just as certain regulations can enhance market discipline, the market can enhance supervisory discipline.

However, market discipline may be limited, or there may be a trade-off between the degree of market discipline and the risk of systemic financial instability if the safety net is too narrow. This chapter discusses the empirical evidence of market discipline, with special reference to Latin America and the Caribbean. It presents new results for a set of countries in the region and discusses key policy measures for enhancing market discipline.

COSTS AND BENEFITS OF MARKET DISCIPLINE

Market discipline is defined as the reaction of bank creditors to risk and the subsequent reaction of banks to the actions of their creditors. For bank creditors to react to bank risk, it is clear that those creditors cannot be fully and credibly insured. Market discipline operates principally on noninsured liabilities.² This implies that to enhance market discipline, standard policy recommendations are to ensure that banks have noninsured liabilities.

Typically, bonds do not attract insurance, and the required returns on more subordinated bonds are more sensitive to bank risk. One response has been the proposal that all banks should issue subordinated liabilities. A more standard proposal is to limit the coverage of deposit insurance. Chapter 7 reviews various schemes that countries have adopted. Deposit insurance schemes usually have an upper quantitative limit, implying that larger, and possibly more sophisticated, depositors lack full insurance. In some countries, there is co-insurance in that only a percentage of the upper limit is insured. That is, the insurance even for small depositors covers

only, say, 90 percent of their investment, and hence all depositors stand to lose some (small) amount in the case of bank failure. In addition, deposit insurance could be restricted to a maximum interest rate. For depositors that require a higher level of return, presumably because of high perceived risk, then those deposits will not be insured. This restriction would prevent banks from paying very high interest rates on insured deposits, especially if the banks are close to failure and risks are considered very high.

At the same time, deposit insurance has an important objective, namely to prevent bank runs spreading from one or more weak banks to other banks and, more generally, to promote financial stability. There is an important trade-off between promoting financial stability by providing deposit insurance and ensuring that there is market discipline to complement standard supervisory oversight. On the one hand, market discipline may assist in providing appropriate incentives for bankers to contain risks and to react conservatively when risks are perceived. On the other hand, insufficient deposit insurance (excessive market discipline) may result in runs spreading across a banking system and converting a problem in one bank (or a few banks) into a larger, systemic problem. This trade-off was visible in the banking crisis that hit Argentina in 1995 in the wake of the Tequila shock; see Box 8.1.

The optimum amount of market discipline may depend on the types of shocks that would be likely to affect the banking system. If shocks tend to be macroeconomic in nature, affecting the perceived risk of the whole banking system, then bankers would be unable to take action to solve them. In this case, depositors in weaker banks may require greater increases in interest rates, or those banks may face greater withdrawals in deposits, and it may be advisable to limit market discipline. If shocks tend to be macroeconomic in nature and if banks themselves can do little to rectify the situation, then market discipline may well be counterproductive.

However, if shocks serve to expose the weaknesses of banks that urgently require remedial action, market discipline should be enhanced. Argentina in the lead-up

¹ One of the factors that contributed to the Enron fiasco was that the information the company presented to the market did not appear to be a fair reflection of the financial strength of the company.

² In Latin America, there is also some evidence of withdrawals of insured depositors or those investors demanding higher interest rates as a response to risk, presumably as a result of insurance systems lacking full credibility or depositors factoring in the costs and delays of recouping their investments in the case of bank failure.

BOX 8.1 | FINANCIAL INSTABILITY AND MARKET DISCIPLINE

The Mexican devaluation in December 1994 heralded a financial crisis known as the Tequila crisis. The first phase of the crisis hit a set of weak banks including wholesale and cooperative institutions; larger banks and foreign banks gained deposits, and dollar deposits increased. However, bank runs spread across the system, and rumors of the weaknesses of particular banks abounded. In the first two weeks of March 1995, all banks lost deposits in a systemic run, which was halted only by a new agreement with the International Monetary Fund (IMF) in mid-March 1995.

In Argentina, after the banking crises of the 1980s, deposit insurance was explicitly removed, and the currency board was established. The general perception was that the lender of last resort power of the central bank was limited. On the one hand, the restricted safety net assisted in ensuring that banks maintained good incentives. Weaker banks were allowed to fail or were merged, and arguably there was little “gambling for resurrection,” and the resolution of the crisis was relatively fast. On the other hand, in part to calm depositors’ nerves and promote financial stability (and in part perhaps to smooth political problems arising from bank failures), in April 2001 Argentina introduced a new, albeit limited, deposit insurance scheme.

In the financial crisis of 2000–02, Argentina

experienced four separate bank runs in November 2000, March 2001, July 2001, and November 2001. Substantial evidence indicates that as the crisis deepened, these runs became more systemic. In the earlier runs, weaker banks were punished, and there is evidence that foreign and public banks had guarantees that were perceived as stronger and therefore lost fewer deposits. In the later runs, banks lost deposits virtually as one. In the case of the earlier runs, excepting foreign and public banks, market discipline served a role in ensuring that weaker banks maintained conservative incentives. However, the later runs were largely related to the perception that depositors would have to share in the economywide costs of a macroeconomic crisis, including public sector default and exchange rate devaluation. It was clear that bankers could not solve this problem, and the role of market discipline became less relevant.

It might be argued that a systemic bank run serves to discipline governments. The systemic run in 1995 forced the Argentine government to renegotiate an agreement with the IMF—that Argentina had let lapse in December 1994—and the run of July 2001 prompted the government to pass a zero-budget law. However, the run of November 2001 resulted in a different response: bank and capital controls, the fall of the government, default, and devaluation.

to the 2002 crisis provides an interesting illustration. In general, countries are exposed, perhaps with different probabilities, to all types of shocks, and hence the extent of market discipline versus the breadth of the safety net is a difficult but critical judgment for each country to make.

An argument might be made that even if a country tended to face systemic shocks, market discipline would be useful to discipline the country or the government rather than the banks. Box 8.1 argues that the systemic run in March 1995 forced the authorities in Argentina to sign a new agreement with the International Monetary Fund, and it might be argued that the runs in 2001 forced the country to adopt tougher budgetary policies. However, Argentina eventually defaulted in 2002, arguably pointing out the failure of market discipline, in this context, rather than its success.

DO DEPOSITORS ACT ON BANK RISK?

Proponents of market discipline point to analyses of the reactions of depositors to bank fundamentals as evidence that depositors can indeed distinguish between safer and riskier institutions and that pure bank runs and contagion may not be as widespread as previously thought.³ Analyses of historical and contemporary U.S. data explore the relations between bank fundamentals and the interest rates that banks must pay and the likelihood of deposit withdrawals (Baer and Brewer 1986; Hannan

³ A pure bank run is defined here as a self-fulfilling run on an otherwise solvent bank (Diamond and Dybvig 1983). Contagion might then be thought of as depositors’ running against otherwise healthy banks as a result of runs against other, perhaps weaker, institutions.

and Hanweck 1988; Ellis and Flannery 1992; Cook and Spellman 1994; Goldberg and Hudgins 1996; Calomiris and Wilson 1998). Bank fundamentals include measures of bank risk, such as nonperforming loans, liquidity indicators, or past returns on equity. For most developed countries, researchers have indeed found a positive link between interest rates and deposit withdrawals and risk, and hence infer that depositors may exert pressure on banks to avoid excessive risk-taking.

Country-specific studies in Latin America focus on Argentina (Schumacher 1996; D'Amato, Grubisic, and Powell 1997; Calomiris and Powell 2001; McCandless, Gabrielli, and Rouillet 2003; Levy-Yeyati, Martínez Pería, and Schmuckler 2004) and Colombia (Barajas and Steiner 2000). On Argentina, Schumacher (1996) finds evidence that bank fundamentals are significant in explaining deposit withdrawals in the Tequila crisis. D'Amato, Grubisic, and Powell (1997), also on the Tequila crisis, show that while bank fundamentals are significant, so too are both macroeconomic variables and explicit "contagion" terms. Given the combination of macroeconomic systemic factors, contagion, and bank fundamentals, the authors argue in favor of market discipline combined with a (limited) deposit insurance system. Calomiris and Powell (2001) present a wider review of market discipline for the case of Argentina. They show how depositors responded to bank risk and present a critical review of Argentina's regulations intended to enhance market discipline. McCandless, Gabrielli, and Rouillet (2003) analyze bank runs in late 2000 and early 2001 and find that although bank fundamentals are significant in explaining deposit withdrawals, the later runs through 2001 were more systemic in nature. Levy-Yeyati, Martínez Pería, and Schmuckler (2004) find a similar result and conclude that systemic factors can overshadow bank fundamentals, limiting the potential for market discipline in environments where systemic risk is likely to predominate.

On Colombia, Barajas and Steiner (2000) show how deposit growth and bank fundamentals are related, and how depositors' choices effectively discipline banks. Following deposit losses, banks tend to improve their fundamentals. The authors conclude that market discipline exists in Colombia—perhaps complemented by "regulatory discipline"—and that moral hazard stemming from deposit insurance is limited, perhaps as a consequence of design features of the insurance scheme.

There are few cross-country studies on market discipline. Notable exceptions are BID/CAN (2001) on countries of the Andean Community; Martínez Pería and Schmuckler (2001), who employ data from Argen-

tina, Chile, and Mexico; and Arena (2003), who uses a set of Latin American and Asian emerging economies. These three papers consider market discipline as the reaction of depositors to bank risk in the form of either demanding higher interest rates for higher risk or withdrawing deposits if bank risk rises. Bank risk is measured through a set of bank fundamentals that are reviewed in Appendix 8.1. BID/CAN and Arena find mixed evidence for the existence of market discipline; Martínez Pería and Schmuckler find strong evidence in favor in the three countries considered.

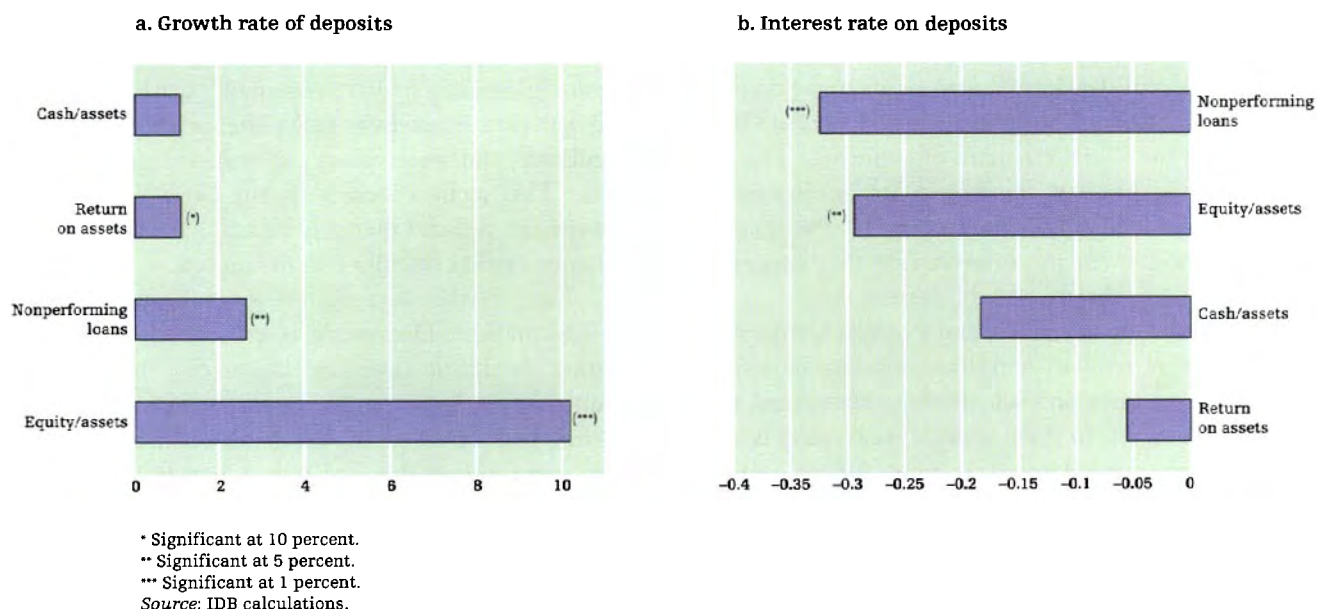
Using a wider dataset covering 13 Latin American and Caribbean countries, Galindo, Loboguerrero, and Powell (2004) find evidence consistent with previous studies, in that depositors discipline banks by withdrawing deposits and requiring higher interest rates.⁴ Bank fundamentals reflecting idiosyncratic bank risk are indeed negatively associated with deposit growth and positively associated with interest rates on deposits. Appendix 8.2 reports regression results showing how deposit growth rates and the interest paid on deposits are related to bank fundamentals that reflect bank risk. The measures of bank fundamentals include the most commonly used variables in the empirical literature on market discipline. The analysis indicates that variables that signal higher risk profiles in banks are associated negatively and significantly with the growth rate of deposits and positively with the interest rate paid on these deposits. These results support the idea that depositors discipline banks by withdrawing deposits and by demanding higher interest rates on the deposits held by riskier banks.

The results are quantitatively important. Figure 8.1 illustrates the effect on the real growth rate of deposits (panel a) and on the deposit interest rate (panel b) of moving from the lower 25 percent of the sample distribution, for each bank risk variable, to the upper 75 percent (the upper part of the distribution always implies lower risk). For example, moving from the lower 25 percent to the upper 75 percent of the sample distribution for equity/assets results in deposits growing 10 percent faster and deposit interest rates declining by 30 basis points.

Literature on the impact of institutional frameworks that might affect market discipline is surprisingly scarce. Perhaps curiously at first sight, the presence of

⁴ The data are from a bank-level panel (of banks over time) for 13 Latin American and Caribbean countries from the early 1990s to 2002. The panel includes 840 banks in Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Peru.

FIGURE 8.1 Effects of Changes in Measures of Bank Risk
(Percent)



deposit insurance does not appear to diminish the extent of market discipline (Martínez Pería and Schmukler 2001; Budnevich and Franken 2003). This may be due to the fact that even where such insurance exists, it may be costly for depositors to be involved in a bank failure due to long delays in payments or because the system is perceived as less than fully credible or unlikely to cover all of the investments of the depositors.

A question that arises naturally from the evidence is whether this finding is common to all types of banks, or whether ownership or market structure alters the conclusions. In particular, state ownership, foreign ownership, and bank size might affect the results depending on the guarantees, explicit or implicit, perceived by depositors. Government-owned banks, for example, may be perceived as being safer than private banks because an implicit or explicit government guarantee covers the government-owned banks but is not always perceived as present in the private sector. This guarantee tends to reduce the incentives to monitor and discipline government-owned banks. There may also be a perception that foreign banks tend to be protected by a strong parent. And large banks may be perceived as “too big to fail.” That is, depositors may believe that the social cost of allowing a large bank to fail would be so high that authorities would avoid letting the bank fail.

Indeed, the regression results in Appendix 8.2 reveal that the importance of fundamentals is significantly diminished in explaining deposit or interest rate movements for public sector banks. Private banks drive

the results shown in Figure 8.1. To summarize the findings in the literature, there is strong support that bank depositors across several countries in Latin America and the Caribbean respond to indicators of bank risk, although this discipline is weakened during truly systemic episodes.

DO DEPOSITORS DISCIPLINE BANKS?

The majority of the empirical literature on market discipline to date has centered on how depositors react to changes in bank risk proxied by a set of bank fundamentals. However, the actions of bank owners and managers—and hence bank fundamentals—are clearly not exogenous to the actions of depositors. The central motivation of market discipline is that bank owners and managers act conservatively to limit bank risk. If risk increases and depositors demand higher interest rates or withdraw, then discipline has been effective if banks react to it by reducing bank risk.

This suggests that analyzing whether bank depositors react to bank risk tells at most only half the story, and does not lead to the conclusion that discipline is effective.⁵ Arguably, the more important question has

⁵ And yet the empirical evidence places much less emphasis on how banks respond to changes in the behavior of depositors. This is partly because of the empirical difficulties associated with attempting to disentangle the dynamics of depositor and bank behavior.

to do with whether and how banks respond to the actions of depositors. This issue is more difficult to tackle empirically, although Calomiris and Powell (2001) and Barajas and Steiner (2000) argue that banks reacted conservatively to depositors' actions in Argentina and Colombia. Galindo, Loboguerrero, and Powell (2004) explore this for a larger sample of countries. The empirical issue is whether there is in fact an interactive system among the following factors: (i) the quantity of bank deposits, (ii) the interest rate that depositors charge or that banks offer, and (iii) bank risk.⁶

Galindo, Loboguerrero, and Powell's results show that depositors tend to withdraw deposits or require higher interest rates on their deposits when bank fundamentals weaken. In their study, a weakening is a reduction in the capital-to-assets ratio. When deposits fall or interest rates rise, banks react by increasing their capital-to-assets ratio. In essence, this is the true test of whether there is discipline because depositors withdraw deposits or demand higher interest rates when bank risk increases, and bankers increase capital or reduce assets as a response to the actions of depositors.

Figure 8.2 reproduces some of the results in Galindo, Loboguerrero, and Powell. Specifically, the figure illustrates the estimated dynamics of their empirical model. The figure shows the standard result that when bank risk rises (capital-to-assets ratios fall), bank deposit growth falls and deposit interest rates rise. However, this result occurs in the context of a system in which the actions of bank depositors also feed back to bank fundamentals because bankers can alter capital-to-assets ratios. More important, bankers react conservatively to risk. In other words, the impulse responses indicate that if deposit growth is more negative or interest rates rise, then banks tend to increase capital or decrease assets.

Thus, there is strong evidence in favor of market discipline in Latin America. The results indicate that depositors react to the standard indicators of bank risk by demanding higher interest rates or withdrawing deposits (deposit growth becomes more negative). This result supports previous analyses on single countries and the sparse multicountry studies on fewer countries. However, the findings must be tempered by the lack of depositor discipline on public sector banks and foreign banks and by the reduced depositor discipline on large banks. Furthermore, extending these traditional studies to consider not only the actions of depositors in relation to changes in bank risk, but also the reactions of bankers to the actions of depositors, there is strong evidence that depositors discipline private banks, which react conservatively to depositors' actions.

EXPLOITING MARKET DISCIPLINE IN LATIN AMERICA—POLICY IMPLICATIONS

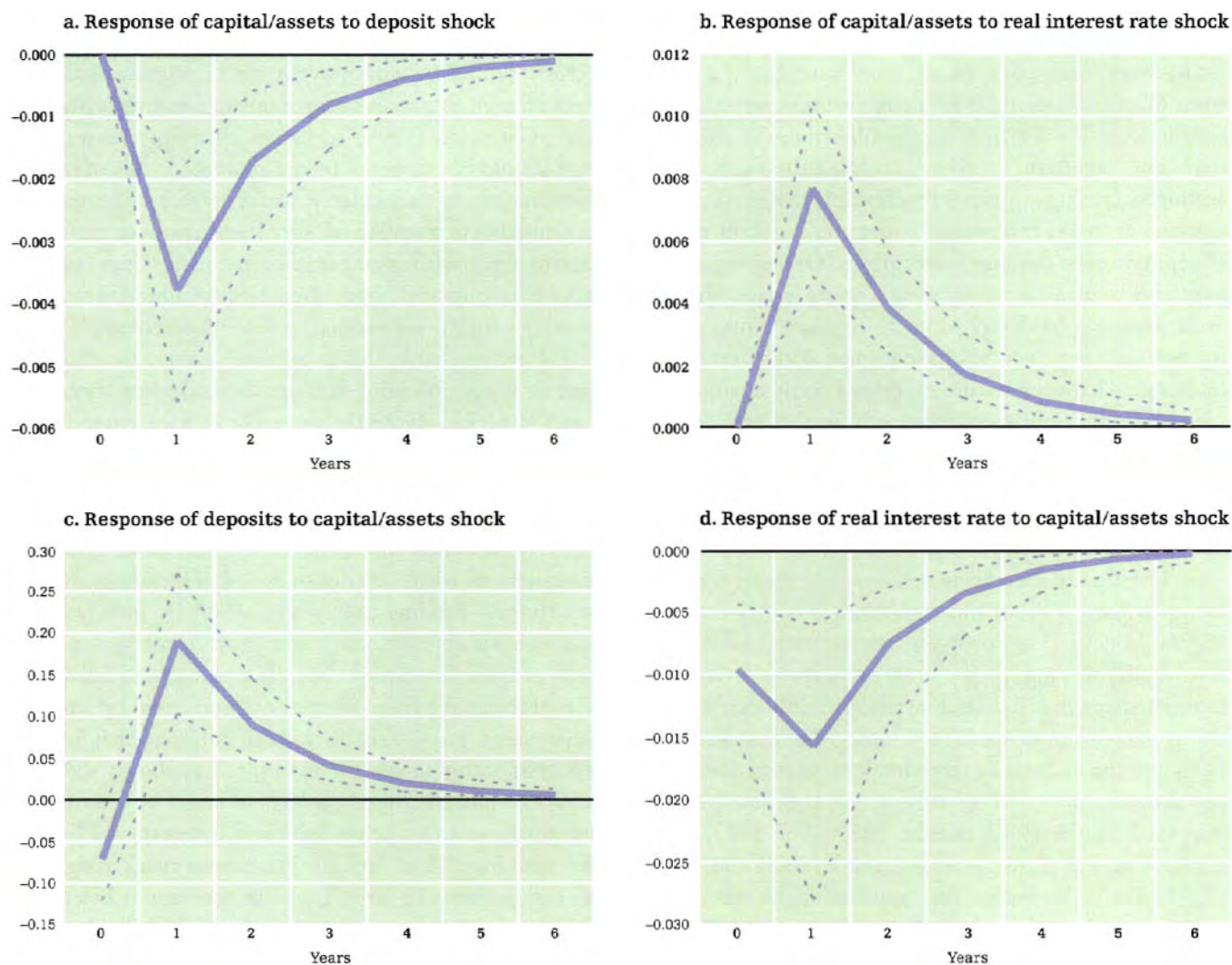
Market discipline and traditional banking supervision are complementary. On the one hand, market discipline may enhance supervisory discipline; on the other hand, regulation and supervision can enhance market discipline. This section focuses on the latter link, namely, the specific policies that may be and have been used to enhance market discipline in the region.

First, market discipline relies on useful and timely information. Disclosure is critical to ensure that market discipline operates effectively. In developed countries, disclosure rules on banks typically refer to information released by the bank on a quarterly or even semi-annual basis. Latin America has in general adopted stricter rules. Typically, banks report to supervisors, who compile reports on a regular basis, usually monthly. Data requirements include balance sheet and profit and loss results and information on the asset portfolio intended to describe credit risk and other risks. Some regulators take the individual bank data and calculate ratios and compare the information across banks by constructing peer tables for ratios summarizing risk and efficiency.

Important questions are whether the bank or the regulator publishes the bank's regulatory ratios at the level of individual banks and whether an individual bank complies with particular regulations. Although the 1988 Basel Accord does not call for banks to disclose their regulatory capital requirement or actual regulatory capital ratios (Basel I-defined capital divided by assets at risk), some countries have indeed asked banks to publish their Basel I-calculated capital requirements and their actual capital ratios. Some countries have also asked banks to publish required liquidity levels, actual ratios, required provisioning levels, and actual provisions. Moreover, as reviewed in Chapter 16, Basel II Pillar 3 explicitly calls for banks to disclose a number of features regarding the credit risk of assets. Basel II calculates capital requirements and actual regulatory capital. It is clear that the trend is toward greater disclosure regarding banks' risks, regulatory requirements, and actual regulatory ratios in order to provide wider information for the market.

⁶ The methodology adopted is that of a vector autoregression (VAR) with three equations corresponding to the change in bank deposits, the deposit interest rate, and the bank capital-to-assets ratio, which represents bank risk. The model controls for bank-specific and country-time-specific factors. The panel VAR methodology in this context was proposed by Charles Calomiris.

FIGURE 8.2 Response of Bank Fundamentals to Changes in Deposits and Interest Rates



Note: The figure shows impulse response functions for private domestic banks. In the case of public banks, the impulse responses are not significantly different from zero. The panel VAR is estimated using a routine in Stata originally written by Inessa Love. The annual sample is from 1994 to 2003. Bank fixed effects are included as well as country-year-specific effects. The panel VAR is estimated with one lag, and impulse response functions are computed via Monte Carlo simulations.

Source: Galindo, Loboguerrero, and Powell (2004).

A second policy guideline is to produce accurate information. In this regard, the task of bank auditors is particularly important. As recent corporate scandals in the United States and Europe have illustrated, non-financial companies can form highly complex financial structures, which make the financial risks of the company less than fully transparent. The potential of financial engineering to make true risks opaque is, if anything, multiplied in a financial institution such as a bank. In recent corporate scandals, auditors either did not understand or did not wish to reveal the true nature of the risks of their clients. It is therefore of critical im-

portance to consider carefully the incentives of auditors to truly understand and report the financial risks of banks. Some countries in the region, in part due to their poor experience with auditors, have gone so far as to construct lists of authorized bank auditors and hence threaten to remove an auditor from that list in case of negligence. Another possibility is to ask auditors for a financial bond to be forfeited in case of proven negligence.

A third strategy that some countries have adopted to enhance monitoring by the market is to make banks seek a credit rating and to make that credit rating pub-

lic. This policy would ensure that an outside body that is not the supervisor, but is skilled in risk analysis, gives an objective opinion regarding the risks of the bank. However, rating agencies are of variable quality. If a rating were made compulsory, what would stop a bank from soliciting a rating from an agency that places more emphasis on the fee than on the objectivity of the rating? The regulator may have to limit the number of authorized ratings agencies to a few internationally recognized agencies that would suffer too much in terms of reputation to devalue their ratings. Or the regulator may have to explain exactly what a rating agency should do in assessing bank risk to try to regulate rating quality. Some rating agencies have argued that attempting to dictate what they should do goes directly against the idea of attempting to harness an informed and objective opinion, and that ratings should not be subject to (or even used for) regulatory purposes. It seems that although the idea of a credit rating is appealing, its application is less clear-cut.

The final policy reviewed here is that of forcing banks to issue a small but significant quantity of subordinated debt. This proposal has attracted considerable academic and policy interest, especially in the United States, but has been applied in only one country to date—Argentina. The Chicago Federal Reserve Bank and the Federal Reserve Bank of Atlanta first proposed this approach in response to the U.S. savings and loan crisis of the 1980s (Keehn 1989; Wall 1989). For a recent review of the proposal, see Evanoff and Wall (2000); for a discussion and application to emerging economies, see Calomiris (1998). Calomiris and Powell (2001) review the Argentine experience.

The underlying idea is to ensure that each bank has some explicitly uninsured liabilities held by sophisticated investors at arm's length, which would constitute the first loss in case of bank failure. Given the lower seniority of this debt if the bank were to fail and assets were liquidated, it is likely that these liability holders would lose their investments and hence such instruments would be sensitive to bank risk. The proposal is normally that banks must issue a small amount of such debt with a minimum maturity (say, 24 months) each year, and that the debt may qualify as (tier 2) capital for the purposes of Basel-style capital requirement regulations.⁷

It is critical that bank insiders do not hold the debt because although they might hold it at nonmarket prices, they would be able to sell it on the basis of private negative information. Calomiris (1998) proposes that emerging country subordinated bank debt be held by a group of only 50 or so pre-authorized internation-

al investors. However, at the same time it is normally considered useful that the debt is reasonably standardized in terms of the instruments used and that it is traded so that secondary prices would reveal relative risks across institutions and movements in prices would reflect changing market perceptions of bank risk. Moreover, Calomiris (1998) advocates that supervisory action should be triggered by the required yields of these instruments. In particular, if banks cannot roll over the instruments at a spread of, say, 5 percent over treasury instruments with comparable maturity, then banks would have to scale back their risk-weighted assets to comply with the subordinated debt requirement.

Foreign banks have become extremely important in many emerging economies, including those in Latin America. Typically, these banks have entered by purchasing significant local institutions that previously were quoted on local stock markets and had bonds outstanding in their own name in local and/or foreign markets. In many cases, the local subsidiaries of large international banks are delisted, and, depending on the institutions' funding policy, the subsidiary may not issue bonds in its own name. Market information on the risks of these institutions has disappeared and been replaced (from the point of view of depositors) by a non-transparent guarantee by a large international bank. The Argentine crisis, for example, has shown that in most cases international banks have stood by their local subsidiaries and branches, but three international banks did withdraw.⁸ The lack of transparent market signals on the riskiness of large banks in the region has provoked renewed interest in subordinated debt and related proposals. If the subsidiaries of international banks were asked to issue subordinated liabilities in local markets, it would reveal market perceptions of the strength of the local institution and of the parental guarantee, and it might assist depositors in making investment decisions.

⁷ Argentina asked banks to have a minimum of 2 percent of their deposits in instruments with a minimum maturity of two years.

⁸ Tschöegl (2003) discusses the cases of Scotia Bank, Credit Agricole, and Intesa. In the first case, two local banks managed the exit and took over the bank's operations. In the second case, the national public Banco Nación took over the three local subsidiaries of Credit Agricole. Intesa sold its operations to a regional bank, but retains a 20 percent share in the newly created entity.

APPENDIX 8.1. WHAT ARE BANK FUNDAMENTALS?

Indicators of bank risk frequently come from the CAMELS rating system. CAMELS stands for Capital adequacy, Asset quality, Management, Earnings, and Liquidity, with the “S” sometimes added for Sensitivity to capture how risk changes with critical variables, including interest rates.

Capital adequacy is normally proxied by the bank capital-to-assets ratio or bank capital plus provisions over assets. These indicators measure how well a financial institution can absorb losses. A second indicator would be capital over assets at risk, a weighted average of assets with weights purportedly reflecting loan risk. The definition of assets at risk stems from the Basel Capital Accord (see Chapter 6); however, definitions vary across countries, and there is controversy as to how well asset risk is measured.

Asset quality is frequently measured by the amount of nonperforming loans over total assets or total loans. In some countries with bank ratings, finer measures of asset quality may be available. Measures of loan concentration, loan interest rates, and the percentages of

different loan types have also been included to measure asset risk.

Earnings are normally included as the bank’s return on assets—profits before taxes divided by assets. Observers frequently comment that bank risk may decline as earnings rise for lower earnings levels; but at high levels of profitability, increases in this variable might actually be positively correlated with risk. The empirical literature agrees on using this indicator to measure the efficiency of banks. The overhead ratio—noninterest expenditures over total assets—reflects variations across banks in employment as well as in wage levels; less efficient banks are expected to have higher expenditures.⁹

Loans over total assets, liquid assets (cash and reserves, government bonds, and other marketable securities) over total assets, and liquid assets relative to liabilities are the most common measures of liquidity risk. In general, banks with a large volume of liquid assets (fewer loans) are perceived to be safer (Demirgüç-Kunt and Huizinga 2004).

Sensitivity to interest rates is in theory measured by asset-liability maturity mismatches. Unfortunately, this critical measure of bank risk is rarely available for the researcher.

⁹ Martínez Pería and Schmukler (2001) consider the case in which banks that offer better services to customers might have higher overhead ratios.

APPENDIX 8.2. EMPIRICAL EVIDENCE OF MARKET DISCIPLINE IN LATIN AMERICA

Most of the empirical literature on market discipline in Latin America focuses on country-specific cases in which bank fundamentals are used to explain movements in the growth rate of deposits during episodes of banking crises. The analysis here uses a panel data approach on 13 Latin American countries (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Peru) during 1994–2003. Each regression includes a country-year effect and a bank effect. With the country-year effect, the analysis can account for most shocks faced by each economy in each year. To avoid problems of endogeneity, the analysis uses the lag of bank fundamentals to estimate changes in deposit growth rates and deposit interest rates. The table below shows that depositors discipline banks by reducing their

deposits and by demanding higher interest rates on the deposits held by riskier banks.

To analyze the role that different market structures play in determining market discipline, the regressions are estimated including interactions with dummies that indicate the ownership structure (state owned, foreign, etc.) of the bank. Dummies for public banks, foreign banks, and large domestic private banks are considered. The table shows that for banks owned by governments, a deterioration in bank fundamentals has significantly lower effects on deposits and interest rates than for private banks. This result is obtained by noting that the sum of the coefficient on the fundamentals variable and the coefficient on its interaction with the state-owned bank dummy is no longer negative and is statistically close to zero. The bank fundamentals variable used in the table is the ratio of nonperforming loans to total loans. The results are similar for other measures.

Independent variable	Dependent variable	
	Growth rate of deposits	Interest rate on deposits
<i>All banks</i>		
Nonperforming loans/loans (lag)	-0.359 (2.49)**	0.045 (3.25)***
Equity/assets (lag)	1.415 (6.92)***	-0.041 (2.09)**
Cash/assets (lag)	0.116 (0.55)	-0.02 (0.99)
Return/assets (lag)	0.622 (1.93)*	-0.032 (1.05)
Observations	1,456	1,456
R ²	0.25	0.74
Year-country effects	Yes	Yes
Bank effects	Yes	Yes
<i>Public, foreign, and large banks</i>		
Nonperforming loans/loans (lag)	-0.332 (1.93)*	0.06 (3.41)***
Public banks * nonperforming loans	0.681 (2.18)**	-0.071 (2.11)**
Foreign banks * nonperforming loans	-0.146 (0.45)	-0.002 (0.05)
Large banks * nonperforming loans	-0.154 (0.45)	0.029 (0.81)
Observations	1,661	1,553
R ²	0.19	0.73
Year-country effects	Yes	Yes
Bank effects	Yes	Yes

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Note: t-statistics are in parentheses.

Source: IDB calculations.

PART III

The Effects of Market Structure

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Concentration and Competition

ADVANCES in information technology, globalization, and deregulation have caused drastic changes in the structure of the banking industry. Innovations and increased competition have reduced margins in traditional banking activities and led to mergers between banks and other financial institutions.

Although this trend toward consolidation affects banks in both developed and developing countries, there are differences in the way the process has taken place in these two groups of countries. In developing countries, most of the consolidation process has taken place with cross-border mergers and acquisitions (usually with banks headquartered in developed countries acquiring banks based in developing countries), whereas in developed countries most of the consolidation process has been through mergers and acquisitions of domestic banks. Empirical evidence suggests that the main driver of consolidation in developed countries is the need to reduce excess capacity, but for developing countries, consolidation is often an outcome of crisis resolution mechanisms, regulatory reforms, and privatization processes. Therefore, consolidation in developed countries is mainly driven by the market, and in developing countries authorities play an important role in the process.

Latin America is not an exception to this trend. In the 1990s, the region was characterized by a process of bank consolidation and entry of foreign banks (see Chapter 10) that was mostly triggered by financial crises and regulatory tightening that tended to affect smaller (and more specialized) institutions. In the case of Argentina, for instance, the Tequila crisis of 1994–95 was followed by the closing of 35 banks and the merger of another 37 banks. A similar process took place in Brazil (the country lost 76 banks between 1996 and 2002) and Colombia after the Russian crisis of 1998. In the case of Mexico, the Tequila crisis led to massive entry of foreign banks (see Box 10.2 in Chapter 10).

Table 9.1 shows the sharp decrease in the number of commercial banks in the region.¹ Interestingly, although the decrease in the number of banks led to an important increase in bank concentration in Nicaragua,

El Salvador, Chile, Guatemala, and Colombia (Figure 9.1), Latin America as a whole did not experience an increase in bank concentration as large as that observed in developed countries.² As a consequence, the level of bank concentration experienced by the region is still lower than the level of concentration in developed countries, and it is lower than the level obtained by almost all the other developing regions (East Asia is the only developing region that reached a lower level of bank concentration than Latin America; Figure 9.2).

CONCENTRATION AND COMPETITION

Although concentration remains low in Latin America, the increase in concentration in some Latin American countries and the entry of large foreign banks in the region have raised concerns about possible effects on bank competition, borrowing costs, bank efficiency, and financial stability.

A concern is that large international banks could exploit their market power by paying lower deposit rates, charging higher interest rates on their loans, and downgrading their services.

Another concern is that the consolidation process may affect sectors and regions differently. For example, the reduction in the number of banks may have a negative effect in regions that already have a small number of banks. Furthermore, the consolidation process (through which banks provide more services) could increase the market power of banks because customers who use banks that supply multiple products may have higher switching costs and hence they could be less sensitive to changes in prices.

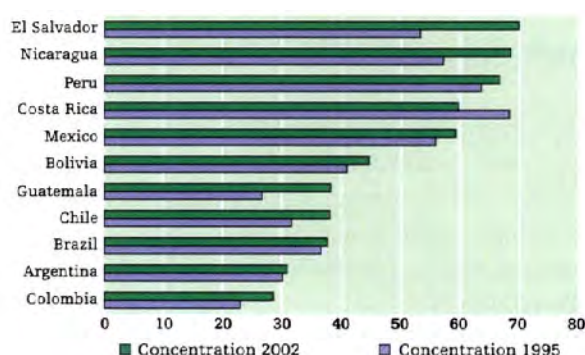
¹ Levy-Yeyati and Micco (2003) describe the complete process that occurred in Latin America.

² Between 1995 and 2002, the average concentration ratio in developed countries increased from 50 to 54 percent. These figures were calculated using BANKSCOPE data that cover only 28 developed countries and hence do not exactly match the data reported in Figure 9.2, which were computed using 33 developed countries.

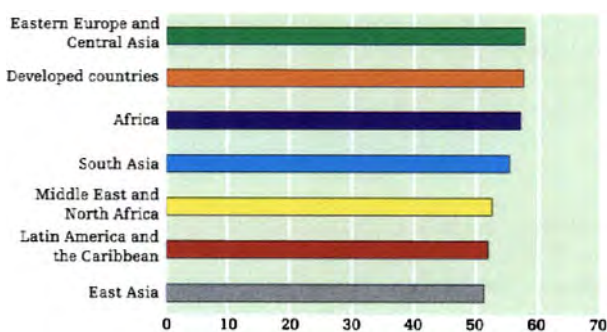
TABLE 9.1 | DECLINE IN THE NUMBER OF BANKS IN LATIN AMERICA, 1996–2002

Country	Number of banks		Change	
	1996	2002	Number	Percent
Argentina	117	80	–37	–32
Brazil	253	177	–76	–30
Chile	31	25	–6	–18
Colombia	39	27	–12	–31
Costa Rica	30	21	–9	–29
Mexico ^a	40	32	–9	–21
Peru	22	15	–7	–32
El Salvador	18	13	–5	–28

^a In 1994 there were 19 banks.
Source: Bank superintendencies.

FIGURE 9.1 Bank Concentration in Latin America, 1995 and 2002 (Percent)

Note: Concentration is measured as the share of assets of the three largest banks.
Source: Bank superintendencies.

FIGURE 9.2 Bank Concentration by Region, 2002 (Percent)

Source: BANKSCOPE.

There is some evidence that lower deposit rates and higher lending rates characterize highly concentrated markets. However, these studies may be flawed because they are based on the structure-conduct-performance paradigm, which implicitly assumes that causality goes from market structure to market performance.³ Several factors have led recent empirical work to rely more on nonstructural models: new developments in industrial organization, the refinement of formal models of imperfectly competitive markets, and the realization of the need to endogenize market structure (that is, to take into account that market performance may affect market structure).⁴ This class of models often assesses market structure, and therefore the level of competition, by measuring how banks react to changes in costs, finding that the largest reactions are experienced by more competitive markets (Bikker and Haaf 2002). Applying this methodology to 50 countries, Claessens and Laeven (2003b) find no evidence that banking system concentration leads to less competition. Their main finding is that competition is stronger in countries with easier entry and fewer restrictions on bank activity.

³ Most studies focus on developed countries. For the United States, see Hannan (1991) and Simons and Stavins (1998). For the United Kingdom, see Egli and Rime (1999). Molyneux, Lloyd-Williams, and Thornton (1994) provide a survey of the literature that applies the structure-conduct-performance paradigm to the banking industry.

⁴ The literature proposes the following three main nonstructural models: Iwata (1974), Bresnahan (1982), and Panzar and Rosse (1987). Of these, Iwata's model has not yet been applied to the banking industry, due to the lack of micro data needed for empirical estimation. Variations on Bresnahan's conjectural variation approach applied to developing countries include Barajas and Steiner (2000) on Colombia.

TABLE 9.2 | BANK CONCENTRATION AND PERFORMANCE AROUND THE WORLD

Variable	Dependent variable	
	Interest margin	Return on assets
Concentration	-0.01 (1.088)	0.52 (0.508)
GDP per capita (ln)	-0.79 (0.115)***	-0.28 (0.053)***
Constant	9.77 (1.247)***	3.32 (0.582)***
Observations	94	94
R ²	0.35	0.26

*** Significant at 1 percent.

Note: Interest margin and concentration are the time average for 1995–2002. Standard errors are in parentheses.

Source: IDB calculations.

The statistical analysis reported in Table 9.2 corroborates these results. The table shows that, controlling for the level of development (measured by gross domestic product (GDP) per capita), there is no statistically significant correlation between bank concentration and either the interest margin or bank profitability.⁵ Levy-Yeyati and Micco (2003) and Gelos and Roldós (2002) study the Latin American case in detail and find no evidence of a negative relationship between competition and concentration or of a fall in the number of banks leading to less competition.

The fact that concentration is not associated with less competition is in line with the contestable market view, suggesting that if there were no barriers to entry, the presence of potential competitors would discipline the incumbent and lead to a situation in which a competitive outcome would be reached although there was only one supplier in the market (Tirole 1988). In fact, although regulations, asymmetric information, and economies of scale may limit entry in the banking industry, in many countries the increase in concentration was the outcome of foreign entry that became possible after the removal of barriers to entry. Furthermore, analytical arguments support the hypothesis that bank consolidation may lead to a more competitive or efficient system (Kroszner and Strahan 1999; Yanelle 1997). In fact, competition and concentration may go in the same direction. Elimination of branching restrictions and widespread use of automated teller machines may reduce geographical barriers and enhance, rather than hinder, banking competition. However, they may also lead to a reduction in margins that, in turn, may induce a consolidation process. In this case, the causality would

go from more competition to more consolidation rather than from more consolidation to less competition.⁶

Given that there is no clear link between bank concentration and competition, it may not be surprising that concentration does not seem to affect credit availability. In fact, there is a weak negative correlation (the correlation coefficient is -0.06 ; Figure 9.3) between concentration and financial development (measured as credit to the private sector relative to GDP). However, this correlation is not statistically significant and becomes positive (still not statistically significant) once the analysis controls for the size of the economy (measured as the log of total GDP).

CONCENTRATION AND EFFICIENCY

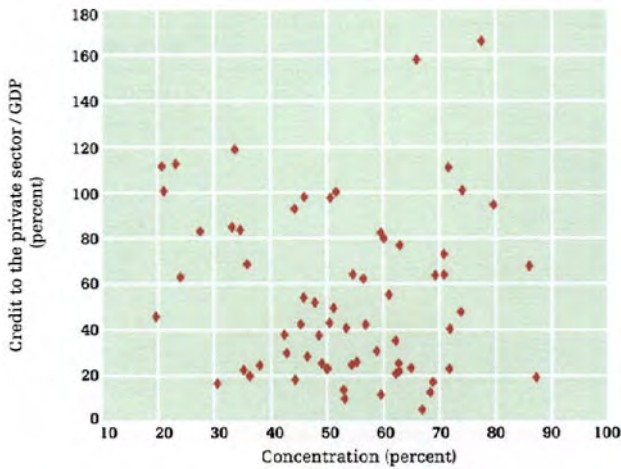
As in the case of concentration and competition, there is no clear relationship between concentration and bank efficiency. On the one hand, mergers can reduce competitive pressure and allow bank managers to supply less effort.⁷ On the other hand, mergers may increase

⁵ The interest margin is defined as net interest income divided by the sum of loans and deposits; bank profitability is measured as the return on assets. The analysis uses annual observations for 1995–2002.

⁶ In fact, a wide range of studies analyze experience in the United States and Europe and conclude that mergers seem to have had a favorable effect on increasing bank competition. For the U.S. case, see Kroszner and Strahan (1999) and Berger and Humphrey (1997).

⁷ Hicks (1935) calls this effect “quiet life.” Berger and Hannan (1998) test it and find it important.

FIGURE 9.3 Concentration versus Financial Development, 1995-2002



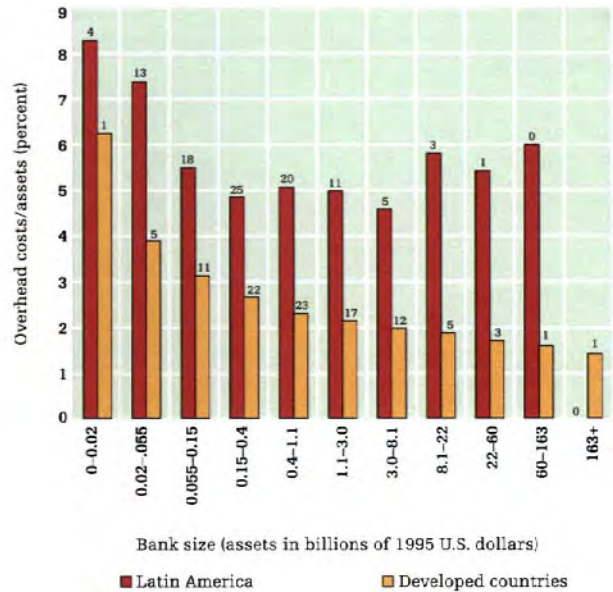
Note: The data are for 66 countries.
Source: BANKSCOPE and World Bank data.

efficiency. For example, a merger between firms serving overlapping or identical markets may increase efficiency by eliminating duplication of activities. Mergers can also increase efficiency if banks are too small and hence unable to fully exploit economies of scale. Finally, mergers can increase efficiency if the merged banks are very different in terms of technology and efficiency *ex ante*.

Empirical studies focusing on developed countries find no evidence in support of the idea that consolidation improves efficiency (Shaffer 1993; Rhoades 1998; Peristiani 1997). Furthermore, they find that cost scale economies are exhausted at a relatively small size (around US\$10 billion in assets) and, hence, that cost reduction cannot be used as a justification for the existence of large banking conglomerates (Berger, Demsetz, and Strahan 1999; Sheldon 2001).⁸ The evidence for developing countries is more limited.⁹ Therefore, it is useful to test for the presence of economies of scale in the Latin American banking industry.

A simple way to test for the presence of economies of scale is to observe the correlation between overhead costs (expressed as a fraction of total assets) and bank size.¹⁰ Compared with banks operating in developed countries, Latin American banks have higher overhead costs, independent of bank size (Figure 9.4). The data seem to indicate that there are substantial scale economies for small banks that have less than \$150 million in assets. In Latin America, such banks have overhead costs that are 2 percentage points higher than the overhead costs of larger banks. However, banks that have between \$150 million and \$8 billion in assets have simi-

FIGURE 9.4 Overhead Costs and Bank Size, Latin America and Developed Countries, 2001



Note: The value above the bars indicates the percentage of banks in each size bracket.
Source: BANKSCOPE.

lar overhead costs (equivalent to about 4.8 percent of total assets), indicating that economies of scale are not at work for these banks. Banks with similar asset size located in developed countries have much lower overhead costs (between 2 and 3 percent of assets), which continue to decrease with the size of assets, indicating that economies of scale may be at work. Not only do economies of scale not seem to be at work for large Latin American banks, but it seems that for very large banks (with more than \$8 billion in assets), overhead costs are positively correlated with bank size. This is not the case for developed countries, where the negative relationship between size and overhead costs never reverses, although it becomes flatter for larger banks.¹¹

These results indicate that the optimal size of banks operating in developing countries may be small-

⁸ Exceptions include Hughes and Mester (1998).

⁹ Berger and Humphrey (1997) is the only relevant study.

¹⁰ See Mathieson, Schinasi, and others (2001). The data discussed here are for 2001 and are measured in 2001 U.S. dollars.

¹¹ The statistical analysis reported in Appendix 9.1 confirms the findings described in Figure 9.4, which shows overhead costs by size. The analysis regresses overhead costs (over assets) on size (log assets), controlling for the relative size of demand deposits over total deposits (a proxy for the type of banks), the relative importance of noninterest income, state ownership, and a country-year fixed effect.

er than that of banks operating in developed countries. Possible explanations for this finding may have to do with the lack of efficient infrastructure (telecommunication and other support), smaller market size, and lack of a well-developed institutional and contracting environment.

CONCENTRATION, COMPETITION, AND BANK STABILITY

It is more complex to evaluate the effects of competition and concentration in the financial sector than in the rest of the economy because they affect not only efficiency, but also the stability of the system in a way that does not have a counterpart in the nonfinancial sector. From a theoretical point of view, greater competition in the banking sector may lead to a drop in bank charter value, which, in turn, may reduce the incentives for prudent risk-taking and negatively affect stability. According to this view, the excess profits associated with the presence of market power reduce the agency problem of limited liability banks (namely, their propensity to gamble). There is in fact some evidence that stiffer competition may lead to excessive risk-taking.¹² In addition, higher profits provide a buffer against adverse shocks and hence reduce the probability of bank failures (Hellman, Murdoch, and Stiglitz 2000).

There are also possible benefits from greater concentration because large banks are likely to be more diversified and hence better able to face shocks compared with smaller and less diversified banks. Along the same lines, some authors argue that it is easier to monitor a few large banks (see Beck, Demirgüç-Kunt, and Levine 2003a). Therefore, the probability of mismanagement and excessive risk-taking might be lower in concentrated systems.

However, some arguments suggest that a more concentrated system may lead to excessive risk-taking because of moral hazard problems. That is, large banks may increase their risk exposure because they anticipate the unwillingness of the regulator to let the bank fail in the event of insolvency problems (this is known as the too big to fail problem; see Hughes and Mester 1998). Furthermore, it is possible that as banks grow in size, they may become complex institutions, making them more difficult to monitor than a large number of small banks. In this case, greater concentration would imply a more opaque and fragile banking system.¹³

Few large banks and high stability characterize the banking industry in the United Kingdom, and low concentration and relative instability characterize the

system in the United States. Thus, comparing these two countries suggests that there might be a trade-off between concentration and stability (Allen and Gale 2000).¹⁴ However, cross-country analyses seem to suggest that there is a positive relationship between competition and stability. In particular, a study that focuses on 79 developed and developing countries in the 1980s and 1990s finds that greater levels of concentration are correlated with lower levels of bank fragility (Beck, Demirgüç-Kunt, and Levine 2003a). The same study indicates that lower barriers to bank entry and fewer restrictions on bank activities also reduce bank fragility, suggesting that competition (not concentration) increases efficiency and reduces bank fragility.

Although these results suggest that concentration is not a proxy for market power, its effect on stability should come from better diversification or better monitoring. The study finds weak evidence to accept the hypothesis that concentrated banking systems are better diversified. Levy-Yeyati and Micco (2003) study Latin American bank performance. Controlling for the degree of competition, they corroborate this result and find that concentration appears to exert no impact on the level of risk taken by banks.

CONCENTRATION, COMPETITION, AND CYCLICALITY OF CREDIT

Another key consideration regards the relationship between market structure and credit volatility. It is interesting to ask the following two questions: Do concentration and competition affect how credit responds to macroeconomic conditions? And do concentration and competition make credit more or less procyclical? As is often the case, theory does not provide an unambiguous answer. On the one hand, theoretical models that

¹² See Cerasi and Daltung (2000) and Keeley (1990). Cordella and Levy-Yeyati (2002) argue that proper regulation and correct disclosure of information by bank creditors would enhance market discipline and could reduce the perverse link between competition and risk.

¹³ Another possible source of instability is that banks charging higher interest rates may induce firms to take excessive risk and hence reduce bank stability (Boyd and De Nicoló 2003). Whether this argument suggests a negative or positive link between consolidation and stability depends on the relationship between consolidation and market power, which is not clear.

¹⁴ Keeley (1990) argues that deregulation of the U.S. banking industry in the 1970s and 1980s led to an increase in competition and was partly to blame for the collapse of the savings and loans in the 1980s. In his view, competition pushed banks to increase asset risk and reduce capital, increasing the vulnerability of banks.

focus on the collusive behavior of banks suggest a positive correlation between concentration and credit procyclicality.¹⁵ On the other hand, some models suggest that fierce competition in the banking industry would not allow banks to smooth credit by using future profits to compensate for current losses.¹⁶ Furthermore, modern portfolio theory implies that diversification reduces volatility. In this context, large banks taking advantage of the law of large numbers are likely to be better diversified and hence better able to face shocks than smaller and less diversified banks. Therefore, large banks would have more stable credit levels (Demsetz and Strahan 1997).

Because the theoretical relationship between concentration and credit procyclicality is ambiguous, it is important to check what the data reflect. Appendix 9.1 presents a statistical exercise aimed at studying how bank concentration affects the way in which credit reacts to macroeconomic shocks. The main results can be summarized as follows: conditional on the level of financial development and income per capita, changes in GDP growth are related to lower fluctuations in aggregate credit in countries with higher levels of concentration in the banking industry. For the median developing country in the sample (with a concentration level of 60 percent), a 1 percent change in GDP is associated with a 1.6 percent change in credit. This percentage goes from 1.9 percent for a country with a concentration level of 50 percent (25th percentile) to 1.1 percent for a country with a concentration of 75 percent (75th percentile).¹⁷ These results suggest that more concentrated banking sectors are associated with lower credit volatility. (Note that greater concentration is not necessarily associated with less competition.)

CONCENTRATION, COMPETITION, AND ACCESS

Another interesting issue concerns the relationship between the market structure of the banking sector and economic growth. Conventional wisdom suggests that any departure from perfect competition in the credit market introduces inefficiencies that would increase interest margins and reduce firms' access to credit (Pagan and Jappelli 1993). However, it is possible that banks with greater market power may have an incentive to establish lending relationships with their clients and hence facilitate their access to credit. In this case, competition may be detrimental to the formation of mutually beneficial relationships between firms and banks (Petersen and Rajan 1995).

In particular, if the cash flow of new or distressed firms is low but potential future cash flow is high, a bank with market power might be willing to lend at a low interest rate today under the expectation that in the future it will be able to extract part of the surplus of the firm. This would not be possible for a bank that operates in a competitive market and needs to break even on a period-by-period basis (because it would be driven out of business if it charged more than the competitive rate in any period). This implies that in a competitive market, young firms with high uncertainty in their flow of funds would have to pay high interest rates, and this could reduce entry or innovation and hence reduce growth.

Furthermore, the process of lending may generate proprietary information that may be affected by the structure of the banking system. Hoff and Stiglitz (1997) show that if information flows worsen with the number of competitors, reputation effects and borrowers' incentives to repay become weaker in more competitive markets. In this case, entry by new banks implies a more severe moral hazard problem and increases enforcement and monitoring costs, inducing higher interest rates. Similarly, Márquez (2002) shows that borrower-specific information becomes more dispersed in more competitive banking industries, which results in a less efficient borrower screening process.

The empirical evidence on whether bank concentration facilitates access to credit for small firms is not clear-cut. Using U.S. data, Petersen and Rajan (1995) show that small, information-opaque firms receive

¹⁵ Rotemberg and Saloner's (1986) implicit collusion model implies that banks decrease mark-ups during good times. In their model, the threat of future punishment provides the discipline that facilitates collusion; therefore, the temptation for a bank to unilaterally break the cartel is higher when demand is high (during an expansion). To moderate this temptation, a maximizing cartel reduces its profitability at such time by cutting prices. For a more recent discussion of countercyclical mark-ups, see Rotemberg and Woodford (1999).

¹⁶ Petersen and Rajan (1995) point out that banks with greater market power may have an incentive to establish a lending relationship with their clients and hence facilitate their access to credit. It is possible that such a lending relationship would allow banks to smooth their lending rate over the cycle, reducing credit volatility.

¹⁷ The results are robust to substituting an external shock for GDP growth. Estimations include all countries for which data are available. The results are similar if only developing countries are included in the sample. If the sample is restricted to Latin American countries, the results remain qualitatively similar, but the coefficient for the concentration variable is no longer statistically significant.

more credit in a more concentrated market than in a more competitive one (concentration is used as a proxy for lack of competition). As the firm grows older, cash flow is less uncertain, which implies that firm borrowing differences disappear. Using data for Italy, Bonaccorsi di Patti and Dell'Araccia (2000) find a nonlinear relationship between firm growth and bank concentration. They find that the relationship is positive when concentration is low and negative when concentration is high. They also find that the level of concentration at which the inflection point occurs is increasing with the level of opaqueness of the industry. Bonaccorsi di Patti and Gobbi (2001) show that concentration has a positive effect for small and medium-size firms, but a detrimental effect for large firms.

Using evidence from industry-level data for 41 developing and developed countries, Cetorelli and Gambera (2001) show that bank concentration promotes the growth of those industries that are more dependent on external finance by facilitating access to credit for younger firms. However, they also find that bank concentration has a negative general effect on growth, which affects all sectors and firms indiscriminately.

Although these studies seem to provide evidence supporting the idea that bank concentration may promote small firms' access to credit, Beck, Demirgüç-Kunt, and Maksimovic (2003) find exactly the opposite. They use a worldwide survey (covering 74 countries)

on financing obstacles for firms of various sizes to show that bank concentration increases financing obstacles and decreases the probability of receiving bank finance, and this negative effect is especially strong for small and medium firms.

CONCLUSIONS

Although the 1990s witnessed a large fall in the number of banks operating in Latin America, the increase in bank concentration was limited, and bank concentration in the region is still relatively low. Contrary to what it is often thought, this low level of concentration has not led to greater competition, which would result in lower margins and overhead costs. Lack of concentration may be one of the possible causes of the poor performance of the banking sector in Latin America. In fact, some evidence suggests that bank concentration may reduce the fragility of the banking system and reduce credit procyclicality.

The effect of concentration on credit availability is not clear. However, there is evidence that a more concentrated banking system may improve access to credit for small firms. If this were the case, the low concentration of the Latin American banking system might also help to explain why, at least in part, small firms in the region find access to credit very difficult.

APPENDIX 9.1. BANK SIZE AND CONCENTRATION

Appendix Table 9.1 uses bank-level balance sheet data to compare overhead costs for banks of various asset sizes. In order to control for variation in product mix across banks, the regression includes a variable that measures the share of demand deposits over total deposits, which should account for differences between wholesale and retail banks. Because state-owned banks tend to be larger and have higher overhead costs than private banks, the regressions include a dummy variable controlling for public ownership. All regressions include country-year fixed effects (therefore the identification is from within-country-year differences).

Appendix Table 9.2 uses aggregate balance sheet data to compare credit cyclicality for countries with various levels of bank concentration. In particular, the

table shows the elasticity of aggregate credit to changes in GDP and external shocks. The analysis controls for lagged aggregate credit growth using instrumental variables and includes GDP growth and GDP growth interacted with both banking concentration (the assets share of the three largest banks) and financial development (credit over GDP). The sum of these three coefficients is the elasticity of credit to GDP. A negative coefficient in the interaction of GDP growth and concentration indicates that greater concentration reduces the elasticity of credit to GDP.

To calculate the elasticity of credit to external shocks, the analysis interacts the external shock variable with bank concentration. The results suggest that greater concentration reduces the elasticity of credit to both GDP and external shocks. Therefore, after controlling for financial development, concentration is related to lower credit volatility.

APPENDIX TABLE 9.1 | OVERHEAD COSTS BY BANK SIZE

Variable	Developed countries	Latin America	Other developing countries
<i>Bank size (billions of 1995 U.S. dollars)</i>			
0.02 to 0.055	-2.177 (0.292) ^{***}	-0.955 (0.352) ^{***}	-2.064 (0.256) ^{***}
0.055 to 0.15	-0.614 (0.094) ^{***}	-0.759 (0.190) ^{***}	-0.841 (0.139) ^{***}
0.15 to 0.4	-0.350 (0.056) ^{***}	-0.730 (0.132) ^{***}	-0.513 (0.086) ^{***}
0.4 to 1.1	-0.265 (0.026) ^{***}	-0.383 (0.128) ^{***}	-0.191 (0.071) ^{***}
1.1 to 3.0	-0.141 (0.023) ^{***}	-0.034 (0.159)	-0.040 (0.065)
3.0 to 8.1	-0.198 (0.023) ^{***}	-0.101 (0.191)	-0.097 (0.064)
8.1 to 22	-0.148 (0.026) ^{***}	0.183 (0.272)	-0.184 (0.075) ^{**}
22 to 60	-0.222 (0.039) ^{***}	0.443 (0.382)	-0.405 (0.088) ^{***}
60 to 163	-0.189 (0.041) ^{***}	0.263 (0.874)	0.173 (0.206)
163 or more	-0.076 (0.050)	0.000 (0.000)	0.601 (0.284) ^{**}
Demand deposits/total deposits	0.895 (0.092) ^{***}	2.145 (0.387) ^{***}	0.404 (0.213) [*]
Noninterest rate income/total assets	42.190 (8.375) ^{***}	9.817 (2.369) ^{***}	17.875 (5.601) ^{***}
Public bank (dummy)	-0.097 (0.060)	1.289 (0.172) ^{***}	0.477 (0.077) ^{***}
Observations	19,497	3,321	4,660
R ²	0.56	0.42	0.65
Countries	41	23	77

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Note: The dependent variable is overhead costs over assets (in percentage points). Robust standard errors are in parentheses.

Source: IDB calculations based on data from BANKSCOPE.

APPENDIX TABLE 9.2 | CREDIT CYCLICALITY BY BANK CONCENTRATION

Variable	1	2	3	4	5	6	7	8
Credit (growth, lagged)	0.412 (0.049)***	0.406 (0.048)***	0.383 (0.056)***	0.499 (0.136)***	0.453 (0.054)***	0.457 (0.055)***	0.399 (0.061)***	0.516 (0.143)***
GDP (change, log)	2.816 (0.585)***	2.976 (0.600)***	3.382 (0.882)***	3.170 (1.564)**				
GDP (change, log)* concentration (percent)	-2.111 (0.888)**	-1.812 (0.904)**	-3.028 (1.317)**	-0.490 (2.384)				
GDP (change, log)* low-income countries (dummy)		-1.110 (0.413)***						
GDP (change, log)* developed countries (dummy)		-0.129 (0.428)						
GDP (change, log)* financial development (percent)	-0.681 (0.454)	-0.943 (0.568)*	-1.011 (0.808)	-4.509 (2.574)*				
External shock (percent)					11.090 (3.812)***	11.341 (4.095)***	14.434 (6.823)**	14.864 (16.289)
External shock* concentration					-11.948 (4.979)**	-13.455 (5.429)**	-13.923 (8.755)	-2.380 (20.199)
External shock* low-income countries (dummy)						3.150 (3.445)		
External shock* developed countries (dummy)					1.121 (2.266)			
External shock* financial development (percent)					-1.353 (2.079)	-1.442 (2.900)	-6.171 (5.062)	-22.168 (25.656)
Concentration (percent)	0.108 (0.104)	0.087 (0.104)	0.117 (0.146)	-0.207 (0.220)	0.120 (0.118)	0.134 (0.119)	0.094 (0.167)	-0.132 (0.268)
Observations	895	895	566	203	869	869	547	203
Sample	All	All	Developing countries	Latin America	All	All	Developing countries	Latin America

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Note: The dependent variable is overhead costs over assets (in percentage points). Banking concentration is the assets share of the three largest banks; financial development is credit over GDP. Robust standard errors are in parentheses.

Source: IDB calculations based on data from BANKSCOPE.

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Foreign Banks

THE ownership structure of banking systems worldwide has undergone deep changes in the past few decades. The entry of foreign banks has been a dominant characteristic of this process, and in many countries foreign-owned banks have become the main players in the domestic financial system. By the third quarter of 2003, foreign banks headquartered in developed countries were lending a total of US\$1.45 trillion to developing countries. Sixty percent of this was either cross-border lending or domestic lending in foreign currency; the remaining 40 percent (US\$600 billion) was lending by local branches and subsidiaries in domestic currency.¹ (Box 10.1 discusses the various ways in which foreign banks can enter a given market.)

Cross-border lending represents more than 20 percent of domestic credit in developing countries, and domestic currency lending by foreign banks corresponds to 15 percent of total bank lending in developing countries.² The presence of foreign banks is particularly important in Latin America, where local currency lending by branches or subsidiaries of foreign banks represents more than 65 percent of total bank lending, and cross-border lending is 60 percent of domestic credit (Figure 10.1). Foreign bank lending is also important in Eastern Europe and Central Asia and less important in East Asia and Africa and the Middle East.

It is interesting to look at the composition by source country of total foreign lending to Latin American residents (cross-border loans and domestic loans issued by foreign-owned banks). Spanish banks are the largest lenders, with approximately one-third of the total share, followed by the United States, the United Kingdom, Germany, and the Netherlands (Figure 10.2). The foreign bank concentration of a few source countries is even greater if the calculations take into account the total local currency claims by branches and subsidiaries of foreign banks located in Latin America (Figure 10.3). In this case, the share of Spanish banks increases to almost 50 percent, and that of U.S. and British banks is 25 and 11 percent, respectively.

However, the data reported above do not fully capture the local market share of foreign banks for at

least two reasons. First, the foreign currency lending of local branches or subsidiaries is included in the cross-border lending entry and excluded from the local market activities of foreign banks. Second, the data of the Bank for International Settlements (BIS) do not include the activities of local subsidiaries that are controlled by foreign banks but not officially headquartered in a reporting country.³

The balance sheet data of banks operating in developing countries can help draw a clearer picture. Figure 10.4 shows the evolution of the share of total bank assets owned by foreign banks in 10 Latin American countries. In the mid-1990s, foreign banks had a significant presence in Chile (about 30 percent of total bank assets) and Argentina (about 20 percent of total bank assets), and a more limited presence in Colombia, Peru, and Brazil (between 10 and 20 percent of total bank assets). Their market share in the other countries for which data are available was well below 10 percent. By the end of 2002, foreign banks controlled approximately 70 percent of bank assets in Mexico (see Box 10.2), and more than 50 percent of bank assets in Chile, Argentina, and Peru. The presence of foreign banks in Brazil also more than doubled (from 10 to 26 percent) over the 1995–2002 period. The increase in the pres-

¹ The data are from the Bank for International Settlements (Table 10.1 of the Consolidated Banking Statistics for the Third Quarter of 2003, available at http://www.bis.org/pub/r_hy0401.pdf). Total international loans include total loans to the residents of the host country by banks headquartered in reporting countries (all the European Union countries except Greece, plus Australia, Canada, Japan, Norway, Switzerland, the United Kingdom, and the United States). International loans are divided into cross-border loans and domestic loans in foreign currency.

² Figure 10.1 shows the ratio of domestic currency lending in host countries by branches or subsidiaries of foreign banks located in the host country to total bank credit. The figure also shows cross-border lending plus foreign currency lending in host countries by branches or subsidiaries of foreign banks located in the host country (again expressed as a share of domestic bank credit). The sum of the two measures provides the ratio of total foreign lending to total domestic credit.

³ For instance, they do not include the activities of, say, the subsidiary of a Canadian bank that operates in Chile but is officially headquartered in the Cayman Islands.

BOX 10.1 | TYPES OF FOREIGN BANKS

A foreign bank can enter a given market in one of the following four organizational forms:

- *Representative offices* require the least amount of resources. They act as an agent of the foreign bank and do not make loans or take deposits. They are often established either to provide services to customers based in the source country that have activities in the host country or to test the ground for expanding the bank's activities in the host country.
- *Agencies* are often allowed to make loans, but they do not usually operate at the retail level and do not take deposits.
- *Branches* are an integral part of the parent bank, and as such their liabilities are fully backed by the parent bank's assets. Although they offer more services than agencies and representative offices, host or source-country regulations may impose limits on their activities that do not apply to domestic banks. Branches often operate in the wholesale market. Because the activities of branches are subject to source-country regulations, foreign banks tend not to use this organizational form when they have

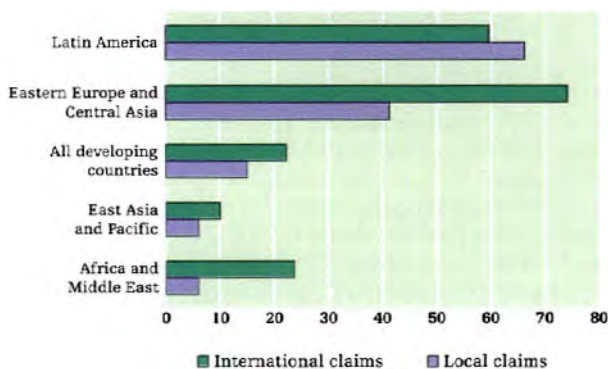
headquarters in a country that does not allow universal banking and the host country allows universal banking.

- *Subsidiaries* are banks incorporated in the host country but owned by a foreign company. The assets of the parent bank do not back the liabilities of subsidiaries. They can perform the same activities and are subject to the same regulations as domestic banks.

There are two methods by which a foreign bank can enter a foreign market: de novo entry and the acquisition of an existing domestic bank. Most of the entry of foreign banks in the Latin American market has been through the acquisition of existing domestic banks. This is important because although de novo entry may increase the number of banks and the degree of competition, the acquisition of existing banks often takes place through mergers and acquisitions that may reduce the degree of competition.

Source: Based on Goldberg and Zimmerman (1992).

FIGURE 10.1 Foreign Bank Activity as a Share of Domestic Credit
(Percent)



Source: BIS data, third quarter 2003.

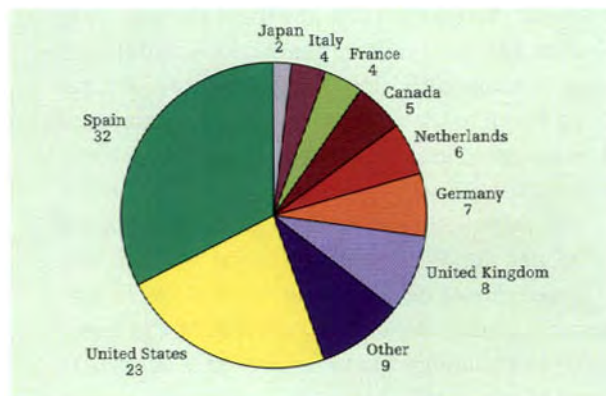
ence of foreign banks in Latin America resulted from the process of financial liberalization and global financial integration.⁴ In some countries, banking crises and the consequent need for foreign resources for the re-

capitalization of the banking system also accelerated foreign bank entry (see Box 10.2).

Given the massive entry of foreign banks in the Latin American market, it is interesting to analyze what drives a bank's decision to expand abroad. The traditional view states that banks enter foreign markets to follow their clients (Aliber 1984). According to this view, the internationalization of the banking system is a consequence of the increasing importance of nonfinancial foreign direct investment (FDI). Although there is a positive correlation between nonfinancial FDI and foreign bank entry in a given market, it has been impossible to establish whether FDI causes foreign bank entry, whether foreign bank entry causes FDI, or whether the association between these factors is driven by other factors omitted in the statistical analysis. Studies focusing on foreign bank entry in developed and developing countries find limited evidence for the hypothesis that banks tend to follow their clients, especially in expan-

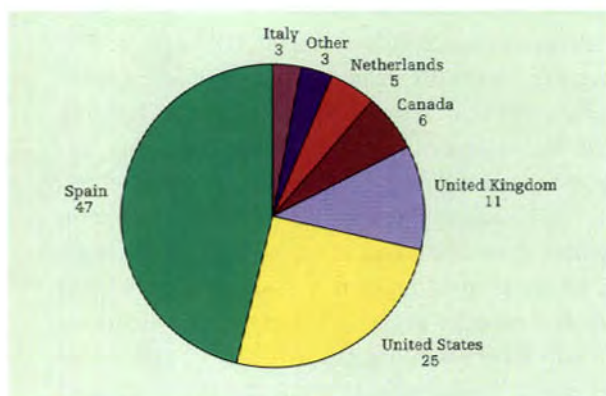
⁴ See IDB (2002, Chapter 5) for a description of financial liberalization in Latin America.

FIGURE 10.2 Foreign Bank Lending and Cross-Border Loans to Latin America (Percent)



Source: BIS data, third quarter 2003.

FIGURE 10.3 Foreign Bank Lending to Latin America (Percent)

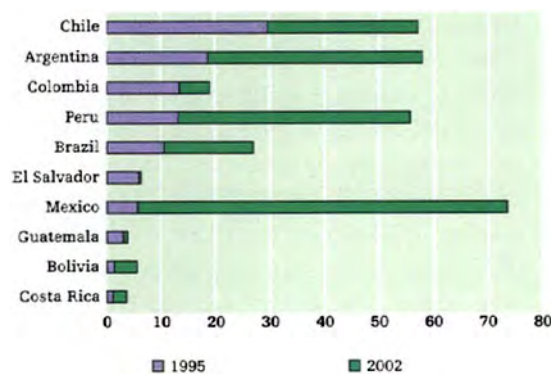


Source: BIS data, third quarter 2003.

sion to developing countries (Seth, Nolle, and Mohanty 1998; Miller and Parkhe 1999). Other studies focusing on commerce find evidence that bilateral trade is correlated with FDI in banking (Brealey and Kaplanis 1996; Williams 1998).

An alternative theory suggests that foreign banks, like other businesses, enter countries where they see profitable opportunities and a good institutional and macroeconomic environment. Accordingly, Focarelli and Pozzolo (2001) find that foreign banks tend to enter countries characterized by high economic growth, low inflation, large stock market capitalization, and a less efficient local banking system. The latter result provides evidence in favor of the idea that foreign banks enter a given market not to follow their clients, but to

FIGURE 10.4 Market Share of Foreign Banks in Latin America (Percent)



Source: Bank superintendencies.

take advantage of profit opportunities with local customers. This is also substantiated by the fact that foreign banks tend to enter markets characterized by fewer bank regulations and restrictions.⁵

DO FOREIGN BANKS PLAY A USEFUL ROLE?

Financial liberalization and incentives to attract foreign banks are based on the premise that there are net gains from foreign entry in the domestic banking system. From a policy perspective, the most important question is whether foreign banks play a beneficial role in promoting financial development and stabilizing credit (hence, domestic governments should promote foreign entry) or have a less benign role by crowding out the domestic financial sector and accentuating international shocks (if this is the case, domestic governments should create obstacles to the entry of foreign banks).

Levine (1996) provides a conceptual framework to analyze the potential costs and benefits of foreign bank entry. On the benefits side, he emphasizes how foreign banks can play a useful role in promoting capital inflows and competition, and hence modernization and improvement in the efficiency of the financial system, and a regulatory framework that will ultimately benefit

⁵ Studying the case of Argentina, Clarke and others (2000) show that foreign banks tend to specialize in certain geographic (Buenos Aires) and economic (lending to manufacturing and utilities) areas and suggest that these are the areas in which foreign banks located in Argentina have a comparative advantage.

BOX 10.2 FOREIGN BANKS IN MEXICO

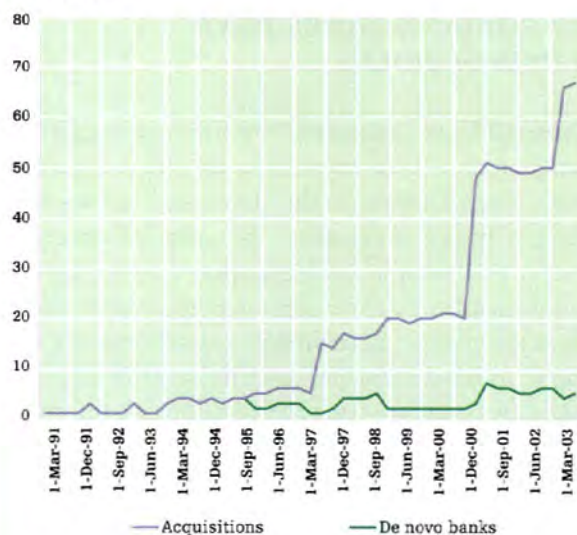
Mexico is a good example of the process of foreign banks entering the Latin American market. President José López Portillo expropriated and nationalized the country's banking system in 1982. Banks were subsequently privatized through auction to private investors in 1991. At the time of the privatization, it was made clear that foreign banks could play only a minor role in the Mexican banking system. In fact, the North American Free Trade Agreement stipulated that no single foreign bank could have controlling interest in any Mexican bank with a market share larger than 1.5 percent (Haber and Kantor 2003). The privatization was poorly managed, without any consideration for the banking experience of the acquiring investors, and with the unique objective of maximizing privatization revenues. Things soon turned sour, and owners of the privatized banks that could not recover their initial

investment started getting involved in very risky activities and then looting the banks' capital with related lending activities. That is, bankers started making loans to themselves or to their relatives or business associates (La Porta, López-de-Silanes, and Zamarripa 2003).¹

The large fiscal cost of the bank bailout and the need to find funds to recapitalize the banking system forced the Mexican government to allow foreign investors to enter the banking system. At the beginning of 1997, foreign banks controlled less than 10 percent of total bank assets. The figure jumped to 14 percent in March 1997, 50 percent by the beginning of 2000, and nearly 70 percent by the end of 2003 (see the figure to the left). The three largest Mexican banks are now under complete control of foreign institutions. Bancomer is controlled by BBVA (a Spanish bank), Banamex by Citibank (a U.S. bank), and Serfin by HSBC (a British bank).

There is some evidence that the entry of foreign banks in the Mexican market led to an increase in efficiency and a lower share of nonperforming loans; Haber and Mustacchio (2004) show that foreign entry led to lower net financial margins. However, weak property rights still generate a situation in which intermediation margins tend to be high, and banks tend to make few loans and hold most of their assets in securities. Indeed, the situation seems to have deteriorated. In 1998, 72 percent of bank assets were loans; by 2003, the share of loans had dropped to 56 percent. The situation seems to be even worse for foreign-owned banks, for which the share of loans decreased from 76 to 52 percent (Haber and Kantor 2003).

Foreign Bank Share in the Mexican Banking System, 1991–2002
(Percent)



Source: Haber and Kantor (2003).

¹ Related lending activities were amplified by the presence of de facto full deposit insurance.

Source: Based on Haber and Kantor (2003, Appendix 10.1).

the whole financial system and increase financial development. Although Levine suggests that the role of foreign banks in promoting capital inflows is relatively unimportant for a country's growth performance, he points out that foreign banks can play an important role in improving the functioning of the payments system;

introducing technological innovations, risk management, and monitoring techniques; expanding the mobilization of domestic savings; and improving resource allocation. He also suggests that the presence of foreign banks leads to better rating agencies and better disclosure requirements, leading to more information about

both firms and financial intermediaries. These benefits, together with a better regulatory environment and improved definition of property rights (also promoted by the presence of foreign banks), ultimately have a positive effect on a country's growth performance.

Potential concerns about the presence of foreign banks include the possibility that they will be the first to rush to the door in the face of a crisis and thus increase capital outflows, leading to procyclical lending and an increase in economic volatility (Galindo, Micco, and Powell 2003; Caballero 2002; Caballero, Cowan, and Kearns 2004). It has also been claimed that a widespread presence of foreign banks may crowd out the activities of domestic banks, which might be unable to compete for deposits against large international banks endowed with a better reputation (Stiglitz 1994). Under the assumption that foreign banks lend mainly to large firms, the crowding out of domestic banks could be problematic because it may lead to a reduction of total credit available to small and medium-size domestic firms. Stiglitz also suggests that the widespread presence of foreign banks may reduce the government's ability to steer the economy.

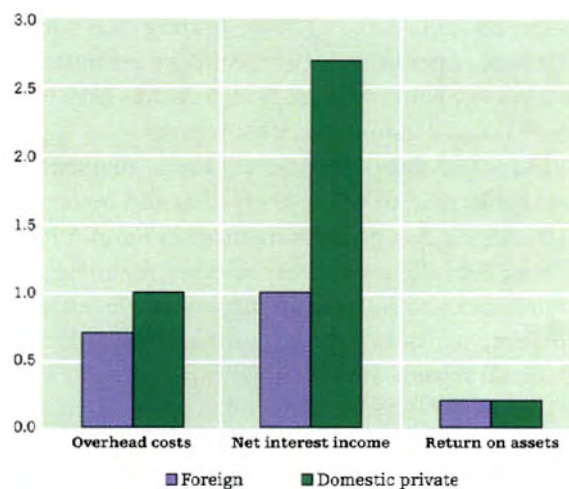
FOREIGN BANKS AND EFFICIENCY

Levine (1996) claims that foreign bank entry should be associated with diffusion of new technologies, better resource allocation, and higher overall efficiency of the financial system. This claim can be broken down into two parts. The first part is that foreign banks are more efficient than their domestic counterparts; the second is that this greater efficiency is soon transferred (through competition and/or imitation) to the whole banking sector.

Studies focusing on developed countries show that foreign banks tend to be either less efficient than their domestic competitors or at least no more efficient (Hasan and Hunter 1996; Vander Venet 1996). The results tend to be different for developing countries. In this case, Claessens, Demirgüç-Kunt, and Huizinga (2001) find that foreign banks have higher profits (and higher overhead costs) and lower interest margins than their domestic counterparts.

Applying a statistical model that controls for bank size and the relative importance of demand deposits and interest income (which capture the type of activity in which the bank is involved and differentiate wholesale from retail institutions) shows that, in the case of Latin America, foreign banks tend to have lower overhead costs than their domestic competitors (Appendix

FIGURE 10.5 Performance Indicators of Foreign and Domestic Private Banks
(Percentage of total assets)



Source: IDB calculations.

10.1). The difference is about 30 percent, with median overhead costs (measured as a share of total assets) of about 1 percent for domestic private banks and 0.7 percent for foreign banks (Figure 10.5). Lower overhead costs allow foreign-owned banks to operate with lower net margins (net interest income over total assets) and to maintain levels of profitability that are similar to those of domestic banks. In particular, the median Latin American domestic private bank has a net interest income of 2.7 percent of assets, and the median foreign bank operating in Latin America has a net interest income of 1 percent; for both types of banks, average returns on assets hover around 0.2 percent. These averages mask some cross-country heterogeneity. Foreign-owned banks tend to have lower overhead costs in Argentina, Brazil, Chile, Colombia, Mexico, and Peru and higher costs in Bolivia and Guatemala. There are only two countries (Colombia and Honduras) in which foreign banks have higher net margins than their private domestic competitors.

Foreign-owned banks operating in Latin America are also characterized by better risk evaluation, but not necessarily by better risk management. In fact, although they have a lower share of nonperforming loans than their domestic private counterparts (5.6 versus 6 percent of loans), foreign-owned banks also have a lower level of provisioning measured in terms of either total loans or nonperforming loans. The median Latin American domestic private bank has loan provisions that are 48 percent of nonperforming loans and 2.5 percent of total loans; the values for the average foreign bank operating in Latin America are 39 and 1 percent, re-

spectively (Figure 10.6). Colombia is the only country where foreign banks have a higher share of provisions than domestic banks. These results partly agree with Levy-Yeyati and Micco's (2003) finding that foreign-owned banks operating in Latin America are more risky than domestic banks because foreign banks have higher leverage ratios and more variable returns.

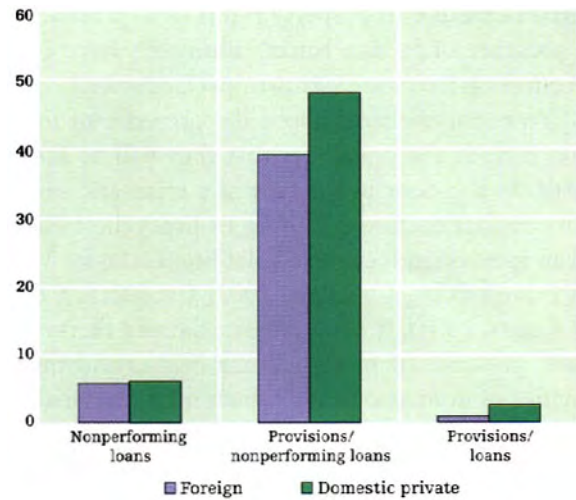
These findings provide evidence that foreign-owned banks tend to be more efficient and better managed than their domestic competitors in Latin America. However, they do not address whether the presence of foreign banks also leads to an increase in the efficiency of domestic banks and to an improvement in the overall financial system. In a cross-sectional study covering 7,900 banks in 80 developing and developed countries, Claessens, Demirgüç-Kunt, and Huizinga (2001) find that the presence of foreign banks is associated with a higher level of competition, which reduces the profitability and margins of domestic banks. However, in a study focusing on a panel of bank-level data for eight Latin American countries in 1996–2002, Levy-Yeyati and Micco (2003) find the opposite. In particular, their results show that increasing foreign presence is correlated with decreasing levels of competition and higher returns on equity. Interestingly, this increase in market power seems to have led to a reduction in the level of risk taken by domestic but not foreign banks.

FOREIGN BANKS AND VOLATILITY

Do foreign-owned banks make domestic credit more stable or more volatile? An argument in favor of the idea that foreign-owned banks may stabilize domestic credit is that internationally active banks from developed countries, through their global reach, diversification, and access to a lender of last resort in the source country, may have lower default risk and lower funding costs and be less prone to depositor runs. However, foreign banks tend to have lower exit costs than domestic banks, and hence they may be more sensitive to shocks that affect the host country and, in times of crisis, they may simply pack up and leave.

Furthermore, foreign banks may import shocks from their home countries.⁶ There is indeed some evidence that foreign-owned banks may transmit source country shocks to host countries. Peek and Rosengreen (2000), for instance, show that the explosion of the Japanese real estate and equity bubble in the early 1990s led to a contraction of credit of Japanese banks in the United States. Goldberg (2001) shows that the U.S. economic cycle strongly influences the international

FIGURE 10.6 Nonperforming Loans and Provisions
(Percent)



Source: IDB calculations.

activities of banks headquartered in the United States. However, Goldberg (2001) shows that host country economic conditions do not influence the international activities of banks headquartered in the United States, contradicting the idea that foreign banks may leave in times of crisis.

Using a simple portfolio approach, Galindo, Micco, and Powell (2003) show that internationally diversified banks may be safer than domestic banks because the former can better take advantage of the law of large numbers to spread risk. However, when banks are more diversified across countries and suffer a shock to expected returns in the host country, they may cut back on local operations more rapidly than less diversified domestic banks. This result broadly suggests that the presence of international banks represents a trade-off for the host country. On the one hand, diversification of risk is likely to lead to safer banks and hence lower funding costs and, assuming the banking sector is competitive, a lower cost of credit. In addition, foreign banks' access to international credit lines makes them less sensitive to shocks to domestic deposits. On the other hand, characteristics that make foreign-owned banks more secure, such as access to foreign business opportunities, make their lending more sensitive to aggregate demand shocks in the domestic market, and this may increase the procyclicality of domestic credit.

⁶ This is particularly a problem when most of the foreign-owned banks have their headquarters in the same country, which is indeed the case for Latin America; see Figures 10.2 and 10.3.

TABLE 10.1 | OPPORTUNITY AND LIQUIDITY SHOCKS AND FOREIGN BANKS

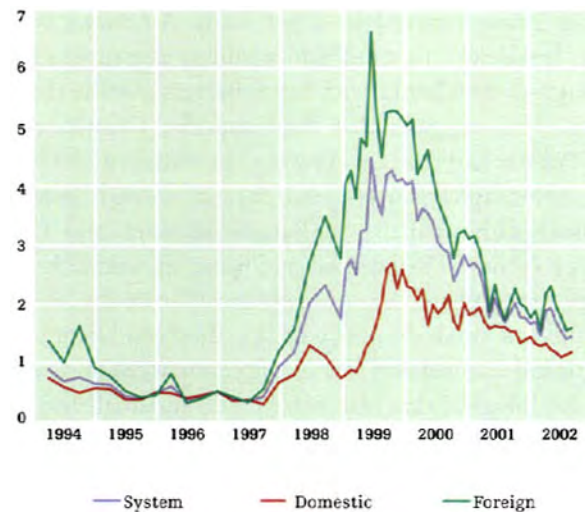
Aggregate credit growth	Aggregate credit growth less than aggregate deposit growth	Aggregate credit growth greater than aggregate deposit growth
Negative	Negative opportunity shock Credit growth of foreign banks < 0 (compared with domestic private banks)	Deposit crunch Credit growth of foreign banks > 0 (compared with domestic private banks)
Positive	Positive liquidity shock Credit growth of foreign banks < 0 (compared with domestic private banks)	Positive opportunity shock Credit growth of foreign banks > 0 (compared with domestic private banks)

Source: IDB based on Galindo, Micco, and Powell (2003).

Following this line of reasoning, Galindo, Micco, and Powell (2003) focus on the following four states of the world (summarized in Table 10.1): (i) periods in which credit is decreasing and deposits are decreasing at a faster rate (deposit crunch); (ii) periods in which credit is decreasing and deposits are decreasing at a slower rate (negative opportunity shock); (iii) periods in which credit is growing and deposits are growing at a faster rate (positive liquidity shock); and (iv) periods in which credit is growing and deposits are growing at a slower rate (positive opportunity shock). They suggest that foreign bank credit should be higher than credit extended by domestic private banks when lending is constrained by deposit availability (that is, during deposit crunches and positive opportunity shocks).

The evidence discussed in Micco and Panizza (2004a) is consistent with the idea that foreign bank credit tends to be less procyclical than credit extended by private domestic banks and that its stabilizing effect comes mainly from less volatile deposits. Furthermore, Galindo, Micco, and Powell (2003) show that foreign banks tend to stabilize credit during deposit crunches but amplify the credit cycles driven by changes in business opportunities in the economy.⁷ Anecdotal evidence also supports this view.

Figure 10.7 provides additional evidence in this direction. It shows the evolution of foreign assets, measured as a share of total assets, for domestic and foreign banks in Chile during the second half of the 1990s. After the fourth quarter of 1998, when the Chilean recession started, the banking sector as a whole increased its share of foreign assets, but the increase was substantially higher for foreign banks. During this period, total deposits in the Chilean banking system did not fall; therefore, it is plausible that the banks were mainly reacting to lower investment op-

FIGURE 10.7 Foreign Assets/Total Assets of Banks in Chile, 1994–2002 (Percent)

Source: Caballero, Cowan, and Kearns (2004).

portunities and that this reaction was larger for foreign banks. In the case of Colombia, instead, total deposits dropped by approximately 10 percent between the end of 1997 and 2001. During the same period, total credit collapsed by more than 30 percent, but the drop in credit was larger in domestic than in foreign banks, increasing the market share of the latter (Figure 10.8) and suggesting that credit from foreign banks helped stabilize total deposits.⁸

⁷ However, the effects are small.

⁸ Arena, Reinhart, and Vásquez (2003) find that the presence of foreign-owned banks has no effect on the lending channel of monetary policy in developing countries.

FOREIGN BANKS AND MARKET SEGMENTATION

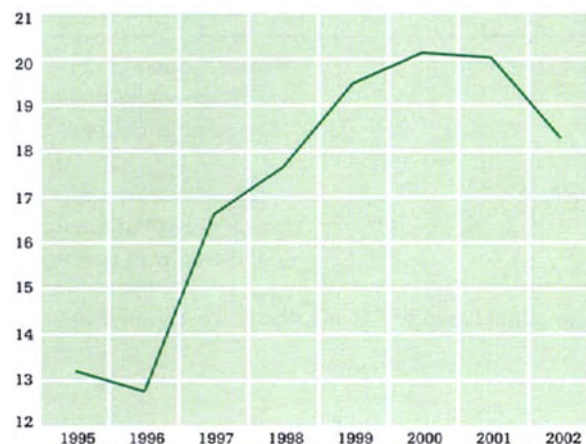
One source of concern regarding increased foreign bank penetration in developing countries is that their presence might reduce access to credit for some segments of the market, in particular small and medium firms that depend on bank financing. Given that international banks are large and organizationally complex financial institutions with limited knowledge of the host country market, they may find it difficult to lend to information-opaque small and medium firms.⁹ In fact, small businesses tend to have exclusive dealings with a single bank with which they have developed an informal relationship that reduces asymmetric information. Large foreign banks could have difficulties developing these types of relationships.

Knowledge of the local culture may also be important. Evidence for Argentina shows that foreign-owned banks headquartered in other Latin American countries lend more to small and medium enterprises than foreign-owned banks with headquarters outside the region. This suggests that their superior knowledge of the culture and the economy may give them a comparative advantage (*vis-à-vis* other foreign-owned banks) in dealing with small firms (Berger, Klapper, and Udell 2001). It should be pointed out, however, that although large foreign banks are unlikely to replicate the lending method of small domestic banks, they can bring technological innovations (for example, new credit-scoring methodologies) that can foster credit for small and medium firms.¹⁰

Empirical evidence of the impact of foreign banks on the amount of credit going to small businesses in developing countries is scarce and inconclusive. Some studies for Argentina show that foreign bank participation is associated with an increase in total lending, but also a reduction in the share of bank lending to small firms (from around 20 to 16 percent of total lending in 1996–98).¹¹ Clarke and others (2000) analyze the behavior of foreign banks in four Latin American countries (Argentina, Chile, Colombia, and Peru) and find that foreign banks in these countries lend less to small businesses than private domestic banks do. However, these results are mostly driven by the behavior of small foreign banks (in all four countries, they lend less to small businesses than domestic banks of similar size do). The opposite is true for medium and large foreign institutions in Chile and Colombia, but not in Argentina and Peru.

In Argentina and Chile (the two countries where the financial sector developed most during the studied

FIGURE 10.8 Market Share of Foreign Banks in Colombia, 1995–2002 (Percent)



Source: Bank superintendency.

period), lending to small businesses by medium and large foreign banks grew faster than lending to this sector by domestic banks. The authors speculate that the institutional environments in Argentina and Chile allowed large foreign banks to use scoring methodologies to increase their lending to small and medium firms.

Does the presence of foreign-owned banks affect overall credit availability for small firms?¹² Using information for around 70 developing countries, the statistical analysis reported in Table 10.2 shows that, compared with medium and large firms, small firms are

⁹ Goldberg and Zimmerman (1992) show that foreign banks in the United States tend to lend to large firms. Berger and Udell (1995) discuss the relationship between large banks and credit for small and medium firms.

¹⁰ Mester (1997) argues that there could be a U-shaped relation between bank size and lending to small firms. On the one extreme, small domestic banks use relationship lending; at the other extreme, large banks use more standardized products (based on credit scoring) to extend credit to small businesses (in fact, large institutions often manage the bulk of consumer credit).

¹¹ During the same period, foreign banks increased both their propensity to lend to small and medium enterprises and their market share in this sector.

¹² Data on access to credit for small and medium enterprises are from the World Business Environment Survey (WBES) database. The WBES is a cross-country, firm-level survey conducted in 54 developed and developing countries in 1999. The survey includes information on firm characteristics as well as entrepreneurs' perceptions of several issues, including access to financial markets and bank credit.

TABLE 10.2 FOREIGN BANKS AND ACCESS TO CREDIT FOR SMALL AND MEDIUM-SIZE ENTERPRISES

Variable	1	2	3
Small	-7.792 (0.877)***	-8.579 (0.859)***	-8.126 (0.818)***
Small * FD	0.109 (0.024)***	0.163 (0.029)***	0.171 (0.028)***
Small * FD * PUB	-0.039 (0.102)		-0.15 (0.099)
Small * FD * FOR		-0.28 (0.092)***	-0.322 (0.090)***
Observations	74	72	70
Countries	37	36	35
Country fixed effect	Yes	Yes	Yes

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Note: The dependent variable is the share of financing from banks. FD denotes financial development (credit to the private sector over GDP); FOR denotes the share of foreign banks' assets; and PUB denotes the share of commercial public banks' assets. Standard errors are in parentheses.

Source: IDB calculations.

able to finance about 8 percent less of their total investment with credit from the banking industry.¹³ The table shows that the gap between small firms and the rest of the economy is smaller in countries with a larger financial sector.¹⁴ The point estimates imply that moving from a country with a very small financial system (10 percent share of credit in GDP) to a country with an average level of financial development (40 percent share of credit in GDP) reduces the gap in bank financing for small firms by 3 percentage points. Table 10.2 shows that there is no statistically significant difference in access to bank credit for small firms in countries with high and low state ownership of banks. However, the presence of foreign-owned banks increases the difference in access to bank credit between small firms and medium and large firms.

It is important to note that the results discussed here focus on how the presence of foreign-owned banks affects access to credit for small firms relative to medium and large firms. Hence, these findings do not necessarily mean that the presence of foreign banks reduces small firms' access to the banking industry. It could be the case that foreign bank entry increases total credit, but that this increase is larger for large firms (Martínez Pería, Powell, and Hollar 2002).

CONCLUSIONS

The past decade has witnessed an exponential increase in the presence of foreign banks in Latin American countries. This trend presents both opportunities in terms of modernization of the region's banking system and challenges in terms of possible additional volatility and less access to credit for small firms. However, the empirical evidence seems to show that the benefits of foreign bank entry greatly outweigh its potential costs. In particular, foreign entry has been associated with greater efficiency and less instability after deposit shocks (except in major crisis episodes in which all banks suffer equally), but with more instability after idiosyncratic business opportunity shocks. The evidence is still inconclusive regarding the effect of foreign bank presence on lending to small enterprises.

¹³ This effect is measured by a dummy variable that takes the value 1 for small firms. Medium and large firms are the excluded group. Firms with fewer than 50 employees are small; firms with more than 50 but fewer than 500 are medium, and firms with more than 500 are large.

¹⁴ This effect is captured by the interaction between the dummy for small firms and a variable measuring financial development.

APPENDIX 10.1 BANK OWNERSHIP, PERFORMANCE, AND RISK

Appendix Table 10.1 presents the results of estimations of how bank ownership affects bank performance, which is measured as the ratio of overhead costs to assets, net income relative to total assets, and the return on assets. The regressions were performed on a sample that includes banks in all countries for which data are available (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, and Peru) and on a subsample that only includes banks in Argentina, Brazil, Chile, Colombia, Costa Rica, El Salvador, Mexico, and Peru. All regressions are estimated using weighted least squares (WLS), in which each observation is weighted by the bank's asset share. (For a discussion of why WLS is preferable to ordinary least squares, see Levy-Yeyati and Micco 2003.)

In order to control for the effect of bank size on performance, the regressions control for the log of total assets. The results show that size is negatively correlated with overhead costs and net income and positively correlated with return on assets. Controlling for

the share of demand deposits in total income is a crude way to differentiate banks that have a large retail network (and hence should have more demand deposits) from banks that have wholesale activity. As might be expected, banks with a large share of demand deposits tend to have greater overhead costs. In addition, there is a negative correlation between the share of demand deposits and net income, and an unclear correlation between the share of demand deposits and the return on assets. Finally, controlling for the share of interest income in total income, the presumption is that banks with a lower share of interest income are more involved in providing services to their customers; thus they may have different levels of overhead costs. The estimations show that the share of interest income is positively correlated with overhead costs and net income and is not significantly correlated with the return on assets.

Controlling for bank ownership, the variables of interest are PUB (a dummy variable that takes the value 1 if more than 50 percent of a given bank is state-owned) and FOB (a dummy variable that takes the value 1 if more than 50 percent of a given bank is foreign-owned). Domestic private ownership is the omitted

APPENDIX TABLE 10.1 | BANK OWNERSHIP AND PERFORMANCE

Independent variable	Dependent variable					
	Overhead costs		Net income		Return on assets	
	1	2	3	4	5	6
PUB (dummy)	0.003 (0.000)***	0.002 (0.000)***	0.003 (0.001)**	0.005 (0.002)***	-0.004 (0.000)***	-0.003 (0.000)***
FOB (dummy)	-0.001 (0.000)***	-0.001 (0.000)***	-0.003 (0.001)***	-0.003 (0.002)**	0.000 (0.000)	0.000 (0.000)
Assets (log)	-0.001 (0.000)***	-0.002 (0.000)***	-0.002 (0.000)***	-0.001 (0.000)***	0.001 (0.000)***	0.000 (0.000)***
Demand deposits/ total income	0.01 (0.001)***	0.018 (0.001)***	-0.025 (0.004)***	-0.033 (0.007)***	0.003 (0.001)**	-0.003 (0.002)
Interest income share	0.001 (0.000)***	0.001 (0.000)***	0.031 (0.009)***	0.037 (0.014)***	0.000 (0.000)	0.001 (0.001)
Observations	14,055	11,410	14,066	11,474	14,171	11,540
R ²	0.55	0.53	0.34	0.30	0.14	0.12
Sample	All countries	Subsample ^a	All countries	Subsample ^a	All countries	Subsample ^a

** Significant at 5 percent.

*** Significant at 1 percent.

^a The subsample includes Argentina, Brazil, Chile, Colombia, Costa Rica, El Salvador, Mexico, and Peru.

Note: See appendix text for variable definitions. Robust standard errors in parentheses, country-year fixed effects.

Source: IDB calculations.

APPENDIX TABLE 10.2 | BANK OWNERSHIP, NONPERFORMING LOANS, AND PROVISIONS

Independent variable	Dependent variable					
	Nonperforming loans		Provisions/ nonperforming loans		Provisions/loans	
	1	2	3	4	5	6
PUB	0.104 (0.006)***	0.086 (0.007)***	-0.056 (0.024)**	-0.128 (0.035)**	0.021 (0.003)***	0.021 (0.003)***
FOB	0.004 (0.002)*	0.001 (0.002)	-0.089 (0.020)***	-0.145 (0.023)***	-0.017 (0.002)***	-0.018 (0.002)***
Assets (log)	-0.011 (0.001)***	-0.006 (0.001)***	-0.021 (0.007)***	-0.007 (0.010)***	-0.004 (0.001)***	-0.003 (0.001)***
Z index (ln)					-0.017 (0.002)***	-0.014 (0.001)***
Observations	7,303	4,381	7,232	4,372	7,441	6,129
R ²	0.40	0.51	0.00	0.00	0.40	0.50
Sample	All countries	Subsample ^a	All countries	Subsample ^a	All countries	Subsample ^a

* Significant at 10 percent.
 ** Significant at 5 percent.
 *** Significant at 1 percent.
^a The subsample includes Argentina, Brazil, Chile, Colombia, Costa Rica, El Salvador, Mexico, and Peru.
 Note: See appendix text for variable definitions. Robust standard errors in parentheses, country-year fixed effects.
 Source: IDB calculations.

dummy. The regression results show that, compared with domestic private banks, state-owned banks have greater overhead costs and net income and lower returns on assets. In terms of the sample, the median domestic private bank has overhead costs and net income equal to 1 and 2.7 percent of total assets, respectively. The values are 1.6 and 2 percent, respectively, for public banks. Foreign-owned banks tend to have lower overhead costs (the median value in the sample is 0.7 percent) and lower margins (the median value is 1 percent). The return on assets is not significantly different for foreign-owned banks compared with private domestic banks.

Appendix Table 10.2 presents the results of estimations of the relationship between bank ownership and risk—in particular, how bank ownership affects the share of nonperforming loans and provisions toward nonperforming loans. (As before, the regressions were estimated using WLS.) The regressions control for bank size (measured by the log of assets) and include an index (the Z index) that focuses on return volatility and leverage to proxy for the probability that the banks will go bankrupt.

The results suggest that larger banks are characterized by a smaller share of nonperforming loans. The effect on provisions is not clear. If provisions are measured as a share of nonperforming loans, large banks have more provisions. If provisions are measured as a share of total loans, large banks have fewer provisions. The Z index is negatively correlated with provisions.

Concerning ownership, the estimations indicate that state-owned banks are characterized by a large share of nonperforming loans and limited provisions for these bad loans (although public banks have higher provisions in terms of total loans). The median domestic private bank has nonperforming loans equivalent to 6 percent of total loans; the median public bank has 16 percent. Foreign banks have fewer nonperforming loans than domestic private banks, but the difference is less than half a percentage point. At the same time, foreign-owned banks tend to have fewer provisions, expressed both as a share of nonperforming loans and as a share of total loans (although in the former case, the difference compared with private domestic banks is not statistically significant).

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Should the Government Be in the Banking Business?

A NUMBER of prominent development economists writing in the 1950s and 1960s—Lewis (1955), Gerschenkron (1962), and others—tended to agree that the state should play a key role in the banking sector. The actual behavior of governments was in line with this view; by the 1970s, the state owned 40 percent of the assets of the largest banks in developed countries and 65 percent of the assets of the largest banks in developing countries (Figure 11.1).

The 1980s and 1990s witnessed a sea change in the view on the state's role in the economy, and privatization was at the center of the neoliberal economic policies codified in the Washington Consensus. Consequently, in 1987–2003, more than 250 banks were privatized, raising US\$143 billion (Megginson 2004). But even after this large wave of privatization, the presence of the state in the banking sector was still widespread and pervasive. In the mid-1990s, about one-quarter of the assets of the largest banks in developed countries and half of the assets of the largest banks in developing countries were still under state control.¹ Therefore, it is relevant to ask whether there is a justification for such a massive public presence in the banking sector.

Some argue that state presence in the banking sector is justified by market failures and development goals. They point out that financial markets in general and the banking sector in particular are different from other markets and that government intervention can improve the working of the financial sector and the overall functioning of the economy. In particular, the *social view* emphasizes the role of the public sector in compensating for market imperfections that leave socially profitable investments underfinanced (Atkinson and Stiglitz 1980; Stiglitz 1994). The *development view* is also supportive of public participation in the banking sector and is often identified with Gerschenkron (1962). The development view stresses the need for public intervention in economies where scarcity of capital, general distrust of the public sector, and endemic fraudulent practices among debtors may fail to generate the sizable finan-

cial sector required to facilitate economic development (Stiglitz 1994).

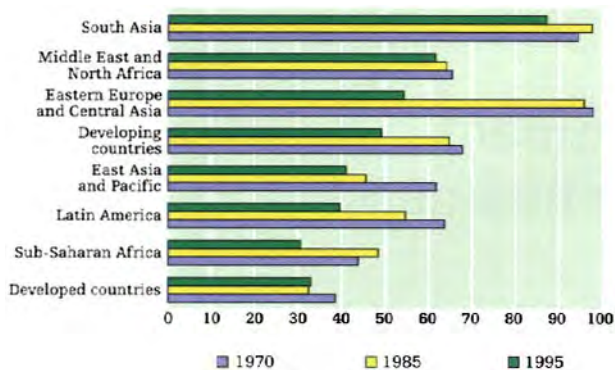
Others argue that banks are not necessarily different from other businesses and that the case for financial market imperfection is often overstated. Furthermore, they suggest that market failures can be better addressed with regulation and subsidies rather than with direct state ownership of banks. This is the *political view*, which argues that politicians create and maintain state-owned banks not to channel funds to socially efficient uses, but rather to maximize the personal objectives of politicians (La Porta, López-de-Silanes, and Shleifer 2002). According to the proponents of this view, state ownership of banks is dictated by redistributive politics and by the fact that politicians are interested in appropriating the rents that may derive from controlling the banking sector.

The *agency view* is somewhere in between the benign view of state intervention in the banking sector, as represented by the social and development views, and the more cynical political view. The agency view highlights the trade-off between the allocative efficiency motive stressed by the social and development views, and internal efficiency, namely the ability of state-owned enterprises to carry out their mandate. The agency view emphasizes that although market imperfections may exist, agency costs within government bureaucracies may more than offset the social gains of public participation.

In order to understand whether the state should be in the banking business, it is useful to divide the issue into the following two questions: Are there market failures that justify state intervention in the banking sector? Are these market failures better addressed with subsidies and regulations, or do they require direct state ownership?

¹ The data reported here are from La Porta, López-de-Silanes, and Shleifer (2002) and refer to the assets of the 10 largest banks in each country. Data for the whole banking system (from Micco, Panizza, and Yañez 2004) are highly correlated with the data for the top 10 banks, but the former dataset shows somewhat lower presence of the public sector (11 percentage points lower on average).

FIGURE 11.1 State-Owned Banks
(Percentage of total bank assets)



Source: IDB calculations based on data from La Porta, López-de-Silanes, and Shleifer (2001).

THE RATIONALE FOR STATE INTERVENTION

Standard arguments for state intervention in the banking sector can be broadly classified into four groups: (i) to maintain the safety and soundness of the banking system; (ii) to mitigate market failures due to the presence of costly and asymmetric information; (iii) to finance socially valuable (but financially unprofitable) projects; and (iv) to promote financial development and give access to competitive banking services to residents in isolated areas.

Safety and Soundness

The first group of reasons—to maintain the safety and soundness of the banking system—has to do with the fact that banks are inherently fragile institutions because their liabilities consist of demand deposits and their assets consist of more illiquid loans. Such a situation can lead to self-fulfilling bank runs and widespread bank failures. However, banking fragility by itself does not justify government intervention aimed at guaranteeing the stability of the banking system, unless bank failures generate large negative externalities. It is exactly in this sense that banks are special because, besides intermediating credit, they also provide two services that have a public-good nature: they are the backup source of liquidity for all other institutions and the transmission belt for monetary policy (Corrigan 1982).

The need for state intervention also arises from the fact that, because of the large leverage ratios that characterize financial institutions in general, bank managers and owners may have strong incentives to pursue

investment activities that are riskier than the ones that depositors would prefer (Jensen and Meckling 1976; Freixas and Rochet 1997). This would not be a problem if depositors could effectively monitor bank managers. However, there is a free-rider problem in bank monitoring because bank liabilities are mostly held by small depositors who have very limited incentives and ability to monitor bank activities.²

Market Failures

The second set of explanations for state intervention—to mitigate market failures due to the presence of costly and asymmetric information—has to do with the fact that financial markets in general and banking in particular are information-intensive activities. It is generally accepted that the stock of information gathered by banks plays a role in increasing the pool of domestic savings that is channeled to available investment opportunities. However, because information has some public-good characteristics (nonrivalries in consumption and costly excludability) and often entails a fixed acquisition cost, competitive markets will undersupply information, and the fixed costs will lead to imperfect competition in the banking system. Moreover, information can be easily destroyed, increasing the cost of bank failures as customers of the failed bank may lose access to credit. It has also been shown that asymmetric information may lead to credit rationing, that is, a situation in which good projects are underfinanced (or not financed at all) due to the lack of verifiable information.³ A similar case can be made for the relationship between depositors and banks: lack of bank-specific information can dissuade savers from depositing in banks, particularly in incipient banking systems where long-standing customer relationships are still to be built.

Social Value

The third group of reasons for state intervention—to finance socially valuable (but financially unprofitable) projects—has to do with the fact that private lenders

² The same problem underlies the role of banks as delegated monitors of depositors' investments, as pointed out by Diamond (1984). These arguments have been invoked to motivate the need for more stringent prudential regulation, as opposed to direct state participation in banking activities.

³ Indeed, rationing may occur as an adverse selection phenomenon in which, by pooling good and bad projects, the lender may increase the financing costs to the point of driving good projects out of the market. For a detailed discussion of market failures arising from costly and asymmetric information, see Stiglitz (1994).

may have limited incentives to finance projects that produce externalities. Thus, direct state participation would be warranted to compensate for market imperfections that leave socially profitable (but financially unattractive) investments underfinanced. Alternatively, state intervention may be justified by big-push theories like the one originally formulated by Rosenstein-Rodan (1961). It is also possible to argue that banks may frustrate expansionary monetary policy because they have limited incentives to lend during periods of economic downturns and low interest rates and do not internalize the fact that, by increasing lending, they would push the economy out of recession (this is the *macroeconomic view*).⁴ If this is the case, state intervention could solve a coordination problem and make monetary policy more effective. A related theoretical argument in favor of state intervention, borrowed from the literature on the mix of financial markets, points to the fact that effective prudential regulations tend to make private banks too risk averse to finance all potentially profitable investments.⁵ Thus, in the absence of developed capital markets that allow for alternative sources of financing, which is the case in most developing countries, state intervention may be warranted.

Isolated Areas

The fourth set of arguments for state intervention—to promote financial development and provide access to competitive banking services for residents of isolated areas—claims that private banks may not find it profitable to open branches in rural and isolated areas. Underlying this argument is the belief that granting access to banking services may increase financial development, generating positive externalities on growth or poverty reduction (see, for instance, Burgess and Pande 2004). Furthermore, proponents argue that access to financial services is a right and that the state should make an effort to guarantee its universal provision. Others claim that the presence of public banks is a means to guarantee competitive behavior in an otherwise collusive banking sector. However, this rationale is likely to be relevant only when the regulatory and monitoring capacity of the public sector is limited and prone to capture.

HOW SHOULD THE STATE INTERVENE?

Most economists would agree that market failures in the banking system warrant some degree of government intervention. There is less consensus on the specific nature of this intervention and, in particular, the

dilemma between regulation and contracting of private agents on the one hand and direct state ownership on the other hand. Under what conditions would state ownership be justified?

The literature on contracting provides some insight into this question. If the government knows exactly what it wants to produce, and if the characteristics of the goods or services to be produced can be written in a contract or specified by regulation, then it will not matter whether a given good or service is directly provided by the government or contracted to a private provider.⁶ Hart, Shleifer, and Vishny (1997) analyze the more realistic case in which the good or service to be provided has some noncontractible quality. They show that if cost reductions lead to a deterioration of the noncontractible quality, private provisions may have benefits in terms of cost reduction but may yield lower quality. In particular, the noncontractible quality will depend on how cost reduction activities affect the quality of the good or service provided.

To provide a concrete example, consider the case in which a government wants to establish a development bank whose ultimate objective is to promote economic development by making loans to certain economic sectors at a subsidized interest rate because of the presence of important externalities. The government could either establish a public development bank or contract a private provider. According to Hart, Shleifer, and Vishny (1997), the private provider would have an incentive to reduce costs and innovate. However, the incentive to reduce costs may contradict the development objective. And because economic development cannot be easily monitored in the short term, the bank could take cost-reducing actions that would reduce its long-term effects on development. For instance, it could focus on low-risk sectors to avoid insolvency risk even though riskier industries may have higher externalities and therefore greater social payoffs. This seems to suggest a theoretical rationale for direct public sector ownership of de-

⁴ Prudential regulation may create an additional disincentive because both the quality of banks' portfolios and prospective investments tend to deteriorate during a recession.

⁵ There are at least two reasons why this may be the case. First, because of the presence of externalities in the banking sector, the regulator may aim for a suboptimal risk level. Second, reputation costs and significant market power may induce large private banks to shy away from risky investments in order to protect their charter value.

⁶ This is so because, from the government's point of view, there is no difference between providing the right set of incentives to private or public managers, and this holds even in the presence of moral hazard and adverse selection (Hart, Shleifer, and Vishny 1997).

velopment banks.⁷ Indeed, most development banks in Latin America are either public or have a mixed (public-private) structure (Figure 11.2).

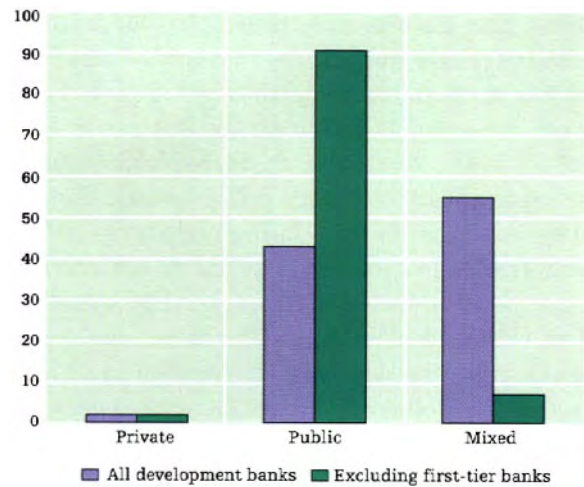
It may seem paradoxical to claim that state-owned banks are more efficient than private sector institutions in achieving objectives that cannot clearly be contracted or monitored. After all, if the state cannot clearly write a contract with a private sector provider, how can it provide incentives to the bureaucrats? The argument that the state can provide incentives to public bureaucrats more easily than to private providers is in line with Holmstrom and Milgrom's (1991) result that increasing the incentives along a measurable performance dimension (costs or profitability) reduces the incentives along nonmeasurable dimensions.⁸

Critics of government intervention argue that state ownership of banks eventually leads to a situation in which credit allocation is dictated by political rather than economic considerations (Kane 1977).⁹ However, once the analysis deviates from the assumption of a benevolent government, it is not straightforward to figure out the effects of corruption, patronage, and a weak state in general on the balance between the costs and benefits of state ownership. State ownership may increase the opportunities for corruption and patronage, but a weak state makes contracting and regulation more difficult and hence may increase the benefits of state ownership.¹⁰

Market failures in the banking system not only lead to the underprovision of certain goods or services but also indicate the inherent fragility of the banking system. The traditional view is that regulation and supervision, together with deposit insurance, can reasonably reduce banking fragility without eliminating the incentives to reduce costs and innovate that arise from private ownership.¹¹ Indeed, most developed countries follow this avenue. However, deposit insurance and regulation do not work satisfactorily in poor developing countries that are plagued by high levels of corruption and poor institutional quality (Demirgüç-Kunt and Detragiache 2002; Barth, Caprio, and Levine 2002). In that context, direct state ownership could increase the public's trust in the banking system and lead to deeper financial markets.

This was the original view of Gerschenkron (1962) and is formalized by Adrianova, Panicos, and Shortland (2002). They justify their work using the example of Russia, where public mistrust of banks induces most small savers to keep their funds outside the banking system and where 70 percent of retail deposits are with the largest state savings bank.¹² Note that the argument can be made more generally in terms of a comparison

FIGURE 11.2 Share of Development Bank Assets by ownership, Latin America, 2001
(Percentage of total bank assets)



Source: IDB calculations based on data from ALIDE.

⁷ By contrast, the objective of providing banking services to isolated areas could be readily met by contracting a private bank to open branches in specific locations, a solution that appears to dominate direct ownership if the latter involves the de novo creation of a state-owned institution.

⁸ This also provides a possible explanation for the finding that state-owned banks tend to be less profitable than their private counterparts. The finding of profitable public banks may signal the failure of the incentive scheme rather than its success. Pressures for profitability may induce public bank managers to deviate from their social mandate and mimic private banks in their credit allocation criteria (De La Torre 2002). If so, public banks, although efficient, would become redundant. Thus, public ownership would be preferable when there is limited potential for quality improvement or when the adverse effect of cost reduction on quality is likely to be substantial.

⁹ Sapienza (2004) looks at the case of Italy and finds support for this political view.

¹⁰ Moreover, Hart, Shleifer, and Vishny (1997) also make the point that the presence of competition in the provision of the good or service would reduce the incentives of the private providers to decrease quality by overinvesting in cost-reducing activities. This is true only if those who choose the provider care about the noncontractible component. Therefore, this may not apply to banking if the noncontractible quality is, for example, the development impact of banking. Hart, Shleifer, and Vishny point out that corruption may weaken the case for private contracting because privatization maximizes the bribes that can be collected by politicians.

¹¹ In the case of banking, a possible source of cost reduction is better screening of potential debtors. This would reduce nonperforming loans and hence reduce fragility of the banking system.

¹² At the cross-country level, there is a positive but not statistically significant correlation between the saving ratio and state ownership of banks.

of agency costs. Credible deposit insurance and effective regulation and supervision can offset the mistrust of depositors while limiting the contingent liability of the insurance agency. If regulation and supervision are ineffective, however, the cost in terms of insurance outlays may outweigh the agency costs of direct state ownership. Thus, the case for direct intervention hinges on the government's ability to provide incentives and monitor private bank owners and managers relative to its ability to do so for its own agents.

WHAT SHOULD STATE-OWNED BANKS DO?

In order to evaluate the performance of state-owned banks, it is important to have a clear idea of the a priori expectations about them. Box 11.1 provides a taxonomy of institutional arrangements that characterize state-owned banks in practice. According to the social view, state-owned banks should be more active in sectors in which market failures are likely to be more prevalent, namely, those associated with informational asymmetries, intangible assets, large external financing needs, and significant spillovers. Candidates would include agriculture (which is plagued by asymmetric information and aggregate shocks); sectors with intensive research and development, such as the pharmaceutical industry (which has a large share of intangible assets and potentially large spillovers); and capital-intensive industries that have long start-up periods with negative cash flows (for example, the aerospace industry).

It is also plausible that politicians may want to use public banks to limit employment volatility. Therefore, state-owned banks would be expected to lend to labor-intensive sectors, particularly during recessions and in the presence of high unemployment rates. In this sense, state-owned banks would not be competing with the private sector to finance firms with alternative sources of credit, or to finance the public sector. However, there are two exceptions to this general statement.

First, the development view stresses that in a context of poor institutional development and general mistrust of private banks, state-owned banks could be the only viable financial institutions and a fundamental stepping-stone in the creation of a country's financial system. Furthermore, well-structured public financial institutions may disseminate their experience to private sector partners and hence promote financial development.¹³ Thus, commercial (as opposed to development) public banks may play a role in the early stages of financial development.

Second, private bank lending could overreact to recessions and amplify the business cycle. Although this problem could be addressed with government guarantees or subsidies, these actions could take time to materialize because they would likely require some sort of legislative action. Hence, public bank managers that internalize the benefits of increasing credit during recessions may play a useful role in smoothing credit cycles.¹⁴

Some policymakers argue that public sector banks could also be used as a tool to address in a nontransparent way a whole class of problems that may arise in times of crisis. For instance, public sector banks could be used as a crisis resolution vehicle, absorbing the bad loans of restructured banks. Public sector banks may function as an instrument to quickly distribute subsidies to politically sensitive sectors or to industries that are facing an economic crisis. There is a trade-off between the costs and benefits of having such an instrument. On the one hand, by increasing the degrees of freedom for policymakers, public banks may make policy more effective. On the other hand, by reducing transparency and accountability, public banks increase the opportunities for waste, corruption, and patronage, and may generate a series of contingent liabilities that are not properly accounted for in the fiscal accounts. It is fair to conclude that, in most cases, this lack of transparency and accountability may do more harm than good.

PUBLIC BANKS IN LATIN AMERICA

The share of bank assets controlled by the public sector varies widely across countries. Developed countries and Sub-Saharan African countries have the lowest prevalence of state ownership of banks (around 30 percent in 1995; Figure 11.1).¹⁵ South Asia and the Middle East have the largest share of state ownership of banks (about 90 and 60 percent, respectively). The transition economies of Eastern Europe and Central Asia, after the massive privatization programs of the 1990s, moved from almost full state ownership of banks (90 percent in 1985) to intermediate levels of state ownership in

¹³ This was the case for the development banks created in Europe during the 19th century (Armedáriz de Aghion 1999).

¹⁴ This idea is similar to the argument that monetary policy has shorter implementation lags than fiscal policy has. In this context, a case can be made in favor of contingent guarantees that are activated in the event of a crisis.

¹⁵ The data described here include both commercial and development banks.

BOX 11.1 | A TAXONOMY OF STATE-OWNED BANKS

Although it is difficult to exactly define the range of operations of state-owned banks and financial institutions, a taxonomy can be helpful in order to better understand their role and possible objectives. By focusing on the type of operations performed by the various state-owned financial institutions and on whether they act as first or second-tier banks on the liability and/or asset side of the balance sheet, it is possible to separate them into four groups (see the table below).

1. Retail Commercial Banks and Hybrid Institutions

Retail commercial banks may have a social or development objective, but their operations are virtually indistinguishable from those of private commercial banks. Retail commercial banks collect deposits from the public and use them to give direct credit to firms and individuals. As such, they act as first-tier banks on both the liability and asset sides of the balance sheet.¹ In addition to embracing typical retail activities, such as credit card management and insurance, in some cases, public banks in this category act as universal or near-universal commercial banks, either directly or through affiliates. Examples of such institutions are Banco de la Nación Argentina, Banco do Brasil, Banco Estado (Chile), and Banco de Costa Rica.

This group also includes institutions that were originally created with well-defined development purposes, but that have grown to incorporate commercial banking activities. These *hybrid institutions* play the roles of both development bank and commercial bank, and act as a government agent

administering subsidies and various government programs. Examples are the Caixa Econômica Federal (Brazil), Banco Nacional (Costa Rica), and Banco de Fomento (Ecuador). A key difference between banks in this subgroup and standard retail banks is that, while the latter are funded primarily through private deposits, the former fund their operations with government transfers or special deposits from the government.²

2. Development Banks

The second group includes institutions that do not operate directly with the public on the liability side—that is, they do not take deposits. The group includes *development banks* such as BNDES (Brazil), Nacional Financiera (Mexico), and Corporación Financiera Nacional (Ecuador). These institutions are funded by multilateral development agencies, bond issuance, or government transfers. They act either as second-tier banks on the asset side (lending through other banks) or lend directly to firms that operate in specific sectors of the economy, such as exports, agriculture, and highly innovative firms. In some cases, these institutions act as financial agents of the government (for example, NAFIN) or are assigned a key role in the structural reform process (for example, BNDES managed most of the Brazilian privatization process). To prevent overexpansion of activities, some of these banks are endowed with initial capital and are legally prohibited from borrowing additional funds. For example, this is the case of the recently created Financiera Rural in Mexico.

Liabilities	Assets		
	First-tier	Second-tier	Nonbanking activities
First-tier	Retail banks and hybrid institutions (Group 1)	Quasi-narrow banks (Group 3)	
Second-tier	Development banks (Group 2)	Development banks (Group 2)	
Nonbanking activities			Development agencies (Group 4)

BOX 11.1

3. Quasi Banks

The third group of state-owned financial institutions includes institutions that act as first-tier banks on the liability side but not on the asset side. These *quasi banks* collect deposits but invest all their assets in short-term government paper and make no loans (in this sense, they operate like *quasi-narrow banks*). Their ultimate objective is to mobilize savings by supplying safe deposits. An example of such an institution was PAHNAL in Mexico.³ Postal offices in continental Europe and Japan traditionally played a similar role.

4. Development Agencies

The fourth group includes institutions that do not explicitly make loans or issue liabilities. Instead, they are *development agencies* with a potentially wide range of instruments, including providing (di-

rectly or via the private sector) technical assistance, partial guarantees, matching grants, and subsidies. As such, they neither lend nor borrow and hence do not act as banks on either the liability or asset side. At this stage, there are no institutions of this type in Latin America, but CORFO (Chile) and, to a lesser extent, FIRA (Mexico) seem to be moving in this direction.

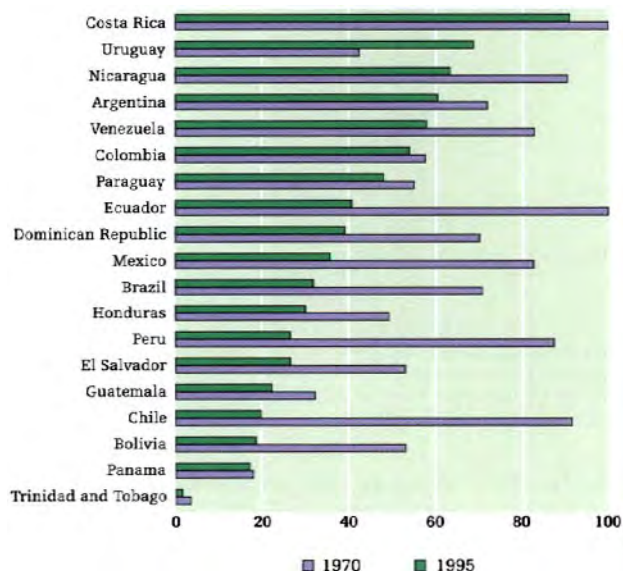
¹ Some of these banks have a national charter, and others operate in a given region or province.

² However, this distinction is sometimes rather vague, as retail public banks also tend to hold a large amount of government deposits.

³ PAHNAL was recently replaced by BANSEFI, which is, by law, a full-fledged development bank. However, so far, BANSEFI has decided to stay out of lending and has retained its small saving mobilization function.

Note: Augusto de la Torre provided invaluable help in formulating this taxonomy.

FIGURE 11.3 State-Owned Banks in Latin America
(Percentage of total bank assets)



Source: La Porta, López-de-Silanes, and Shleifer (2001).

1995, with data for 2001 indicating an even lower level of state ownership (Bonin, Hasan, and Watchel 2003).

The level of state ownership of banks in Latin America is similar to the average for developing countries. However, there are large differences across countries in the region, with Costa Rica having the largest share of government ownership of banks (90 percent in 1995, down from 100 percent in 1970; Figure 11.3), and Trinidad and Tobago having the smallest share (1.5 percent).

Most countries in the region privatized aggressively in the 1970s and 1990s. In 1970–85, average state ownership of banks dropped from 64 to 55 percent; in 1985–95, it dropped from 55 to 40 percent.¹⁶ Ecuador, Chile, and Peru privatized the most, moving from around 90 percent state ownership to less than 40 percent. Uruguay is the only country that increased state ownership of banks, moving from 42 percent in 1970 to 69 percent in 1995. Other countries experienced large swings in the bank privatization and nationalization process. Mexico, for instance, moved from 82 percent of state ownership in 1970, to 100 percent in 1985, and

¹⁶ Studies of bank privatization in Latin America include Beck, Crivelli, and Summerhill (2003); Clarke and Cull (2002); and Haber and Kantor (2003).

TABLE 11.1 PUBLIC BANK ASSETS IN LATIN AMERICA, 1995–2002
(Percentage of total bank assets)

Country	1995	1998	2000	2002
Argentina	42.5	29.2	25.7	—
Bolivia	0.0	0.0	0.0	0.0
Brazil	52.8	49.6	46.6	42.7
Chile	13.3	10.6	9.5	10.3
Colombia	19.6	16.3	21.1	19.4
Costa Rica	81.0	76.7	73.2	68.0
El Salvador	9.1	7.0	5.7	4.3
Guatemala	6.4	3.8	3.8	3.2
Honduras	—	3.2	2.3	1.8
Nicaragua	53.0	13.3	0.5	—

— Not available.
Source: Bank superintendencies.

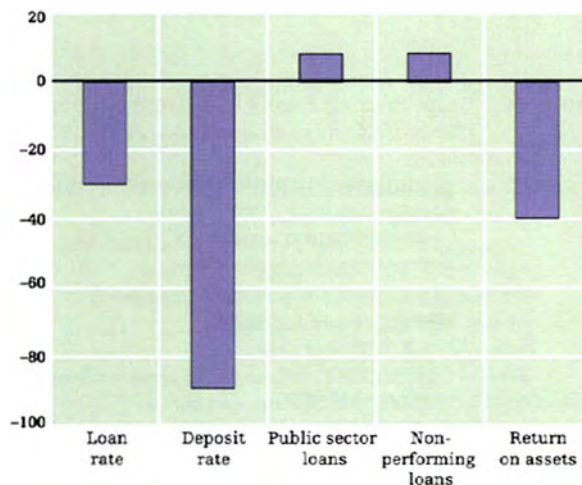
35 percent in 1995. A similar pattern holds for Nicaragua, Colombia, El Salvador, and Bolivia.¹⁷

More recent data show that the pattern of bank privatization has continued in most countries.¹⁸ In 1995–2001, large bank privatizations raised US\$5.5 billion in Brazil, where the privatization of BANESPA raised US\$3.6 billion; US\$800 million in Mexico; and more than US\$500 million in Colombia and Venezuela (Megginson 2003). Table 11.1 shows the recent evolution of state ownership of banks in 10 Latin American countries. Argentina, Brazil, Costa Rica, and Nicaragua privatized the most. The share of assets controlled by state-owned banks also dropped in Chile, El Salvador, and Guatemala but remained more or less constant in Colombia. Box 11.2 provides a description of the effect of privatization on bank performance.

Figure 11.4 describes public bank performance indicators relative to those of domestic private banks.¹⁹ It shows that public banks charge lower interest rates than their private counterparts, which is consistent with Sapienza's (2004) findings for Italy, and public banks pay lower interest rates on deposits—90 basis points less than private banks. In addition, public banks tend to lend more to the public sector (the difference between the share of public sector loans of private and public banks is 8 percentage points) and have a higher share of nonperforming loans (about 8 percentage points higher). Finally, public banks are less profitable than their private counterparts (the difference in returns on assets is 40 basis points).

Table 11.2 shows indicators of public and foreign bank performance relative to private banks for countries

FIGURE 11.4 Relative Performance of State-Owned Banks, 1993–2003
(Percentage difference compared with domestic private banks)



Note: Includes banks from Argentina, Brazil, Chile, Colombia, Costa Rica, El Salvador, Mexico, and Peru.
Source: IDB calculations based on balance sheet data from 1993–2003.

¹⁷ Data for 1970, 1985, and 1995, respectively, show that state ownership was 53, 69, and 18 percent in Bolivia; 57, 75, and 53 percent in Colombia; 53, 100, and 26 percent in El Salvador; and 90, 100, and 63 percent in Nicaragua.

¹⁸ Data from bank superintendencies.

¹⁹ All the values were obtained by running a bank-level regression, controlling for size (expressed as log of total assets) and including a dummy taking the value 1 for public banks and a dummy taking value 1 for foreign-owned banks. The values plotted in Figure 11.4 are the coefficients of the public bank dummy. Appendix 9.1 in Chapter 9 reports full regression results and explains the methodology.

BOX 11.2 | BANK PRIVATIZATION: A SURVEY OF THE EMPIRICAL EVIDENCE

There is some evidence that private banks outperform public banks in terms of profitability and operating efficiency and hence that privatization could involve fiscal benefits and increase microeconomic efficiency (Megginson 2003). However, the evidence on bank privatization in developing countries indicates that these purported benefits have been limited and, in some cases, even negative. According to Haber and Kantor (2003), Mexico's bank privatization in the early 1990s produced disastrous results.¹ Chile in the early 1980s is another example of rapid privatization leading to a large financial crisis. By contrast, Clarke and Cull (2002) suggest that bank privatization in Argentina was highly beneficial and involved large fiscal savings.

Some studies try to measure the effectiveness of bank privatization in developing and developed countries. Their main findings are that in developed countries, bank privatization leads to improvement in terms of profitability and stock performance but that these improvements are smaller than what is typically found in the case of privatization of nonfinancial companies. Studies that focus on nontransition developing countries tend to find that privatization has a positive effect on bank competition but no significant effect on profitability or operating efficiency. In addition, they find that poorly executed privatizations—like the one in Mexico in the early

1990s—can carry very large costs. Studies focusing on transition countries find more beneficial effects of privatization. The surveyed studies also find that privatization tends to be more beneficial if the state completely relinquishes ownership and the privatization involves or allows for the entry of foreign banks.

Privatization can be implemented either by directly selling the bank's assets to a set of strategic investors or by selling equity shares in the capital markets. The voucher privatization implemented by some transition countries shares many of the characteristics of this second approach. There is some evidence that privatization through issuing shares tends to work better in countries with a strong institutional environment and well-developed capital market. Direct asset sales, especially those involving foreign strategic investors, are preferable in countries with poor institutions and limited capital market development.

¹ The authors do not criticize that idea of privatization, but rather the way it was implemented in early 1990s. One of the major points of criticism is that foreign banks were excluded from the privatization process.

Source: Based on surveys by Megginson (2003) and Clark, Cull, and Shirley (2003).

in Latin America. It shows that the relative profitability of public banks is particularly low in Colombia and Honduras, and Costa Rica is the only case in which public banks are more profitable than their private counterparts. Public banks pay and charge the lowest interest rates relative to private domestic banks in Brazil and Honduras, with a rate differential close to 2 percentage points in the case of loans in Brazil. Nonperforming loans are particularly high for public banks in Costa Rica, Guatemala, and Honduras, and public sector loans are particularly high in Chile and Costa Rica.

Table 11.3 traces the evolution of public sector loans in public, private, and foreign banks. In three countries (Argentina, Brazil, and Colombia), the share of public sector loans increased considerably in 1995–2000. In Colombia and Argentina, public sector banks seem to have absorbed a disproportionately large share of public sector debt.

These results should be taken with some caution because they are simple correlations that control only for bank size. The results suggest that public banks tend to be less efficient than their private counterparts, with higher nonperforming loans, more loans to the public sector, higher overheads, and lower returns. However, public banks are also perceived to be safer and hence able to pay lower rates on deposits and extend credit at a lower rate. An alternative explanation for this result is that state-owned banks may benefit from indirect subsidies from government deposits paying no or low interest rates.²⁰

Finally, it is important to stress that state-owned banks may maximize social welfare rather than profits. Therefore, it could be the case that an efficient pub-

²⁰ This is the case in Chile, where the Banco del Estado de Chile manages the central government's checking account.

TABLE 11.2 PUBLIC AND FOREIGN BANK PERFORMANCE INDICATORS FOR COUNTRIES IN LATIN AMERICA, 1995–2002
(Percentage point difference compared with domestic private banks)

Country	Rate of return		Interest rate on loans		Interest rate on deposits		Nonperforming loans		Loans to public sector	
	Public	Foreign	Public	Foreign	Public	Foreign	Public	Foreign	Public	Foreign
Argentina	-0.37	-0.06	-0.45	—	-0.23	-0.02	—	—	8.76	-0.60
Bolivia	—	-0.26	—	-1.09	—	-0.60	—	9.27	—	8.06
Brazil	-0.26	-0.02	-1.94	-2.28	-1.76	0.73	6.44	-1.08	0.09	-0.13
Chile	-0.01	-0.05	-0.34	-0.04	-0.94	-0.01	0.90	-0.02	17.25	-2.05
Colombia	-0.98	-0.16	0.78	0.94	0.01	-0.16	7.03	-1.56	7.34	3.18
Costa Rica	0.14	-0.23	0.39	-1.01	-0.13	-1.17	23.37	5.90	16.61	1.00
El Salvador	-0.52	-0.13	-0.70	-0.33	-0.41	-0.05	12.19	1.06	6.36	1.04
Guatemala	-0.10	0.58	-0.42	-0.98	-0.21	-0.52	24.65	-10.51	-0.31	10.30
Honduras	-0.58	0.49	-1.62	-0.96	-1.47	-1.76	26.20	-12.16	4.28	2.96
Mexico	-0.35	0.10	0.13	0.14	3.12	0.35	1.58	-3.60	-1.5	2.18
Nicaragua	-1.11	—	1.85	—	0.56	—	11.63	—	—	—
Peru	—	-0.03	—	-0.54	—	-0.13	—	0.03	—	—

— Not available.

Source: Bank superintendencies.

lic bank loses money on projects with negative private present value but with positive externalities or social benefits.

DEVELOPMENT BANKS

Most of the literature on state ownership of banks either focuses exclusively on commercial banks or mixes commercial banks with development banks.²¹ However, these are very different types of institutions (see Box 11.1). Although there is no universally accepted definition of development banks, they are often described as financial institutions that are primarily concerned with offering long-term capital finance to projects that are deemed to generate positive externalities and hence would be underfinanced by private creditors. Standard objectives of development banks include financing the agricultural sector and reducing regional economic disparities. Rather than working directly with the public, development banks sometimes operate as second-tier institutions; that is, they operate through other banks. And development banks often have a well-defined objective that is closely related to the economic development of either the country or a given sector.²²

The most recent survey available indicates that there are 550 development banks worldwide, of which 152 are located in Latin America and the Caribbean (Bruck 1998). Figure 11.5 describes the relative im-

portance of development banks in regions around the world. Latin America, South Asia, and Sub-Saharan Africa are characterized by a relatively large presence of development banks.

There is some consensus that development banks played an important role in the industrialization of Continental Europe and Japan (Cameron 1961; Arnedáriz de Aghion 1999). For example, *Crédit Mobilier*, a private institution with close government ties, played an important role in financing the European railway system and, through partnership with other banks, contributed to overall European financial development.²³ In Germany and Japan, development institutions were key to the post-World War I and II reconstruction eras. According to Arnedáriz de Aghion (1999), key factors in the success of these financial institutions were their dispersed ownership (especially for institutions created before World War II) and charters that stated that these

²¹ Important exceptions include Arnedáriz de Aghion (1999), Titelman (2003), and ALIDE (2003).

²² Alternative definitions of a development bank include: (i) an institution to promote and finance enterprise in the private sector (Diamond 1957), (ii) a financial intermediary supplying long-term funds to bankable economic development projects and providing related services (Kane 1975), and (iii) a public or private institution that has as one of its principal functions supporting medium or long-term industrial projects (Boskey 1959).

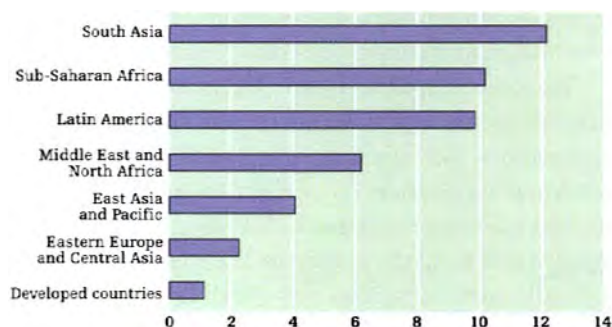
²³ For a brief history of *Crédit Mobilier*, see Rajan and Zingales (2003b). Cameron (1961) provides a more detailed account.

TABLE 11.3 | **LOANS TO THE PUBLIC SECTOR IN LATIN AMERICA, 1995–2000**
(Percentage of total loans)

Country	1995			1998			2000		
	Private	Public	Foreign	Private	Public	Foreign	Private	Public	Foreign
Argentina	5.3	16.7	8.0	8.2	14.4	8.1	12.9	21.6	12.1
Bolivia	1.0	—	10.1	6.5	—	9.8	6.3	—	6.7
Brazil	21.5	13.3	19.0	33.1	21.3	33.7	31.2	24.8	33.1
Chile	0.1	1.1	0.8	0.1	1.3	0.6	0.2	1.5	0.9
Colombia	2.6	5.2	2.0	3.7	5.8	4.1	8.9	23.1	13.1
Costa Rica	6.3	7.1	7.4	3.3	13.6	2.7	4.4	11.0	2.2
El Salvador	16.5	33.8	9.1	25.1	20.9	17.4	30.3	23.3	20.4
Guatemala	32.0	19.8	27.4	21.2	18.1	34.5	24.5	6.2	36.8

— Not available.
Source: Bank superintendencies.

FIGURE 11.5 Importance of Development Banks, 2001
(Percentage of total bank assets)



Source: IDB calculations based on data from La Porta, López-de-Silanes, and Shleifer (2001).

institutions should provide only supplementary finance, which led to the necessity of cofinancing agreements. These characteristics were important because they enabled the development institutions to disseminate their expertise and thus promote financial development in Europe.

In comparing the experience of *Crédit National de France* with *Nacional Financiera de Mexico*, *Armedáriz de Aghion* (1999) suggests that the type of government involvement (with subsidized credit and loan guarantees in the first case and direct ownership in the second) and the need for cofinancing agreements are among the factors that made the experience of *Crédit National* more successful than that of *Nacional Financiera*. *Armedáriz de Aghion* also argues that these findings are consistent with a theoretical model showing that well-targeted

state intervention via subsidies and credit guarantees and the imposition of cofinancing restrictions are likely to maximize the positive spillover effects of development institutions. They may lead not only to a better allocation of credit because cofinancing may limit the opportunities for politically motivated credit allocation, but also to dissemination of development expertise to the whole financial system.

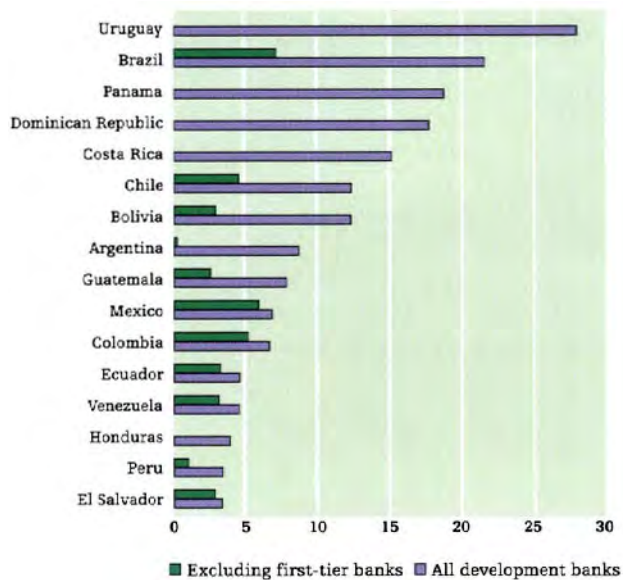
Latin America has a large number of institutions that define themselves as development banks and are part of ALIDE (*Asociación Latinoamericana de Instituciones Financieras para el Desarrollo*).²⁴ Of the 121 members of ALIDE, 75 are first-tier banks, 21 are second-tier banks, and the rest are mixed. Most of these development banks are either state-owned or have mixed public-private ownership. In 2002, there were only 11 development banks with fully private ownership, accounting for less than 2 percent of the total assets of Latin American development banks (Figure 11.2).²⁵

Argentina, Brazil, and the Dominican Republic have the largest number of development institutions (more than 10). Development banks are particularly important in Brazil, Costa Rica, the Dominican Republic,

²⁴ The self-definition is adopted because it is otherwise difficult to define whether an institution is a development bank.

²⁵ These were Banco Industrial S.A. (operating in Bolivia and Guatemala); Banco del Desarrollo (Chile); Banco BHD S.A., Banco Dominicano del Progreso S.A., and Banco de Desarrollo Citicorp (the Dominican Republic); Banco Empresarial S.A., Financiera Guatemalteca S.A., Financiera Industrial S.A. (Guatemala); and FEDECREDITO (El Salvador).

FIGURE 11.6 Development Bank Loans in Latin America, 2001
(Percentage of GDP)



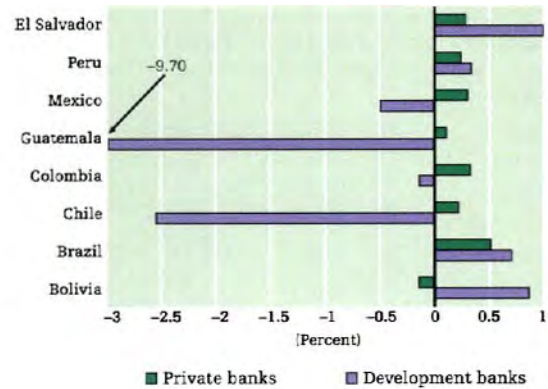
Source: IDB calculations based on data from ALIDE.

Panama, and Uruguay, where loans totaled more than 15 percent of GDP in 2001; they are relatively less important in Ecuador, El Salvador, Honduras, Peru, and Venezuela (Figure 11.6).

BNDES in Brazil is the largest development bank, with total net loans of US\$28.3 billion and annual disbursements of approximately US\$11 billion in 2002. The second and third-largest development banks are also Brazilian (Banco do Brasil and Caixa Econômica Federal), followed by two Mexican development banks (NAFIN and BANOBRAS) and an Argentine institution (Banco de la Nación Argentina). The list of institutions that are members of ALIDE also includes firms that mostly engage in commercial banking activities; that is, they belong to group 1 in the taxonomy of Box 11.1. If these banks are dropped from the sample, the share of development bank loans over GDP drops substantially. Brazil becomes the country with the largest presence of development banks, followed by Mexico, Colombia, and Chile.

Development banks tend to have low profitability, and their return on assets tends to be lower than that of private banks (Figure 11.7).²⁶ This is particularly true for Chile, Colombia, Guatemala, and Mexico.²⁷ However, in Brazil and Peru, there is no large difference between the profitability of development and private commercial banks, which could be due to the fact that

FIGURE 11.7 Average Return on Assets of Development and Private Banks in Latin America, 2001
(Percent)



Note: Figures for development banks exclude first-tier development banks.
Source: IDB calculations based on data from ALIDE.

the cost of funds is lower for development banks. In El Salvador and Bolivia, development banks seem to be more profitable than private commercial banks.

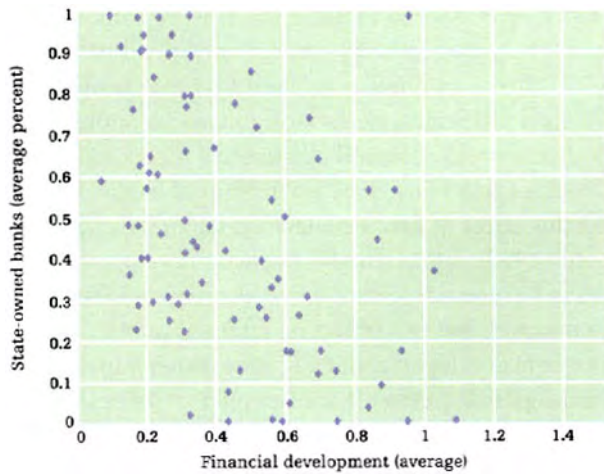
In some respects, Latin American development banks adhere to their mandate of focusing on disadvantaged sectors. For instance, a recent survey by ALIDE found that more than 20 percent of total credit allocated by its member institutions is directed toward agriculture and rural development and that 80 percent of credit allocated by second-tier ALIDE members is either medium or long-term. The same survey found that 50 percent of the surveyed institutions allocate more than 80 percent of their credit to small and medium enterprises (ALIDE 2003).²⁸ However, in some cases,

²⁶ The figure compares average return on assets (weighted by bank assets) for development banks (excluding first-tier banks) and private commercial banks.

²⁷ It should be pointed out, however, that the figure for Guatemala is influenced by the disastrous returns of one institution, which had a return on assets of -26 percent. If this institution is dropped from the sample, the return on assets of development banks increases to 0.6 percent. In the case of Chile, the negative results are due to the crisis at CORFO (Corporación de Fomento de la Producción), which in 2001 had a return on assets of -4.8 percent (the return on assets was mostly positive in the previous years).

²⁸ It should be pointed out that evaluating the effects of development banks is not an easy task. Take, for instance, the provision of long-term financing. In Brazil, BNDES is basically the only provider of long-term financing. This could be interpreted in two ways. On the one hand, it could be claimed that BNDES provides a much-needed form of credit that is not offered by private providers. On the other hand, it may be claimed that the presence of BNDES crowds out the activity of private providers of long-term financing.

FIGURE 11.8 Share of State-Owned Banks and Financial Development, 1980-2001



Source: BANKSCOPE (2004); International Monetary Fund (2004).

some development banks forget their mandate and replicate the activity of private commercial banks.²⁹

DO PUBLIC BANKS PLAY A USEFUL ROLE IN ECONOMIC DEVELOPMENT?

A few empirical studies have addressed the effects on development of state-owned banks. The studies tend to focus on implications for the evolution of the private banking sector and financial markets as a whole and thus for economic performance. Looking at the correlation between public participation in the banking sector and financial development, Barth, Caprio, and Levine (2002) find that, after controlling for bank regulation, government ownership of banks is not robustly linked with other indicators of bank development and performance. However, these findings conflict with previous work by Barth, Caprio, and Levine (2001) on a sample of 59 developed and developing countries. The 2001 study finds a negative association between state ownership and financial depth, even after controlling for economic development and the quality of government (Figure 11.8).³⁰

The interpretation of these findings in terms of causality is rather difficult, and these results do not help clarify whether the existence of public banks is justified by development and social objectives or whether their existence is purely due to political reasons. In fact, all theories aimed at explaining state intervention in the banking sector point to the correlation between state ownership of banks and poor institutional quality (as

measured by lack of property rights), low financial development, government intervention in the economy, and low GDP per capita.

An alternative way to look at the issue is to use microeconomic data.³¹ However, it is often difficult to distinguish the empirical implications of each theory. For example, both the development and political views are consistent with low profitability of public banks because they finance socially (but not privately) profitable investments, are dominated by agency costs, exploit political patronage, and are subject to macroeconomic policy (Sapienza 2004).

La Porta, López-de-Silanes, and Shleifer (2002) focus more specifically on the determinants and implications of state ownership of banks. Their original data on public ownership comprise public shares for about 90 economies for 1970, 1985, and 1995. Their study shows that government ownership of banks in an earlier period is associated with slower subsequent development of the financial system and slower economic growth. The analysis controls for initial conditions (financial and economic development, and the state ownership ratio) but is still limited to cross-section correlations. The authors note that the correlations are not conclusive evidence of causality. This is particularly true in light of the strong persistence of both credit shares and state ownership ratios. As noted, a negative link between government ownership and financial development is not at odds with Gerschenkron's (1962) view of development.

²⁹ For example, Mexico's Banco Nacional de Crédito Rural (BANRURAL) has a mandate to finance agricultural activities but has a large share of its branches in urban areas.

³⁰ Note that the data in Table 11.1 are not directly comparable with the data in Figure 11.8. Table 11.1 includes only all the commercial banks operating in the country; values were computed by assigning 100 percent government ownership to banks that have at least 50 percent of assets owned by the government and 0 percent government ownership to others. Figure 11.8 also includes development banks, but the data are for only the assets of the 10 largest banks.

³¹ Altunbas, Evans, and Molyneux (2001) investigate scale economies, inefficiencies, and technical progress for a sample of private, mutual, and public banks in the German market. They find little evidence that private banks are more efficient than public and mutual banks. Sapienza (2004) studies the comparative performance of private and public banks in Italy. She shows that: (i) state-owned banks charge lower interest rates than their private counterparts to similar firms, even if the latter have access to financing from private banks; (ii) state-owned banks' lending behavior is affected by the electoral results of the party affiliated with the bank; (iii) state-owned banks favor mostly large firms; and (iv) state-owned banks favor firms located in depressed areas.

La Porta, López-de-Silanes, and Shleifer's (2002) statistical analysis groups together very different countries, including former socialist economies where state ownership was the rule and for which output data for earlier periods are less reliable. Therefore, a revision of their results may shed additional light on these issues. Appendix 11.1 revisits their findings by using the same measure of state ownership in the banking sector, updating and extending in time the private credit and GDP data following their definitions and sources.

Although the findings in Appendix 11.1 qualify the previous evidence of a negative effect of state ownership of banks, they also fail to support the view that public banks mitigate market imperfections that lead to allocative inefficiencies. Indeed, the preliminary conclusion from this evidence suggests that, in terms of its effects on financial development and long-term growth, the average public bank does not appear to be significantly better than its private peers.

As noted above, an alternative rationale for the existence of public banks is that they could play a useful countercyclical role by stabilizing credit. In this case, public bank lending should react less to macroeconomic shocks—decreasing less during recessions and increasing less during expansions—compared with the behavior of private banks. Furthermore, if bank failures are more likely during recessions, and if depositors think that public banks are safer than private banks, the former should enjoy a more stable deposit base and hence be better able to smooth credit. Micco and Panizza (2004b) use bank-level data to look at whether bank ownership affects credit growth during the business cycle. They find that, in Latin America, credit extended by public banks is less procyclical than credit extended by private banks. In addition, the smoothing effect of public banks is particularly strong in periods characterized by slow growth of domestic deposits and when credit grows less than total demand deposits. The results also suggest that deposits of public banks are less procyclical than deposits of private domestic banks.

These results suggest that public banks may help to reduce credit procyclicality and hence reduce business cycle fluctuations. However, Micco and Panizza's (2004b) analysis focuses on bank-level variables and not on total credit. If public banks were to crowd out private credit, their presence could still lead to higher credit volatility. Levy-Yeyati, Micco, and Panizza (2004) find a negative but not statistically significant correlation between the presence of state-owned banks and the elasticity of credit to external shocks. This finding supports the micro-economic evidence that public banks do not amplify, and if anything smooth, credit cycles.

It is also interesting to test whether state-owned banks allocate credit better than private banks by using industry-level data to identify the role of bank ownership in explaining industry growth and volatility.³² Levy-Yeyati, Micco, and Panizza (2004) find that while more developed financial systems tend to favor economic sectors that for technological reasons are more dependent on external financing, state ownership of banks detracts from this effect of financial development (Rajan and Zingales 1998). Interestingly, financial development appears to be more important for sector growth in developing countries, but the offsetting effect of public banks is stronger in developed countries; state ownership of banks has no significant effect if the sample is restricted to developing countries. The authors also investigate whether state ownership of banks has an effect on sector volatility, but they find no evidence to support this hypothesis.

WHAT IS A GOOD PUBLIC BANK?

It is difficult to make general statements on the desirability and past performance of state-owned banks based on cross-country analysis of aggregate data. There are two reasons for this. One has to do with the basic specification problems of omitted variables and endogeneity, compounded by data restrictions, such as the lack of institutional measures for earlier periods. The other reason relates to the fact that state-owned institutions are heterogeneous and may work satisfactorily in some countries but disappointingly in others. Heterogeneity is also present in individual countries, as the case of Brazil illustrates (Box 11.3). Thus, cross-country studies tend to spread a negative or neutral light on the role of public sector banks. More detailed studies that use micro-level data find that, once provided with the right incentives, public sector banks may play a positive role in mobilizing savings (Yaron and Charitonenko 2000) or in providing consumption smoothing in times of crisis (Alem and Townsend 2003).

Characteristics that may affect the success of a state-owned bank include the following: (i) the nature of the bank's objective and mission; (ii) clear accounting of the subsidy component and constant evaluation of its mission; and (iii) the bank's governance structure. Public sector banks with a general mandate

³² The strategy was first employed by Galindo and Micco (forthcoming) to check whether government-owned banking promotes growth by directing credit toward the industries that rely more on external finance and/or toward industries where informational asymmetries may be higher.

BOX 11.3 | THE PUBLIC SECTOR IN BRAZIL

Until the mid-1990s, Brazil was characterized by a large presence of public banks owned by either the federal government or various state governments. The implementation of the program of incentives for reduction of the participation of state banks in the banking system (PROES) led several states to close, privatize, transform into specialized government agencies, or restructure their banks (Beck, Crivelli, and Summerhill 2003). At this stage, the public sector still owns a few small banks and three large banks.

The large banks are Banco do Brasil (BB), Caixa Econômica Federal (CEF), and Banco Nacional de Desenvolvimento Econômico e Social (BNDES). BB is a retail commercial bank. CEF is a mixed institution that has both retail and second-tier activities, handles the government's social payments, and is very active in the mortgage market. BNDES is a development bank that acts mostly as a second-tier institution. Until 2001, a large number of nonperforming loans characterized the balance sheets of both BB and CEF. The federal government absorbed those loans at a net cost of approximately 6 percent of GDP, three-quarters of which was due to the restructuring of CEF. BNDES had a sound balance sheet and did not need any restructuring.

The three institutions rely on highly subsidized funds, although this is less so in the case of BB, which is funded primarily by deposits. However, most observers are convinced that the three institutions operate and fulfill their mandate with very different degrees of efficiency. They consider CEF to be the least efficient of the three. Because of its multiple roles as a commercial bank, mortgage bank, lottery manager, and scholarships administrator, CEF does not have a clear strategy; it has very high oper-

ating costs and is probably overstuffed. In addition, it has a poor loan recovery record, especially in the case of mortgages, which represent two-thirds of its loan portfolio.¹ And CEF booked record default rates that led to the 2001 recapitalization whereby the government swapped the nonperforming portfolio for government securities. It is possible that CEF's problems are due to its multiple mandates and objectives and that breaking up the institution into smaller parts with narrower and better-defined objectives would improve its efficiency.

BB is in an intermediate position. It is not considered a model of efficiency, and it is characterized by high costs and nonperforming loan ratios. However, BB is often thought to be better managed than CEF.

It is difficult to estimate the opportunity cost of BNDES projects, that is, whether the implicit subsidy provided by BNDES lending would have greater returns if it was employed differently. However, there is general agreement that the institution is fairly well managed, has low default rates, partly because most of its lending is second-tier and therefore channeled through intermediary banks, and contributes to Brazil's economic development.² There is also some consensus that BNDES has managed well in the transition from an institution that supported Brazil's import substitution policies to one that cooperates with the private sector in projects aimed at increasing the country's competitiveness.

¹ This is in line with the results in Chapter 15 on the poor record of public banks in housing finance.

² As mentioned above, BNDES is the only provider of long-term financing in Brazil. There is also some evidence that BNDES is playing a positive role in reducing regional disparities (Lage de Sousa 2003).

may achieve greater economies of scale and scope than those with a narrower mandate, but public sector institutions with a well-defined mandate are less likely to be affected by mission creep and conflicting objectives. Having a well-defined objective may also prevent managers of public sector banks from continuously switching between trying to fulfill their social mandate and trying to maximize profits. It should be pointed out that having a well-defined mandate is not necessarily in conflict with maximizing profits or becoming self-sufficient.³³

Public sector banks may have high costs and low profitability because they are poorly managed or because they are providing large subsidies and services

³³ In the early 1980s, BRI-UD (a rural financial institution in Indonesia) realized that it was putting too much focus on lending activities and too little on deposit activities. Thus, it started offering innovative deposit accounts for low-income farmers (Yaron and Charitonenko 2000). This example illustrates that a development objective can be compatible with running a profitable institution. Vogel (1984) calls savings mobilization the forgotten objective of rural finance.

to their borrowers. Lack of clear accounting for the subsidy component is problematic. On the one hand, the excuse of subsidy can be used to cover up for poor management of the institutions. On the other hand, in the absence of proper accounting, well-managed institutions that have low profitability (or losses) because they administer well-targeted subsidies can be accused of mismanagement and forced to change their policies. Transparency and proper fiscal accounting would also require measurement of the subsidies received by public sector banks. This is important because it would allow estimation of the true cost associated with managing these institutions and would be a stepping-stone in conducting a proper cost-benefit analysis of their role. However, this is often difficult to do because the subsidies are not usually implemented by direct transfers of funds, but via low-cost funding achieved with implicit guarantees and public sector deposits.

The main criticisms that are often levied against state-owned banks are that they are poorly managed and their lending activities are politically motivated. The most difficult issue for a country that wants to maintain a public sector presence in the banking system is to devise an appropriate governance structure for public banks. Although there is no literature that is specific to the problems of the governance of public banks, it is possible to formulate some principles on how managers of state-owned banks should be chosen by drawing a parallel with the literature on central banking.

First, bank managers should have operational independence. This means that government should set some objectives that banks should reach, but that bank management should be free to choose how to reach these objectives.³⁴ Second, in order to guarantee the independence of banks from direct political influence, managers should have long appointments that do not overlap with the political cycle. Third, having a board of directors that represents a wide cross-section of the society (private sector, civil society, and geographic regions) could guarantee adequate checks and balances and limit the amount of political lending.

Interestingly, the need to protect the independence of the bank may provide a political economy explanation for why it may be optimal to have institutions that mix banking activities with development activities rather than pure development institutions with no banking activities, as suggested by De La Torre (2002). The argument is that a well-managed development bank has the potential of conducting its activities without direct government transfers, although of course there still may be subsidies in the form of implicit or explicit guar-

antees. If a development agency asks for direct government transfers, however, the executive's discretionary authority on whether to grant the transfers and on their total amount may reduce the degree of independence of the institution.

CONCLUSIONS

Several prominent development economists writing in the 1960s and 1970s strongly supported government intervention in the banking sector and direct state ownership of banks. The more recent view is that state ownership of banks is not beneficial for economic development. That is, "whatever its original objectives, state ownership of banks tends to stunt financial sector development, thereby contributing to slower growth" (World Bank 2001, p. 123).

This chapter has reviewed the existing evidence on the role of state ownership of banks, tested its robustness, and introduced new evidence. Although the chapter finds some evidence in support of the idea that state-owned banks do not allocate credit optimally, it also shows that the results demonstrating that state ownership inhibits financial development and growth are less robust than previously thought. Furthermore, the chapter discusses some new evidence indicating that, at least in the case of Latin America, public banks may play a useful role in reducing credit procyclicality.

An argument that is often invoked against state ownership of banks is that private banks tend to be more profitable than public banks. There is in fact evidence that this is the case, especially in developing countries. It should be pointed out, however, that whatever merit the development view has, it is unfair to judge it by using the profitability benchmark, because having public banks that maximize profitability would generate an inherent contradiction and a vicious circle. Public banks would start with a social policy mandate and concentrate on activities with high risk and low private returns. This would lead to recurrent losses and the need for recapitalization that would soon be followed by reorientation toward profitable activities in competition with private banks. In turn, this would lead to insufficient attention to the

³⁴ Clearly, here the task of defining an objective is more difficult than in the case of central banking, in which the objective is often a well-defined monetary, inflation, or exchange rate target.

social policy mandate and political pressure to restart the cycle (De La Torre 2002).³⁵

Instead, public banks should be judged on the basis of their development and stabilizing effects. The main problem in identifying whether state-owned banks play a positive role in economic development is that both the political view (which assumes that state-owned banks have a negative effect on the economy) and the development view (which assumes that public banks can play a beneficial role) are consistent with a negative relationship between state ownership of banks and both financial development and institutional quality. The main difference between these two interpretations lies in the fact that, according to the development

view, state ownership helps promote financial development at initial stages and mitigates the negative effect of poor institutional quality, which would be even more damaging without public intervention. According to the political view, state ownership of banks depresses financial development and possibly promotes corruption. As both financial development and institutional quality are closely related to economic growth, it is difficult to make a statement on the role of public banks without disentangling the causal relationship between these variables and state ownership of banks. Thus, a definitive answer on the development role of state-owned banks will require addressing the problem of causality, which is one of the thorniest issues in economics.

³⁵ State-owned banks' fiscal costs and absence of clearly proven benefits may lead some to conclude that such banks should not exist. Although it is difficult to argue with such logic, it should be pointed out that this reasoning also applies to several other areas of government intervention.

APPENDIX 11.1. DETERMINANTS AND IMPLICATIONS OF STATE OWNERSHIP OF BANKS

Appendix Table 11.1 focuses on the relationship between state ownership of banks and subsequent financial development. The results indicate that state ownership of banks depresses subsequent financial development even after controlling for initial GDP and the initial level of financial development. This is also true when 1970 is used as the initial period.

Although the negative association between public shares and private credit growth appears to be robust, causality and omitted variable issues are more difficult to assess. In particular, if public banks are more likely to arise in a context in which private financial intermediation is discouraged by institutional deficits, the negative link between private financial intermediation and state ownership could be due to either reverse causality or the omission of institutional variables. The analysis provides a robustness check for this potential simultaneity prob-

lem by instrumenting the state ownership variable using an index of state-owned enterprises as a share of the economy.³⁶ With these specifications, the effect of state ownership of banks on subsequent financial development, while still negative, ceases to be statistically significant.³⁷

The table reports additional robustness checks, focusing on the effects of state ownership at shorter horizons by splitting the sample into two periods (1970–85 and 1986–2002) in line with the available data on public shares.³⁸ The link is still significant at 10 percent for the later period, but not for the earlier one.

³⁶ La Porta, López-de-Silanes, and Shleifer (2002) find that the state-owned enterprises index is highly correlated with state ownership of banks, and it is not significantly correlated with private credit growth once the share of public banks is included.

³⁷ It should be pointed out, however, that the coefficient, while not statistically significant, does not change in value, which suggests that the change in significance may be due to the loss of efficiency typical of IV estimation.

³⁸ Here, private credit growth is computed only for countries with at least five observations in the period.

APPENDIX TABLE 11.1 | **THE EFFECT OF STATE OWNERSHIP OF BANKS ON FINANCIAL DEVELOPMENT WORLDWIDE, 1960–2002**

Variable	1 ^a	2 ^a	3 ^a	4	5	6	7
	1960–99	1960–99	1970–2002	1970–2002	1960–99	1970–85	1986–2002
Methodology	OLS	OLS	OLS	IV	IV	OLS	OLS
GDPPC (initial)	-0.056 (0.433)	-0.205* (0.122)	-0.176 (0.135)	-0.076 (0.152)	-0.572 (0.487)	-0.03 (0.270)	-0.345 (0.212)
Private credit (initial)	-0.056 (0.019)***	-0.037 (0.009)***	-0.036 (0.009)***	-0.041 (0.019)**	-0.041 (0.178)**	-0.083 (0.025)***	-0.051 (0.015)***
Public share (initial)	-0.039 (0.011)***	-0.021 (0.008)**	-0.019 (0.009)**	-0.026 (0.03)	-0.03 (0.02)	-0.015 (0.02)	-0.039 (0.017)**
Constant	6.681 (2.616)**	6.651 (1.225)***	6.257 (1.305)***	5.663 (1.934)***	8.749 (3.744)**	7.04 (2.601)***	9.411 (2.276)***
Observations	82	66	70	65	73	66	77
R ²	0.21	0.26	0.2	0.17	0.22	0.17	0.21

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

^a Column 1 replicates the results from La Porta, López-de-Silanes, and Shleifer (2002). Columns 2 and 3 replicate the results using new data.

Note: The dependent variable is the average annual growth rate of private credit/GDP. It is computed as the average of the log difference of the ratio over the period, for those countries for which a minimum of 10 observations are available. In order to maintain data homogeneity, all the regressions except for the first column use data for which data are available from World Development Indicators and IMF (2004); this reduces the size of the sample. Robust standard errors are in parentheses.

Source: IDB calculations. Initial per capita GDP is from World Development Indicators; credit to GDP is IMF (2004, lines 22df and 22zw plus line 42d); public share is from Gwartney, Lawson, and Block (1996).

APPENDIX TABLE 11.2 | STATE OWNERSHIP AND OUTPUT GROWTH WORLDWIDE, 1960–2002

Variable	1	2	3	4	5	6
	1960–95	1960–95	1960–95	1960–95	1960–95	1970–2002
GDP per capita (initial)	-1.749 (0.300)***	-1.740 (0.308)***	-1.603 (0.297)***	-1.922 (0.277)***	-1.872 (0.384)***	-1.604 (0.376)***
Public share (initial)	-0.017 (0.007)**	-0.016 (0.008)**		-0.04 (0.912)***	-0.008 (0.008)	0.001 (0.007)
School enrollment (average)	0.545 (0.123)***	0.54 (0.126)***	0.586 (0.126)***	0.586 (0.113)***	0.549 (0.157)***	0.596 (0.140)***
Private credit (initial)	0.03 (0.010)***	0.031 (0.011)***		0.001 (0.012)	0.03 (0.009)***	0.02 (0.008)**
Private credit (growth)		0.016 (0.073)				
Private credit * public share (initial)			0.036 (0.016)**	0.082 (0.024)***		
Private credit * (1 – public share) (initial)			0.031 (0.012)**			
Constant	9.417 (1.628)***	9.292 (1.710)***	7.338 (1.415)***	11.23 (1.356)***	9.817 (1.917)***	7.397 (1.763)***
Observations	82	82	82	82	69	69
R ²	0.42	0.42	0.36	0.49	0.41	0.39

** Significant at 5 percent.

*** Significant at 1 percent.

Note: The dependent variable is GDP per capita growth in 1960–95. Robust standard errors are in parentheses.

Source: Regression 1 is from La Porta, López-de-Silanes, and Shleifer (2002). Regressions 2–6 are from IDB calculations using data from La Porta, López-de-Silanes, and Shleifer (2002).

In sum, the evidence that the prevalence of state ownership in the banking sector conspires against its ultimate development appears to be weaker than suggested by previous studies. However, there is no indication that state ownership has the positive catalytic effect that its advocates have suggested. A balanced reading of these results would indicate that public banks, at best, do not play much of a role in the development of their private counterparts.

The same conclusion can be extracted from the more elusive question on the effects of public banks on long-run economic growth. While a direct nexus is difficult to construct, there are at least two indirect avenues through which there could be a link, either positive or negative. First, public banks may foster growth by financing projects with important externalities that would otherwise be shelved. Second, public banks may inhibit financial development, which would ultimately be reflected in poorer investment and growth records.

Appendix Table 11.2 explores the link between state ownership of banks and economic growth. It closely follows the work of La Porta, López-de-Silanes,

and Shleifer (2002), who report a negative association between state ownership and growth. First, the results suggest that the relationship between bank ownership and growth is unrelated to changes in the amount of credit during the period, a finding that is at odds with the view of financial underdevelopment (measured as total credit) as a channel through which bank ownership may influence economic performance. Second, when financial development is interacted with bank ownership to proxy credit extended by public and private banks, the two types of credit seem to have an identical effect on growth. Finally, Appendix Table 11.2 suggests that state ownership of banks has a negative effect on growth in countries with low financial development, but no statistically significant effect on growth in countries with high financial development.³⁹

These findings suggest that state ownership of banks has a beneficial effect on growth only in countries with highly developed financial systems, contradicting

³⁹ See Levy-Yeyati, Micco, and Panizza (2004) for a more detailed discussion of these results.

the development view's implicit hypothesis of substitutability between public and private credit. A possible explanation for this puzzling result is that countries with well-developed financial systems are better equipped to deal with the distortions that arise from government ownership of banks (La Porta, López-de-Silanes, and Shleifer 2002). Alternatively, these results could be due to the fact that the model is not well specified and that public bank ownership is a proxy for some excluded variable that is correlated with both bank ownership

and subsequent growth (institutional quality, for instance).

The table also shows that the results are somewhat sensitive to the sample. For instance, the results from La Porta, López-de-Silanes, and Shleifer (2002) restrict the sample to countries for which World Bank and IMF data are available and find a much lower coefficient and no significant correlation between initial state ownership and subsequent growth. The same is true for regressions using data from 1970 through 1995.

PART IV

The Role of Economic and Financial Institutions

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Economywide Institutions and Banking Credit: Protecting Creditor Rights

AMONG the fundamental causes of long-run economic performance, institutions have received considerable attention in recent years. Broadly defined, institutions are the “rules of the game in a society, or, more formally, are humanly devised constraints that shape human interaction. In consequence they structure incentives in human exchange, whether political, social, or economic” (North 1990, p. 3). The most obvious formal institutions are the constitution and set of laws in a society, but informal institutions such as conventions and codes of behavior often referred to as social norms or social values, are also important in determining human interaction.

Under such a broad definition, it is hardly controversial that institutions matter for development. Nonetheless, going back at least to Adam Smith, economists have paid special attention to a particular set of *economic* institutions, most notably, the rule of law and the degree of property rights enforcement as well as the constraints on the actions of powerful groups (including the state). These institutions generate incentives and opportunities for investment and can therefore spur or hinder economic growth. Recent studies have provided convincing empirical evidence supporting the view that differences in these institutions can have a large effect on output per capita (Hall and Jones 1999; Acemoglu, Johnson, and Robinson 2001, 2002a, 2002b; Rodrik, Subramanian, and Trebbi 2002).

Due to the characteristics of financial contracts, strong institutions are crucial to support deep and stable financial markets. Indeed, with imperfect ability to enforce loan contracts, people are tempted to renege on their loans. Large and impersonal financial markets not only require an appropriate legal framework, but also adequate enforcement of the rights and constraints of each of the parties involved in the contract. Otherwise, financial contracts may become infeasible.

Historical evidence is consistent with the idea that key economic institutions matter for financial develop-

ment. For instance, North and Weingast’s famous study of the Glorious Revolution in 17th century England shows that constitutional arrangements were aimed at securing property rights, protecting private property, and eliminating confiscatory governments. The authors conclude that “one necessary condition for the creation of modern economies dependent on specialization and division of labor (and hence impersonal exchange) is the ability to engage in secure contracting across time and space. That entails low transaction costs per exchange. The creation of impersonal capital markets is the single most important piece of evidence that such necessary condition has been fulfilled” (North and Weingast 1989, p. 831).

The importance of understanding the determinants of financial development cannot be overemphasized. Differences in the level of financial development can have a large effect on subsequent growth (for a survey of the literature, see Levine 1997, 2004). Therefore, one of the channels whereby better institutions may have an effect on economic development is through the consolidation of larger and better financial markets. This raises the more fundamental question exactly why some countries have developed financial markets and others do not.

One of the major differences between developed financial markets and underdeveloped ones is the role played by property rights (see De Soto 2000). The lack of property rights in developing countries is strongly linked to the institutions that support financial contracts in these countries. To understand the importance of securing property rights, consider a basic credit contract involving three players: the creditor, the debtor, and the institutions that guarantee that each of the other parties will live up to its responsibilities. If institutions are inadequate, the benefits that the other parties have to gain from renegeing on the debt contract can be so pronounced that they prevent the realization of the contract itself. Hence, the ability of these institutions to

align the players' incentives with the clauses of the debt contract can become an engine for promoting financial depth.

One way institutions promote financial development is by creating a framework for the use of collateral. Collateral is used in legal structures called security interests. Many kinds of assets can be used as collateral if the laws and institutions surrounding the creation and enforcement of security interests are clear, transparent, and well managed. Immovable assets—that is, land, houses, office buildings, and factories—are used as collateral in structures called mortgages. Movable assets, including contractual rights, accounts receivable, inventory, vehicles, and future flows, can be used as collateral in structures that are often called pledges or assignments.

Security interests for both kinds of collateral must usually be registered to be valid against third parties. In addition, in the case of immovable assets, the ownership of the asset must be registered in the same office. Well-functioning secured transactions frameworks involve (i) efficient property registries that allow creditors to track the ownership and pledging of assets; (ii) clear rules and regulations that define property rights regarding the types of assets that could be pledged as collateral in credit agreements; and (iii) enforceable rules and efficient institutions that allow creditors to seize collateral in an efficient and timely manner if the debtor defaults.

It is important to note that while most of the components of a secured transaction framework have been linked to the term *creditor protection*—in particular the possibility of taking over collateral if borrowers default—ultimately those that are protected are the depositors of the financial system. Financial guarantees are useful because they lower credit risk. The benefit of lower risk is enjoyed by the economy in several ways, including offering depositors a more secure place to save. Hence, stronger creditor protection is directly mapped into stronger depositor protection. After all, banks lend mostly resources entrusted to them by depositors. The ability to secure an interest in the collateral used to back up loans is a guarantee to the depositors that, in case of trouble, their savings will not vanish (at least not completely).

Several institutions limit the ability to secure property rights in Latin America. In most countries, laws are not designed to protect creditor rights. However, even if they were, given the low levels of rule of law and judiciary efficiency in the region, securing property rights would still remain costly and inefficient. In fact, the rights of creditors to the assets pledged as collateral

or the cost of taking over collateral has a major role in explaining the depth of financial markets, the allocation of credit among groups of investors, and the way the allocation and amount of credit react to economic shocks, as this chapter will discuss.

In addition, inability to create collateral in a broader sense is also a major impediment to the development of credit markets in Latin America. In most developing countries, and in Latin America in particular, the types of assets that can be used as collateral are limited and mostly reduced to immovable assets, such as real estate. Using movable assets is much more difficult, in part because rules and regulations do not accommodate adequate definitions of collateral that span these assets. Underdevelopment of immovable property registries further diminishes the possibility of using real estate as collateral in many countries (see De Soto 2000, especially on the poor). All these factors are of great relevance and deserve proper attention. However, due to lack of international data that allow formal comparisons and empirical studies, this chapter focuses on the protection of creditor rights, which is used as a proxy for the whole contracting environment.

CREDITOR RIGHTS IN LATIN AMERICA: AN OVERVIEW

La Porta and others (1997, 1998) give new impetus to the empirical discussion on the importance of regulations regarding the rights of creditors to borrowers' assets by providing valuable data on the state of creditor rights regulations around the world. The studies collect information on various regulations regarding creditor rights protections. Using this information, the authors construct an index that summarizes regulations determining creditors' rights to control collateral in case firms file for reorganization or bankruptcy. The index considers whether regulations do the following: (i) impose an automatic stay on assets in case of reorganization; (ii) give secured creditors the right to be paid first in case of bankruptcy; (iii) require firms to consult with creditors before filing for reorganization; and (iv) mandate removal of a firm's management during reorganization. A positive response to each of the four elements of the index is interpreted as creditor rights protection. It should be noted that this measure goes beyond collateral repossession by focusing on total asset liquidation in case of bankruptcy.

Table 12.1 summarizes the La Porta and others creditor rights measure for Latin American countries as well as the average level for countries in the OECD

TABLE 12.1 | CREDITOR PROTECTION, LATE 1990s

Country	Creditor rights	Rule of law	Effective creditor rights
Argentina	0.00	0.50	0.00
Bolivia	0.00	0.40	0.00
Brazil	0.25	0.46	0.12
Chile	0.50	0.75	0.38
Colombia	0.00	0.37	0.00
Costa Rica	0.50	0.65	0.33
Dominican Republic	0.25	0.45	0.11
Ecuador	0.25	0.38	0.10
El Salvador	0.25	0.42	0.11
Guatemala	0.00	0.35	0.00
Honduras	0.25	0.35	0.09
Jamaica	0.25	0.45	0.11
Mexico	0.00	0.44	0.00
Panama	0.50	0.51	0.26
Paraguay	0.25	0.34	0.09
Peru	0.25	0.41	0.10
Trinidad and Tobago	0.25	0.58	0.15
Uruguay	0.50	0.61	0.31
Venezuela	0.50	0.35	0.18
Latin America average	0.25	0.46	0.12
OECD average	0.47	0.85	0.40
Other emerging economies average	0.73	0.50	0.38

Note: Creditor rights, rule of law, and effective creditor rights are normalized between 0 and 1. Effective creditor rights is the product of the creditor rights index and the rule of law index. The higher the number, the better the measure.
Source: For the creditor rights index, La Porta and others (1997, 1998) and Galindo and Micco (2001); for the rule of law, Kaufman, Kraay, and Mastruzzi (2003).

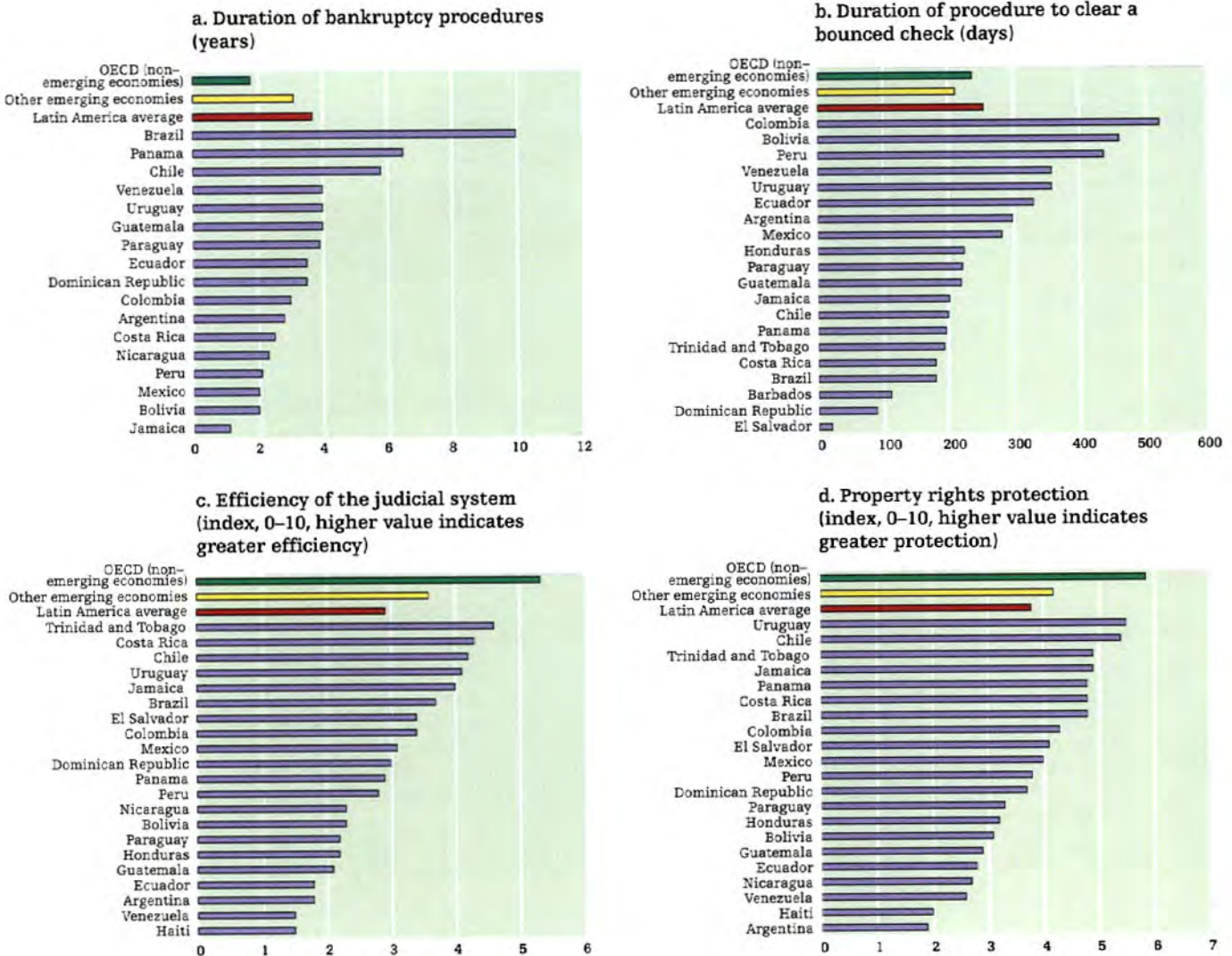
and other emerging economies. A first glance at this data immediately suggests that in Latin America creditors are less protected than elsewhere. Although the measure illustrates the degree to which regulations protect creditors, it only reflects what the law says, which is not necessarily what happens in practice. Thus, it is relevant to account for variations in law enforcement from country to country. Taking into account that law enforcement is weak in Latin America, it is likely that creditors may enjoy even less de facto protection. In order to incorporate such weakness in law enforcement into the measure of creditor protection, a new index labeled effective creditor rights multiplies the creditor rights index by a measure of the rule of law. The last column in Table 12.1 reports values of the effective creditor rights index, with higher values implying greater effective protection. Once rule of law is factored in, the conditions for Latin America and the Caribbean look even worse, as creditor rights in the region are not only weak, but also barely enforced. Based

on this methodology, it is only fair to say that creditor protection in Latin America and the Caribbean is extremely weak.

In addition, Latin American and Caribbean countries fare poorly in several other indicators commonly used as proxies for the institutional environment that determines the ability to contract, such as duration of bankruptcy procedures, duration of clearing a bounced check, efficiency of the judicial system, and protection of property rights. Figure 12.1 summarizes these measures and stresses the weakness of institutions in Latin America and the Caribbean.

In many of the region's countries, the possibility of using collateral fails in several other dimensions. Property registries tend to be weak and poorly managed, which makes it difficult for creditors to establish the priority and seniority of their claims on an asset that has been or will be pledged as collateral.¹ In addition, in some countries property fraud is a significant problem (see De Soto 2000 on the Peruvian case). This further

FIGURE 12.1 The Institutional Environment



Source: For the duration of bankruptcy procedures and procedure to clear a bounced check, World Bank (2003); for efficiency of the judicial system and property rights protection, World Economic Forum (2003).

limits the usefulness of property as collateral and consequently places serious constraints on access to credit.

DEEPENING CREDIT MARKETS

A growing strand of the literature emphasizes the importance of the legal framework in explaining financial development and the depth of credit markets (La Porta and others 1997, 1998, 2000; Beck and Levine 2003). This is not surprising because legal institutions are the most obvious “rules of the game” affecting the interaction of individuals in financial contracts. The underlying framework follows naturally from the development of corporate finance theory. Indeed, in Modigliani and

Miller’s (1958) contribution, debt and equity give creditors and shareholders a right to a project’s cash flow that is taken for granted. Jensen and Meckling (1976) recognize that insiders may use these resources for their own benefit. Thus, debt and equity should be understood as

¹ In Uruguay, for example, assets are classified by date of pledge. Hence, in order to verify whether an asset was previously used as collateral, it is necessary to know when it was pledged, which undermines the use of the registry. Similarly, in Bolivia assets are classified chronologically, and the whole file has to be searched in order to determine whether a particular asset has ever been pledged. Permission is required to search the registries, which makes the process more complex and prone to corrupt practices. In modern registries, searches can be done by name of borrower, date of pledge, name of lender, serial number, and other criteria.

contracts that give outside investors claims to the cash flows. Laws and their enforcement are therefore critical in determining the rights of security holders and the functioning of financial systems. In other words, both laws and their enforcement are thought to be connected with the extent to which insiders (such as managers and controlling shareholders) can expropriate outside investors (such as creditors and shareholders) who take the risk of financing firms. From this perspective, better protection of creditor rights increases the breadth and depth of credit markets by making expropriation more difficult.²

The view in favor of creditor-oriented regulations is complemented by the literature on the role of collateral in financial contracts (for a summary, see Galindo 2001). A critical aspect of creditor rights has to do with the right to repossess collateral. Collateral can solve a variety of problems in financial contracts when there is uncertainty about the project's return or when there is asymmetric information between banks and entrepreneurs (Coco 2000). For example, if the value of collateral is less uncertain than the expected return of a project, pledging collateral reduces asymmetric valuation problems and the cost of credit. Pledging collateral may also reduce rationing by providing information about borrowers and about the project, as entrepreneurs with risky projects will choose not to pledge collateral. Likewise, moral hazard problems might be reduced because collateral requirements add a potential cost to "lazy" borrowers and to those who engage in investments that are too risky for the agreed interest rate.

Theoretical findings regarding the role played by collateral in mitigating these problems are based on the presumption that the creditor can repossess the collateral in case of default. That is, it is presumed that a third party stands ready to protect and enforce the creditor's security interest in the collateral stipulated in the debt contract. The right to repossess collateral as well as efficiency in doing so act as a threat that helps to ensure that borrowers will not engage in inadequate behaviors, and this threat can serve to align the borrower's incentives with the clauses of the contract. If lenders feel that regulations do not protect them and that their chances of taking control of the assets pledged as collateral are uncertain, they are likely to prefer not to extend credit because the risk of bankruptcy will reduce their expected earnings. Under these circumstances, credit rationing will occur. Therefore, countries with a higher degree of creditor protection can be expected to enjoy deeper debt markets by taking advantage of the use of collateral to mitigate problems derived from uncertainty and information asymmetries. Consequently,

advocates of creditor rights-oriented regulations claim that if the right to repossess collateral in case of debtor default is not protected, the use of collateral will lose its important role in solving problems that can lead to credit rationing and underinvestment.

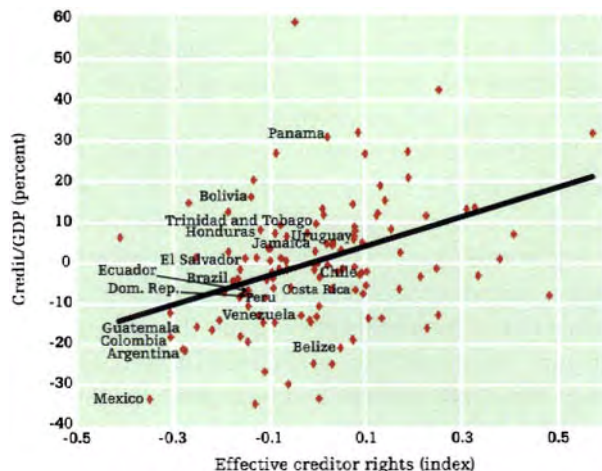
The theoretical literature regarding the role of creditor rights for financial development is not one-sided. Padilla and Requejo (2000) review countervailing arguments. First, the alternative or critical view suggests that strict protection of creditors might be efficient *ex ante*, but inefficient *ex post*. The argument is that once the uncertainty embedded in an investment project is realized and the borrower defaults, there are two possibilities: selling the assets of the project to repay creditors, or reaching an agreement and continuing the project. If the right to repossess collateral is strictly protected, it might be impossible for the borrower to continue with the project without the creditor's consent. As long as the liquidation value of the assets exceeded the value of the project, the strict protection of creditor rights would be efficient. Yet, if it were efficient to continue the investment project, credit-oriented regulations might lead to underinvestment.

Padilla and Requejo (2000) emphasize that the *ex ante* efficiency of creditor rights can also be disputed. One argument is that strengthening creditor rights may reduce risk-taking incentives, repressing entrepreneurial activity and credit demand. Another argument is that creditors' incentives to screen projects and discourage investment by overconfident entrepreneurs are reduced when creditors are protected against default. Thus, too many unworthy projects may be funded under strict protection of creditor rights, leading to a larger proportion of defaulted loans and insolvent businesses in equilibrium.

It is important to stress that the alternative view does not question the need for efficient enforcement of laws and regulations. This aspect is thought to be critical in solving all sorts of opportunistic behaviors that emerge in financial contracts. The disagreement is over the importance of creditor-oriented laws. For example, a Coasian approach implies that the content of the laws is irrelevant; it suffices to enforce private contracts because the parties involved will design them in a way that ameliorates opportunistic behavior. Yet, to the extent that enforcing private contracts is difficult, writing specific laws that provide a framework for financial con-

² See La Porta and others (2000). In this vein, Himmelberg, Hubbard, and Love (2000) develop a theoretical model in which higher effective investor protection reduces the cost of capital, improves its allocation, and increases investment and growth.

FIGURE 12.2 Credit/GDP vs. Effective Creditor Rights



Note: Variables are adjusted for the log of GDP, average inflation rates during the 1990s, and average real GDP growth rates during the 1990s.
Source: IDB calculations.

tracts (albeit in a more rigid setting) may improve the functioning of the financial market.

As usual in economics, the issue of the importance of regulations regarding the rights of creditors and their enforcement is ultimately an empirical matter. Several research papers have linked creditor rights protection to financial depth in an empirical manner (see for example La Porta and others 1997, 1998; Padilla and Requejo 2000; and Galindo and Micco 2001). The creditor rights measure developed by La Porta and others has been used in several studies that address a number of important questions. Researchers have examined the impact of creditor rights regulations on the size of credit markets and explored the determinants of creditor rights, reaching the conclusion that legal systems based on the civil law tradition, as is the case in Latin American countries, tend to grant less protection to creditors and more to debtors than do systems based on the common law tradition. Several research papers on this topic have emerged with similar findings.³

Figure 12.2 summarizes the results in the literature on creditor protection and financial development and shows a strong association between the effective protection of creditor rights and the size of financial markets. The main result in the figure is that better legal protection enhances the ability of creditors to operate in risky environments and increases the depth of credit markets. There are several reasons for this. From the perspective of the discussion above, credit markets are deeper due to the fact that protections increase the implicit value of collateral or alternatively reduce liquidation costs in case of borrower default. For example, lower protec-

tion reduces the possibility of seizing collateral at low cost and hence reduces the expected return to creditors in case of default. The increase in credit risk shrinks credit markets. In summary, after controlling for relevant features such as inflation, past economic growth, and the size of the economy, most empirical studies find a strong correlation between creditor protection and financial sector development.⁴

In addition to formal institutions, informal institutions have proven to be necessary for financial development. Box 12.1 discusses this issue.

CREDITOR PROTECTION AND ACCESS TO CREDIT

Information asymmetries tend to increase financial restrictions for smaller borrowers that usually have fewer assets to pledge as collateral. There is extensive empirical evidence suggesting that the size of the borrower matters for financial constraints. The main intuition behind this result is that, as opposed to large firms, smaller borrowers are not able to internalize many of the capital allocation functions carried out by financial markets. Hence, financial development may have a disproportionate impact on smaller firms.

This section reviews evidence on the degree of creditor rights protection and access to credit for small and medium-size enterprises. Results are drawn from Galindo and Micco (2004b), who use a survey of firms around the world to explore the role of creditor protection in small and medium-size enterprises' access to credit.⁵ In particular, the authors test whether the share of firm investment financed with bank credit depends on legal protections and firm size.⁶

³ La Porta and others (1997, 1998), Padilla and Requejo (2000), and Galindo and Micco (2001) show that creditor protection can affect the size of financial markets, the level of interest rates, and the level of nonperforming loans.

⁴ Galindo and Micco (2004) show that this result holds using virtually any other measure that proxies the ability to contract.

⁵ The World Bank's World Business Environment Survey is a cross-country, firm-level survey conducted in 54 developed and developing countries in 2000. The survey includes information on firm characteristics as well as entrepreneurs' perceptions of several issues, including access to financial markets. Previous uses of this database to test credit restrictions on small and medium-size firms include Clarke and others (forthcoming), who analyze whether deeper foreign bank penetration affects access to credit of smaller firms, and Love and Mylenko (2003), who analyze whether credit information registries affect financing constraints for these types of firms. Galindo and Micco (2004b) follow an approach similar to these two studies.

In addition to the legal framework, other institutions affect the functioning and development of financial markets. Recently, economists have paid attention to so-called informal institutions, such as trust or social capital, and their impact on economic performance. Fergusson (2004) provides a literature survey on this issue. Presumably, informal institutions are less important in modern societies where formal rules such as the legal framework are the keys to exchange. Nonetheless, “informal constraints are pervasive features of modern economies as well,” and empirical work has documented a positive correlation between a country’s level of trust and economic performance (North 1990, p. 39).

The theory behind the importance of trust in economic performance is fairly simple. Trust increases people’s perception that others will cooperate. Thus, trust can be important for ensuring cooperation between people who encounter each other infrequently. This implies that trust is especially important for supporting cooperation in large organizations, such as the government, large firms, or simply large markets. It also implies that trust is potentially important for ensuring financial contracts. Indeed, according to Guiso, Sapienza, and Zingales (2000, p. 1), “financial contracts are trust intensive contracts *par excellence*.” A financial contract is an exchange of a sum of money for a promise of more money in the future that can only take place to the extent that the financier trusts the borrower. Adequate enforcement of formal contracts and additional clauses such as collateral requirements may give credibility to such promise. Therefore, trust is especially important when legal institutions are inadequately designed or enforced. Nonetheless, because of incompleteness of financial contracts, even under perfect enforceability there should be a positive association between the size and efficiency of financial markets and the level of trust (Guiso,

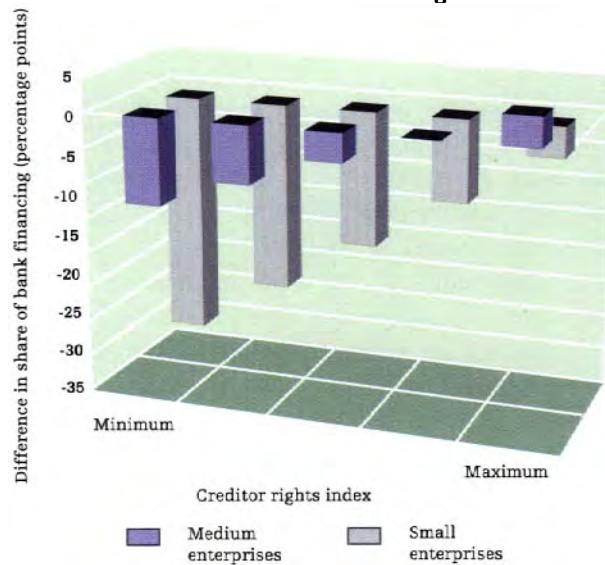
Sapienza, and Zingales 2000; Calderón, Chong, and Galindo 2002).

In a study in Italy, Guiso, Sapienza, and Zingales (2000) consider the effects of social capital in financial development using data on households and firms. The results reveal a strong connection between social capital and financial development. In particular, higher levels of trust are correlated with lower levels of household investment in cash, higher investment in stocks, increased use of checks, higher access to institutional credit, and less informal credit. In addition, firms have greater access to formal markets in high trust areas. Trust is especially important where legal enforcement is weak, although trust matters even after controlling for the quality of the court system.

Do these results extend beyond Italy? Calderón, Chong, and Galindo (2002) examine this question, and their answer is a definite yes. They find that trust has a positive and economically large effect on the size and activity of financial intermediaries, the efficiency of commercial banks, and the extent of stock and bond market development. Moreover, their results hold even after controlling for key determinants such as the size of the economy, human capital, inflation, and especially law enforcement. Their results hold after changing the specification when using a formal sensitivity analysis and after addressing reverse causality issues. The authors conclude that “trust appears to be a key complement to formal institutions when a society has little regard for the rule of law or, vice versa, that is, when trust in a society is low, the development of formal institutions to help uphold the rule of law appears to become particularly crucial in a society.”

In sum, there is ample evidence that both formal and informal institutions are important for financial development.

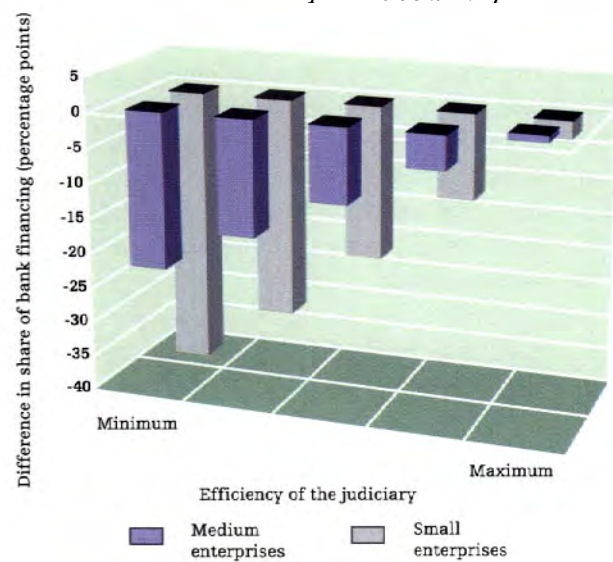
FIGURE 12.3 Gap in Bank Financing of Small and Medium-Size Enterprises and Effective Creditor Rights



Note: Values are differences in share of bank financing compared with large enterprises.
Source: Galindo and Micco (2004b).

Figures 12.3 and 12.4 summarize the results. Figure 12.3 shows the estimated difference in bank credit finance between small and medium-size firms with respect to large firms in countries with different levels of creditor protection.⁷ The figure shows the difference in the share of bank financing between small and large firms for different values of the effective creditor rights index and the difference between the share of financing between medium-size and large firms, also for different values of the effective creditor rights index. In countries with low values for the creditor protection index, small firms have much less credit than large ones. The difference falls as the creditor protection measure rises. While the difference in bank financing between medium and large firms is not as large, it also decreases as the index increases. Figure 12.4 shows results similar to those in Figure 12.3, but for a variable measuring the efficiency of the judiciary instead of the effective creditor rights index to proxy for the contracting environment. For an intuitive view of the magnitude of this result, consider a country in the 20th percentile of effective creditor protection where the difference in bank credit financing between small and large firms is nearly 30 percentage points and the difference between medium-size and large firms is close to 10 percentage points. As effective creditor rights increase, the gap is closed. In fact, according to these estimates, the difference in bank credit between small and large firms in countries with high creditor protection (75th percentile) is only

FIGURE 12.4 Gap in Bank Financing of Small and Medium-Size Enterprises and Efficiency of the Judiciary



Note: Values are differences in share of bank financing compared with large enterprises.
Source: Galindo and Micco (2004b).

18 percentage points, and the difference between medium and large firms is only 4 percentage points.

Compared with large firms, small and medium-size firms finance significantly less investment with bank credit. In fact, the share of bank credit in smaller firms is on average lower than that of medium-size firms. Note that this is perfectly normal due to the increased risks and administrative costs involved in lending to small firms. What is important to stress is that the financing gap seems to be reduced as creditor protection increases, given that risk is partially reduced. Even in countries with high creditor protection and deep financial markets, the gap will remain. However, the degree to which smaller firms are constrained depends on the quality of the regulatory framework, suggesting that in countries where creditor rights are protected (and enforced), smaller firms have greater access to bank credit to finance investment.

⁶ The survey classifies firms into three groups. Firms with fewer than 50 employees are labeled small, firms with more than 50 but fewer than 500 are medium, and firms with more than 5,000 are considered large.

⁷ The results come from Tobit estimations. Given that the dependent variable in these regressions is naturally truncated between 0 and 1 (the share of investment financed with bank credit), the empirical model is estimated using a standard two-limit Tobit model. The empirical model is estimated using clustered standard errors, controlling for firm-specific characteristics, as well as for country fixed effects.

It is important to emphasize that strict protection of property rights not only increases the availability of external finance for all types of firms, but also increases the efficiency of its allocation. For instance, firms operating in a market with poorly defined or poorly enforced creditor rights tend to invest more in fixed assets relative to intangible assets, given that securing returns from tangible assets is relatively easier when property rights are weak (see Claessens and Laeven 2003a).

The evidence in this section suggests that creditor protection tends to reduce the financing constraints of small and medium-size creditors, despite the fact that even in highly financially developed countries a gap will exist. The ability to pledge collateral may be substantially more important for firms lacking access to internal capital markets or other forms of formal financial markets. Consequently, a reform aimed at increasing creditor protection not only may increase the size of financial markets and promote economic growth, but may also have a significant effect on credit allocation and income distribution.

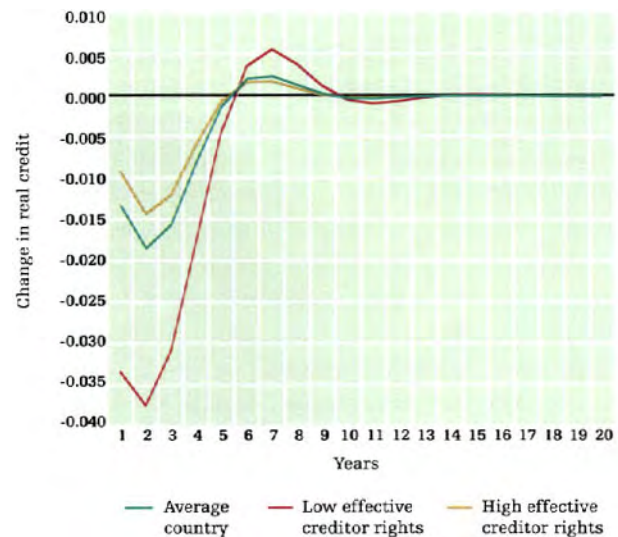
CREDITOR PROTECTION AND FINANCIAL STABILITY

In addition to promoting the depth of credit markets in general and reducing constraints on small and medium-size debtors in particular, creditor protection can reduce the effects of adverse shocks on the credit cycle. If creditor rights are protected, when the economy faces an adverse shock that increases credit risk, the extent of credit contraction will depend on the regulations regarding collateral repossession. Creditors' inability to recover the collateral pledged in case borrowers default will likely exacerbate the increase in credit risk experienced during a recession. In such a case, the credit market would overreact to the exogenous shock, and credit would contract.

Figure 12.5 summarizes empirical evidence on how weaker creditor protection increases credit market volatility. The figure plots the response of credit to an external shock in an average country, a country with lower than average creditor protection, and a country with higher than average creditor protection. Clearly, after a negative shock of the same size, credit contracts much more in the country with low creditor protection than in the country with high creditor protection.⁸

Galindo, Micco, and Suárez (2004) analyze the relationship between credit fluctuations and shocks in a formal econometric study and find that an increase in almost any of the legal protection proxies would reduce

FIGURE 12.5 Response of Real Credit to an External Shock



Note: The figure plots an impulse response function of a near-VAR model including credit, GDP, and an external shock.
Source: Galindo, Micco, and Suárez (2004).

the amplitude of the real credit cycle. In addition, they find that countries with legal systems of French origin tend to experience greater volatility than common law countries. The results presented by the authors imply that credit is more stable in countries with high legal protection for creditors. On the one hand, when credit markets are hit by negative shocks, creditors in countries with low legal protection experience high losses because they are not able to seize and sell the collateral pledged. Such a loss translates into a strong contraction of credit. On the other hand, in the face of positive shocks, credit increases more in those countries than elsewhere because the shock provides an opportunity to compensate for losses during downturns. Countries with high legal protection have more stable credit because creditors face lower liquidation costs and hence experience lower losses than in countries where protections are not in place.

The main intuition driving these results is that weak creditor protection reduces the cash flow from a portfolio of loans and can exacerbate the increase in credit risk that occurs during recessions. When there is an adverse shock—such as a reduction in the terms of trade or a reversal of international capital flows—and creditors are not protected, they disproportionately de-

⁸ The measure of creditor protection used in this exercise is the effective creditor rights measure. Countries with high or low creditor protection are those above or below the median of the effective creditor rights measure, respectively.

BOX 12.2 | THE EMERGENCE OF LEGAL CODES

La Porta and others (1999) and Glaeser and Shleifer (2002) argue that legal codes emerged as an efficient response to the degree of political power of feudal lords in each country. Powerful feudal lords in France were more afraid of each other than of the king; therefore, it was important to delegate dispute resolution in a centralized manner to the king. In England, where local lords were less powerful, resolving disputes locally was more efficient and did not pose a threat to the king.

Beck and Levine (2003) trace the historical evolution of legal institutions and find some disagreement among historians and legal scholars regarding the development of Europe's legal traditions. In the case of France, the legal system evolved starting in the 15th century as a fragmented and corrupt system, which ultimately led to the lack of prestige and integrity of the judiciary by the 18th century. The French Revolution strove to place the state above the courts and eliminate jurisprudence. Napoleon's intention to unify and strengthen the state built on the theory that the civil code should be so clear and complete that there would be little discretion left for judges. Although this goal is well recognized, the authors report conflicting views regarding the ex-

tent to which it was achieved. Indeed, some scholars argue that this was a largely theoretical deviation from a tradition based on jurisprudence and, in practice, judicial discretion continued to play a major role. Others assert that the relatively rigid framework that was built had real effects and cite the encouragement of alternative and easily verifiable "bright-line rules," such as mandatory dividends and legal reserve requirements (Glaeser and Shleifer 2002).

In the case of Germany, Beck and Levine (2003) show that, although codification under Bismarck was also meant to unify the country and give more power to the central state, there was another approach toward jurisprudence. Indeed, unlike the Napoleonic code, the German code was designed to evolve and had a favorable view of jurisprudence. Turning to British common law, its historical evolution has been amply studied, and there is wide agreement that the evolution of this tradition was marked by the importance of placing the law above the crown, defending private property, and giving a leading role to judges in shaping the law through practice as opposed to following a more rigid and formal legal framework.

crease lending because the shock reduces the chances of recovering loans and the collateral that guarantees them.

WHAT TO DO ABOUT BAD INSTITUTIONS?

Many empirical studies support the idea that maintaining and enforcing clear legal rules protecting creditors will have a positive effect on financial markets. The more fundamental question is: Why do some countries have good laws and institutions while others do not? The law and finance literature emphasizes that differences are associated with legal origin (see Fergusson 2004).

The basic building block of this hypothesis is that a country's laws are largely transplanted (through conquest, imperialism, or imitation) from one of a few legal families or traditions (see La Porta and others 1998).

The broad traditions are English common law and Roman civil law, the latter of which includes three major families: French, German, and Scandinavian. Civil law developed in Europe as part of the restrained control by the sovereigns over their subjects, while common law was developed in Britain as a mechanism for protecting the subjects against the crown (for a discussion of the development of legal codes, see Box 12.2). Civil law relies heavily on legal scholars to formulate its rules and on statutes and comprehensive codes, whereas common law is formed by judges who resolve specific disputes based on precedents rather than on contributions by scholars. From this perspective, it is argued that common law gives higher priority to private property vis-à-vis the state and is better able to adapt to changing conditions than is civil law. Beck and Levine (2003) call these characteristics the political and adaptability mechanisms, respectively. Under the presumption that these two characteristics lead to financial development, legal origin influences finance. The origin of legal insti-

The European Bank for Reconstruction and Development has drafted the following basic principles to define a well-functioning regulatory framework for secured transactions:

1. Permit security interests to be created quickly, at a predictable and low cost.
2. Facilitate easy access to information in the registry.
3. Include a broad definition of the scope of rights (both tangible and intangible) that may be the subject of a security interest. Frequently, legislation only recognizes security interests on assets that can be specifically identified at the time the interest is created and excludes property such as accounts receivable, future flows, and floating charges over a company's assets.
4. Enable all kinds of debt and types of creditors to benefit from the framework.

5. Simplify the formalities required to register a security interest through the adoption of a notice filing system (instead of a document registration system) and through the utilization of technology and the standardization of procedures for various types of security interests.
6. Establish clear rules of priority among creditors.
7. Create security interests and priorities that will survive an event of bankruptcy.
8. Establish out-of-court remedies with the objective of ensuring prompt, inexpensive, and effective enforcement of security interests.

Source: Summary based on European Bank for Reconstruction and Development principles and other sources, <http://www.ebrd.org/>.

tutions that are more or less favorable for financial development should be traced back to the historical process leading to the adoption of particular legal systems.

Does this mean that civil law countries are doomed? Not necessarily. Even civil law regimes can adapt. Beck, Demrigüç-Kunt, and Levine (2002) examine the mechanism through which legal origin affects finance and find that the primary channel is the adaptability channel. They conclude that “legal systems that adapt efficiently to minimize the gap between the financial needs of the economy and the legal system’s capabilities will foster financial development more effectively than more rigid systems” (p. 31). In addition, they point out that, despite the fact that adjustment is easier in common law countries, there is no strong evidence that countries with legal systems based on civil law cannot adapt their regulations and institutions.⁹

POLICY IMPLICATIONS

Despite the importance of reforms to the secured transaction framework, little has been done in Latin America in this area. It is common knowledge that many Latin American countries have gone through intense re-

form processes during the past 15 years, and many of these reforms have been aimed at increasing the size and stability of credit markets. Financial markets have been liberalized, and there have been radical changes in prudential regulation and supervision. However, due to the lack of reform of underlying institutions, such as the ones discussed in this chapter, many of the reforms directed toward liberalizing financial markets have had little impact.¹⁰ Financial liberalization, in particular that of domestic financial markets (liberalizing interest rate caps and eliminating directed credit), has a positive impact only in countries with strong creditor rights protection and enforcement. Creditor rights protection allows lenders to take advantage of liberalization by granting them the instruments to deal properly with credit risk. However, because of the lack of reform of underlying institutions, the region’s financial markets remain comparatively small and volatile, particularly with respect to other emerging market economies.

⁹ See Fergusson (2004) for a survey on theories of institutional development.

¹⁰ See Galindo, Micco, and Ordoñez (2002b) for a discussion on how the lack of institutional development has hindered the effects of financial liberalization in Latin America.

Several reasons exist for the inadequacy of reform in this area. First, there is not one specific area to reform in order to achieve an adequate framework for protecting creditors. Not only do rules and regulations in different legal codes regarding seizing collateral need to be reformed, with all the complexity that this usually involves in civil law countries, but also, and probably more important, the judicial system needs to be made more agile. With these goals in mind, several analysts have formulated principles for an adequate framework for secured transactions on movable assets, and the European Bank for Reconstruction and Development has drafted some basic principles to define a well-functioning regulatory framework for secured transactions (Box 12.3). Such principles clearly note the need to establish out-of-court remedies that ensure prompt, effective, and relatively inexpensive enforcement of creditor rights. However, the civil law tradition limits this alternative, making it difficult (but not impossible) for lawmakers to achieve a satisfactory reform. Despite these difficulties, East European countries such as Romania and Estonia have been able to implement many of these principles.

Second, in deciding whether to execute these

types of reforms, policymakers face a nontrivial political economy problem (see Fergusson 2004). Despite the fact that a certain degree of awareness of the importance of this topic exists, there is also a great degree of misunderstanding. In general, the public might view these sorts of policies as a way to redistribute wealth in favor of the already maligned financial sector, which could lead to a loss of popularity of such reforms. In addition, political interests might block the creation of new rules and regulations that could help promote financial development. Rajan and Zingales (2003a), for example, argue that a more efficient financial system would likely hurt incumbent firms and financial institutions by facilitating entry and lowering profits. Thus incumbents, who tend to have a strong political lobby, may not support policies and institutional reform leading to financial development, despite their positive effect on development. The main challenge in promoting reform in this area is to align views and generate political consensus toward the need to carry out these types of financial reforms, which not only protect depositors and increase the size of credit markets, but also have important redistributive effects by allowing smaller entrepreneurs to exploit business opportunities.

Information Sharing in Financial Markets

LACK of information about creditors is a major impediment to the extension of credit. The forward-looking nature of credit contracts, which involve a promise to pay over time, makes the identity and intentions of the buyer a critical factor in the likelihood of repayment, and thereby profitability, of the loan. Information on potential borrowers and their investment projects is typically only partially disclosed to lenders. This can lead to several problems for lenders, the most notable being moral hazard. That is, once a loan is made, the possibility arises that the borrower may try to avoid repaying the loan or take actions that increase the risk of the investment project. Not knowing in advance what type of borrower is asking for credit (one that usually repays debts or one that does not) may lead to credit rationing.¹ One way of reducing this problem is through institutions that provide information about potential clients.

Information sharing among banks about their borrowers is crucial to financial markets. In short, the argument follows these lines: If a borrower does not repay his bank and other banks do not know about it, the faulty client can go to any other bank and ask for a loan, and his cost of defaulting on his loan obligations is relatively low. If other banks know about his behavior, however, then it will be more difficult to access credit once he has defaulted. Information sharing among lenders makes a borrower's default costs higher. Pagano and Jappelli (1993) provide the first rigorous treatment of information sharing mechanisms such as credit registries. They discuss how information sharing can affect the problem of adverse selection and find that the structure of the credit market drives the impact of information sharing on lending. In a competitive market, informational rents fall and lending increases, whereas such benefits do not necessarily accrue when competition is lacking. Padilla and Pagano (1997) show that information sharing can also reduce moral hazard by imposing discipline on credit users.

Although an extensive theoretical literature discusses the role of information in credit markets, much

less attention has been given to the institutional responses that actual lenders have developed to minimize the impact of asymmetric information. One such institutional response is credit registries, also commonly known as credit bureaus, which collect, distribute, and often analyze information on borrower behavior from a variety of sources, including numerous lenders.

Credit registries date back to at least the 19th century. In Latin America and the Caribbean, some of the oldest credit registries were formed by chambers of commerce to record information on customers who did not pay accounts held with merchants. More recently, banks have organized in many countries in the region to share information on delinquent customers. In addition, most central banks or bank superintendencies in Latin America and the Caribbean require supervised financial institutions to provide information on borrowers to a public credit registry, which then makes available a subset of the information to the financial system.

Credit registries have gained in importance in the past 20 years, in both developed and developing countries, due to changes in banking systems and advances in technology. In many countries, the financial system has recently gone through a period of consolidation. Community-based institutions with a limited geographic focus have been acquired or closed in fa-

¹ In this regard there are two types of asymmetries—one related to what a bank knows about its clients and the other related to what a bank knows about clients of other banks. With respect to the first type of asymmetry, an extensive theoretical literature has uncovered the central role it plays in credit markets. Examples are Jaffee and Russell (1976) and Stiglitz and Weiss (1981). Because of asymmetric information between borrowers and lenders, the price of a loan—the interest rate—can hardly be an appropriate way of balancing the supply and demand of financial resources. Stiglitz and Weiss suggest that the structure of the credit market will determine the extent to which either lenders or borrowers benefit from greater transparency of information. However, their analysis is in the context of a one-shot adverse selection model. For the purpose of this chapter, the relevant framework is that of a willingness-to-pay model in a repeated game context that addresses the second type of asymmetry.

vor of large national and even international financial conglomerates. There is evidence that the process of mergers and acquisitions in a financial system results in a loss of institution-specific knowledge on borrowers. In addition, larger institutions often want to centralize the credit decision process. These factors may increase the reliance on and importance of the standardized and easily transmitted information contained in credit registries. In parallel with the shift toward larger banking institutions, there has been rapid growth in computing capacity, which enables lenders to quickly and cheaply access and analyze data on massive numbers of borrowers. Credit-scoring technologies, which provide a numerical ranking of borrower credit quality, have become a central part of the credit decision used in a growing number of credit markets. From their early use in the credit card market, credit-scoring tools are now also a fundamental part of the mortgage market and the small business loan market.²

The small business loan market is perhaps the segment of the credit market where asymmetric information is most pronounced. Independent analysis of most small businesses (through ratings firms or stock prices) is usually not available. Small businesses are also very diverse, so it is difficult to identify clear predictors of success. Further complicating matters is the fact that many small business owners mingle their personal finances with those of their company. In Latin America and the Caribbean, these problems are even greater due to economic volatility, poor accounting standards, and widespread tax evasion.

The traditional response of banks—the main source of untied credit for small firms—has been to put significant resources into studying business plans and cash flows and requiring collateral to back loans.³ This approach is time consuming and results in high fixed costs, making many small business loans too costly to undertake.

Credit registries that collect standardized historical data on borrowers can create a new kind of collateral—reputation collateral—that can help in reducing problems of adverse selection and moral hazard. Credit-scoring technologies that make use of such data greatly reduce per loan costs, thereby opening up new lending opportunities. Data on small businesses and on their owners have proven to be relevant in determining the risk and profitability of small business loans.⁴

WHAT DO CREDIT REGISTRIES DO?

The uses of credit registries varies across countries and to a great extent depends on their ownership structure. While in many countries credit registries are privately owned (private credit registries are usually known as credit bureaus), in several others they are owned by a public institution such as the central bank or the bank superintendency. The uses and functions of both public and private registries depend on several aspects. When both types of registries exist, their role is not necessarily the same. In such cases public credit registries might just collect basic information on borrowers, and private ones might focus on more detailed information that complements that of the public credit registry. If no private credit registry is available, it is likely that the public registry has to serve all the information sharing services.

Most Latin American and Caribbean countries have both types of credit registries. Only in Colombia and Panama is there no public credit registry; all countries except Ecuador, Honduras, Nicaragua, and Venezuela have a private credit bureau. This chapter discusses the differences in the coverage, amount of data compiled, and distribution methods of both types of institutions. In general, private credit bureaus compile more information, from more sources, and distribute it to more institutions than public credit registries do. This does not necessarily mean that private credit bureaus are better than public ones; it might just mean that they play different roles.

Public credit registries might also be used for pru-

² The downside of bank consolidation with respect to credit bureaus is that the incentives to share information can decrease as bank size increases. It is surely more in the interest of small banks to share information than it is for large banks.

³ Trade or supplier credit is perhaps the most common type of credit for small firms, but it is tied to specific purchases or transactions and usually very short term (30–90 days). The prevalence of trade credit in the small business market is likely due, at least in part, to the information advantages enjoyed by firms that share business relationships.

⁴ The most common U.S. small business credit-scoring product, which is sold by the Fair Isaac Corporation, makes use of information on both small businesses and their owners in creating the firm score. This credit-scoring product is used extensively in the small business market and has reduced loan processing times from hours or days to minutes. Nonetheless, it is the consumer side of credit registries rather than the small and medium enterprise side that has developed most throughout the world. In part the incentives for sharing small and medium enterprise data might be different from those for sharing consumer data. Banks spend resources finding and building relationships with small and medium enterprises. It is likely that, given the cost of building those relationships, banks might not want to share information on these clients (at least immediately).

dential supervision purposes. As discussed in Falkenheim and Powell (2003), credit registries can play an important role in assessing whether capital and provisioning regulations match up to actual lending risks. Further discussion on these issues is presented in Chapter 16. The rest of this chapter concentrates on the uses of credit registries to diminish information asymmetries and expand credit market access.

Empirical evidence on this particular role of credit registries is scarce. However, a few recent studies have shown that the availability of information is crucial for sound lending decisions. Greater availability of information stimulates financial development, reduces default rates, and increases access to credit (Barron and Staten 2003). Accurate credit information has substantially greater predictive power for the performance of firms than the data contained in financial statements (Kallberg and Udell 2003).

Credit registries play a substantial role in the development of credit markets. A simple regression experiment reported in Appendix 13.1 reveals the importance of this relationship when controlling for other factors that affect financial development, such as the rule of law, creditor rights, inflation, the log of gross national product, and previous economic growth rates.⁵ Regression results suggest that, on average, countries with credit registries have nearly 9 percentage points greater financial development compared with countries without them.⁶

It is interesting to note that the relationship between the existence of credit registries and the development of credit markets varies depending on the level of financial development of the country. Countries below the median of financial development appear to benefit more from the advantages of having credit registries than do more developed ones. According to the estimates reported in Table 13.1, based on the empirical results in Appendix 13.1, having a credit registry corresponds to nearly 10 percentage points greater financial development in countries below the median level of financial development. The contribution of having a credit registry to the level of development of the credit market diminishes as financial development increases. This is consistent with the presumption that countries with lower financial development suffer more from problems derived from information asymmetries than do more developed ones. Moral hazard, for example, may be more pronounced in such countries. Therefore, mechanisms to partially alleviate such problems at a low stage of financial development may make a notable contribution.

Credit registries also contribute to the development of financial markets by diminishing some vulner-

TABLE 13.1 THE VALUE OF A CREDIT REGISTRY FOR FINANCIAL DEVELOPMENT
(Percentage points of GDP)

Quantile of financial development	Increase in financial development
15	9.4
25	9.0
50	10.2
75	7.3
85	1.7
Average country	9.6

Source: IDB calculations.

abilities. The proper use of credit registries can reduce the nonperforming loan ratio of a banking institution by allowing creditors to sort good and bad debtors before granting credit. Jappelli and Pagano (2001) find that the performance of credit registries—proxied by the number of years they have operated and the type of information they share (positive, negative, or both)—has a significant negative effect on nonperforming loans. Box 13.1 reports additional evidence on the impact of the use of credit registries on nonperforming loans specific to Latin American countries.

Better-informed lenders are able to provide better financial services to borrowers. In countries where credit bureaus are more developed, firms face less severe financial constraints. These results apply for large firms as well as for small and medium-size enterprises. In countries where credit registries are developed, large firms listed on the stock market face lower financial constraints and are allowed to invest more than in countries where credit registries are less developed.⁷ In addition,

⁵ Even excluding the United States, the results are the same.

⁶ Jappelli and Pagano (2003) provide similar results by showing that the performance of credit registries, proxied by the number of years they have operated and the type of information that they share (positive, negative, or both), has a significant positive impact on the amount of consumer credit (relative to gross national product) granted by the financial sector and the total amount of credit as well.

⁷ Galindo and Miller (2001) focus on a structural empirical question related directly to the microeconomics of credit markets. They use firm-level data for more than 20 countries to explore whether the performance of credit registries has an impact on the financial constraints faced by listed firms. The authors find that information sharing institutions reduce the degree to which firms are credit constrained.

BOX 13.1 | NONPERFORMING LOANS AND THE USE OF CREDIT REGISTRIES IN LATIN AMERICA

Data from bank balance sheets and information from a survey on how Latin American banks use credit registries (carried out by the Inter-American Development Bank and the World Bank) confirm that the use of credit registries can help reduce default risk.¹ Nearly 200 banks in Bolivia, Brazil, Chile, Colombia, Costa Rica, El Salvador, and Peru answered the survey, which took place in 2002. The findings are based on regression analysis that controls for bank-specific characteristics such as bank ownership and loan structure (consumer credit, corporate credit, and small and medium-size enterprise loans) and countrywide effects.

The dependent variable in this study is the rate of nonperforming loans to total loans. The results confirm that some banks that use private credit bureaus for their loan decision process have lower lev-

els of nonperforming loans than those that do not. The values in the table below suggest that banks that have a high concentration of credit to small and medium enterprises or a high concentration of consumer loans in their assets benefit from using private credit bureaus and experience lower default rates than those that do not consult them periodically (regression 1). These results do not hold for banks that use public credit registries (regression 2). This difference may occur because of the different roles of private and public credit registries in countries where both types of institutions coexist.

¹ See http://econ.worldbank.org/programs/credit_reporting/topic/2247/.

NONPERFORMING LOANS AND USE OF CREDIT REGISTRIES IN LATIN AMERICA, 1999–2003

Variable	1	2
Foreign ownership of bank (dummy variable)	-1.166 (0.906)	-0.705 (1.019)
Public ownership of bank (dummy variable)	2.939 (1.312)**	1.861 (1.490)
Consumer or small or medium enterprise loans are primary activity	8.756 (3.018)***	3.724 (2.044)*
Bank uses private credit bureau	2.521 (2.219)	
Bank uses private credit bureau * consumer or small or medium enterprise loans are primary activity	-7.758 (3.128)**	
Bank uses public credit registry		1.973 (1.575)
Bank uses public credit registry * consumer or small or medium enterprise loans are primary activity		-2.185 (2.235)
Country effects	Yes	Yes
Number of countries	7	7
Observations	170	149

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Note: The dependent variable is the average number of nonperforming loans/total loans. The estimation method is Tobit. Standard errors are in parentheses.

Source: IDB calculations.

small and medium-size enterprises tend to suffer less from financial constraints in countries that have developed private credit bureaus. Small firms in countries with greater development of credit information systems tend to finance more of their activity with bank credit, as opposed to small firms in countries with lower development of credit registries, where access to credit is a much larger problem.⁸ Interestingly, evidence suggests that private (not public) credit registries are the crucial component in reducing the credit constraints of small and medium-size enterprises.

Given the empirical results available, it is only fair to say that the development of credit reporting systems—in particular private ones—is relevant for financial development, stability, and access to credit. However, information sharing can be difficult, especially in medium-size markets, where banks may be unwilling to disclose information on clients, even if this would reduce their risk; the banks may prefer to maintain their information rents.⁹

CREDIT REPORTING IN LATIN AMERICA AND THE CARIBBEAN

A recent credit registry survey conducted by the World Bank is useful for describing the state of the art in credit registries in Latin America and the Caribbean.¹⁰ The data allow comparisons across countries with respect to several crucial elements of credit registries, in particular the amount of information available in the registries, the type of information reported, the way it is reported, who can access it, and the procedures used to verify the integrity and accuracy of the data. On the basis of this information, this chapter develops a *quality index* for public credit registries and private credit bureaus.

Most Latin American and Caribbean countries have either a public or a private credit registry, and most have both. In terms of the quality of these institutions, countries in the region fare well compared with other regions.¹¹ Table 13.2 summarizes relevant features of private credit bureaus and public credit registries in Latin American and Caribbean countries and provides an index that proxies the amount and quality of information available in the credit registry. As seen in the table, private credit bureaus in Latin American and Caribbean countries score higher in the quality index than other emerging economies and even better than other (besides the United States) countries in the Organisation for Economic Co-Operation and Development (OECD). There is not much variance in the quality index of private credit bureaus throughout the

region; most countries are near the average, and only Argentina and Costa Rica appear particularly high and low, respectively.

The quality of public credit registries in Latin America and the Caribbean is not significantly different from that in the rest of the world. However, the scores tend to be lower than those of private credit bureaus. This may be due to the fact that private credit bureaus tend to complement public credit registries in countries where both types of institutions coexist. Note that in three of the four countries in Table 13.2 that have no private credit bureau but do have a public credit registry, the score of the public credit registry is significantly higher than the regional average of public credit registries and close to the regional average of private credit bureaus. In a sense this indicates that public credit registries are assuming the role of private credit bureaus in some way in Ecuador, Honduras, and Venezuela.

The fact that the quality index suggests that credit bureaus in the region are healthy has been noted previously.¹² A combination of factors explains the health of the index: (i) the absence of laws prohibiting or greatly restricting sharing of credit information within the financial sector; (ii) foreign direct investment in credit registries in the major Latin American markets (Argentina, Brazil, Chile, and Mexico) and many smaller countries; (iii) a history of using credit registries in the retail sector, often organized by chambers of commerce; and (iv) changes in banking systems that encourage information sharing (consolidation of the sector, a return of long-term lending due to macroeconomic stability, and increased foreign presence requiring modernized lending practices).

⁸ See the discussion in Chapter 14 and Love and Mylenko (2003).

⁹ Castelar Pinheiro and Moura (2003) use data from Brazil's largest private credit registry, SERASA, to study sharing of credit information in a highly segmented credit market.

¹⁰ See http://econ.worldbank.org/programs/credit_reporting/topic/2247/.

¹¹ The index reported in Table 13.2 is an average of subindexes that measure the amount of data available on consumer loans, the amount of data available on loans to businesses, the types of loans reported to the credit registry (such as mortgages, credit cards, other consumer loans, and car loans), whether positive as well as negative information on the debtors is reported, the number of creditor institutions that report to the credit registry (such as commercial banks, retail stores that offer credit, and credit card companies), the number of institutions that can access the data, and the number of procedures the registry uses to verify data. Based on this information, seven indexes are constructed with values ranging from 0 to 1. The average of the seven indexes is the credit registry quality index.

¹² See Miller (2003a), Galindo and Miller (2001), and IDB (2001) for discussions on credit registries in Latin America.

TABLE 13.2 CREDIT REGISTRIES IN LATIN AMERICA AND OTHER REGIONS

Country/region	Private credit bureau			Public credit registry		
	Index ^a	Coverage ^b	Date established	Index ^a	Coverage ^b	Date established
Argentina	0.78	475	1957	0.47	149	1991
Bolivia	0.64	134	1994	0.52	55	1988
Brazil	0.74	439	1894	0.59	44	1997
Chile	0.72	227	1919	0.49	209	1977
Colombia	0.70	187	1952	No registry	No registry	No registry
Costa Rica	0.29	55	1996	0.44	7	1996
Dominican Republic	0.68	423	1994	0.27	n.a.	1994
Ecuador	No bureau	No bureau	No bureau	0.66	82	1997
El Salvador	0.55	128	1967	0.51	130	1996
Guatemala	0.67	35	1976	0.43	n.a.	2002
Honduras	No bureau	No bureau	No bureau	0.50	45	1998
Mexico	0.70	382	1995	0.15	n.a.	1964
Nicaragua	No bureau	No bureau	No bureau	0.39	50	1994
Panama	0.62	302	1956	No registry	No registry	No registry
Peru	0.71	185	1888	0.62	92	1983
Uruguay	0.62	479	1915	0.42	49	1982
Venezuela	No bureau	No bureau	No bureau	0.60	97	1975
Latin America	0.65	265		0.47	83	
United States	0.90	810		No registry	No registry	
Other OECD countries	0.48	443		0.53	136	
Other emerging markets	0.47	231		0.52	5	

^a The index ranges from 0 to 1. It is the average of seven subindexes that measure the following: number of institutions reporting data, amount of data reported on individuals, amount of data reported on businesses, number of procedures used to verify data, number of institutions allowed to access the data, if positive and negative information on borrowers is reported, and the number of loan types reported.

^b Coverage reports the number of individuals and/or firms listed in the private credit bureau or public credit registry with current information on repayment history, unpaid debts, or credit outstanding. The number is scaled to the country's population (per 1,000).

Source: The indexes are from IDB calculations based on World Bank surveys of private credit bureaus and public credit registries. Coverage and date established are from the World Bank's Doing Business Website, <http://rru.worldbank.org/DoingBusiness/default.aspx>.

The United States has the most complete and accessible credit reporting system, especially in the consumer credit segment. Compared with Europe, the United States has a more open system for credit reporting and a relatively light regulatory approach.¹³ The European Union has placed a significant regulatory burden on the credit reporting industry, and in 1998 the European Union's Privacy Directive came into effect. That directive greatly limits sharing of personal information, including credit data in credit registries. Some European nations, such as France, have even more stringent laws than the European Union with regard to credit registries. Those laws account for the lower scores of the other OECD category in Table 13.2.

The Latin American nations that fare best are Brazil, Chile, Argentina, and Peru. Brazil has a well-established credit registry in which most banks participate. The Brazilian firm SERASA is by far the largest Latin American credit registry, with annual sales of approximately US\$150 million. In addition to SERASA, the extensive chamber of commerce system in Brazil operates a credit registry and bad check list on a state-

¹³ The United States has allowed a significant degree of self-regulation by the credit reporting industry. However, in 1997 the Fair Credit Reporting Act, which protects consumer rights with regard to credit registries, was amended to address growing consumer concerns about privacy abuses by the industry.

by-state basis. Finally, in 1998 the Central Bank of Brazil established a public credit registry to collect detailed information on all large loans.

Argentina and Chile have strong private credit registries, which are both majority owned by Equifax. In addition, both Argentina and Chile have public credit registries, and much of the data in the Argentine public registry is accessible to the general public via the Internet. In Chile, the Santiago Chamber of Commerce runs one of the region's oldest retail credit databases. The information in this database on consumers is actually superior in some ways (coverage and years of history) to that in the bank-led credit registry. Peru enjoys an unusually active credit reporting industry with at least four credit registries operating in the relatively small economy.

INFORMATION QUALITY

Information asymmetries can be reduced by developing credit bureaus. However, in order to guarantee that the credit bureaus will work, it is also necessary to ensure that the information contained in them is reliable. The most fundamental data in credit registries are related to the proper identification of the debtor and his or her repayment history. Other information, such as the financial standing of the person and the firm, is also relevant, but can be viewed mostly as complementary to the crucial basic set of information.

The quality of the data is related to the procedures followed by credit bureaus and credit registries to verify the data's integrity. Table 13.3 reports on two areas of information that are related to data quality—legal requirements and accuracy checks. The first column shows whether the law requires credit registries to respond to consumer complaints. Presumably, if it does, consumers will be able to contest erroneous information, which is an important step toward improving the quality of the data. Clearly there are many countries in which there are no legal requirements for responding to complaints; that is a feature shared by many other emerging markets. This of course is a source of concern and an area where policy intervention is justified.

Table 13.3 reports an index of procedures used by credit registries to assess the quality of the data. Higher values indicate use of a greater number of procedures to check the integrity of the data. The index reveals a great deal of heterogeneity in Latin America and the Caribbean; nonetheless, the average suggests that the region as a whole fares about average in this indicator, not far from other emerging countries and non-U.S.

TABLE 13.3 DATA QUALITY OF CREDIT REGISTRIES

Country/ region	Legal requirement to respond to complaints ^a	Accuracy checks index ^b	
		Private credit bureau	Public credit registry
Argentina	1	3	4
Bolivia	1	3	1
Brazil	1	4	3
Chile	0	4	3
Colombia	1	3	No registry
Costa Rica	1	0	2
Dominican Republic	0	3	2
Ecuador	1	No bureau	4
El Salvador	0	2	n.a.
Guatemala	0	3	1
Honduras	0	No bureau	2
Mexico	1	2	0
Nicaragua	0	No bureau	1
Panama	0	1	No registry
Peru	1	3	3
Uruguay	0	2	1
Venezuela	0	No bureau	3
Latin America	0.47	2.54	2.14
United States	1	4	No registry
Other OECD countries	1	2.80	3.71
Other emerging markets	0.420	2.60	2.73

^a The number 1 indicates "yes" and 0 "no."

^b The accuracy checks index ranges from 0 to 4 and measures whether credit registries use the following to determine the accuracy of their records: (i) data provided by other financial institutions; (ii) whether consumers can check their data; (iii) statistical checks such as month-to-month comparisons; and (iv) software programs to identify abnormalities in the data.

Source: World Bank data.

OECD countries. In any case, there is room for improvement in this area as well.

Latin American bankers' perception of data quality confirms the information in Table 13.3. On average, Latin American bankers seem satisfied with the quality of the data of the credit registries operating in their countries. Figure 13.1 provides information from a survey of bankers in Latin America that was conducted by the IDB and the World Bank. Except for the perception of bankers in Bolivia about the quality of private credit bureaus, the bankers report an average level of satisfaction regarding the quality of public credit regis-

tries and private credit bureaus. The low values of the private credit bureau index for Bolivia and El Salvador are primarily due to concerns about the accuracy and timeliness of the data in the bureau.

Regarding the quality of complementary information indicating the financial standing of a person or firm, much remains to be done in the region. Unfortunately, Latin American and Caribbean countries have proven weak in the adoption of international accounting and auditing standards (Staking and Schulz 1999), which are essential to ensure the reliability of business data. Many countries are behind in the adoption of global standards, such as the recently updated international accounting standards, and are deficient in the enforceability of auditing standards.

In part, countries have been reluctant to move to international standards because they can be costly. Changing standards could push some firms toward insolvency once more stringent accounting principles are applied. Creditors and clients might lose confidence in firms once their true financial nature is revealed, even in cases when insolvency is not the true scenario.

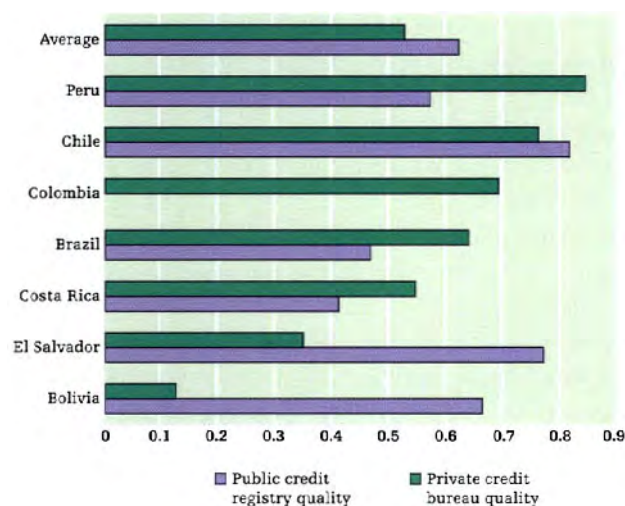
Countries may not have in place incentives to renew standards because, regardless of the standards, capital markets are closed or nearly closed for many countries. However, given the new financing opportunities for Latin American firms through the reemergence of American Depositary Receipts (ADR) trading, new incentives for modernizing standards have appeared. A positive effect of intensive ADR trading is the pressure induced by local firms on regulators to update standards to increase transparency and face competitive conditions with firms in the rest of the world (see Moel 2001).

Firms, individuals, and governments are gaining awareness of the possibility of exploiting the advantages of information sharing. At the same time, the world is moving toward the definition and adoption of precise standards of disclosure and accounting of information. Together, these two movements and their interaction will increase the access of individuals and firms to credit markets, and will decrease the information boundaries that, to some extent, have reduced capital mobility across borders.

HOW DO LATIN AMERICAN BANKS USE CREDIT INFORMATION?

The IDB-World Bank survey helps to explain how banks use credit registries. On average, 90 percent of the 177 banks surveyed report that they consult private credit registries frequently for their lending decisions;

FIGURE 13.1 Quality of Credit Registries as Rated by Bankers
(Index, 0, dissatisfied, to 1, very satisfied)



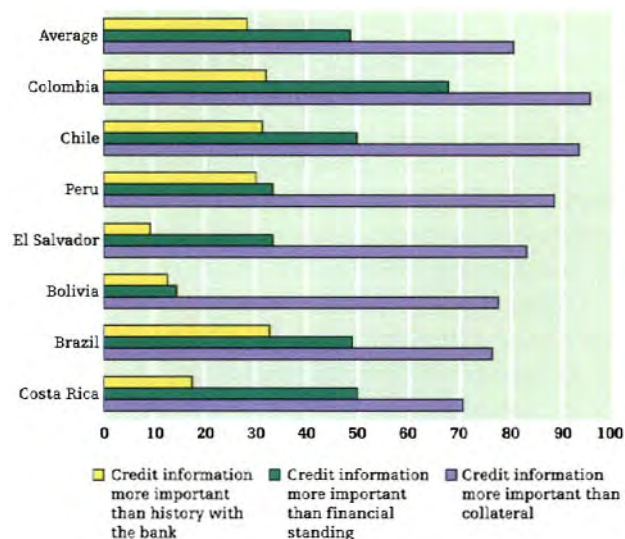
Note: The quality index measures the degree of satisfaction of banks with the accuracy, timeliness, completeness, and accessibility of information in credit registries.
Source: IDB/World Bank survey of banking institutions on credit information.

75 percent report that they consult public credit registries. However, less than 20 percent report that they use the credit registry as their main source of information on borrowers. Except for Colombia, where 80 percent of surveyed banks report that credit registries are their primary source of information for consumer and business loans, in most countries banks prefer other sources of information.

Figure 13.2 reveals that in most countries banks rely on multiple sources of information—such as the financial standing of the debtor and his or her past history with the bank—instead of relying solely on information from credit registries when making loan decisions. This claim holds for public, foreign, and private domestic banks. Overall, most banks behave similarly regarding the importance assigned to credit registries. In all surveyed countries, data from credit registries are more relevant than collateral. This is a result of the low degree of creditor protection in the region. In every country except Colombia, 50 percent or less of the banks report that financial standing is more important than the credit registry report, and in all countries only 30 percent (at most) of banks report that information from credit registries is more important than the history of the client with the bank.

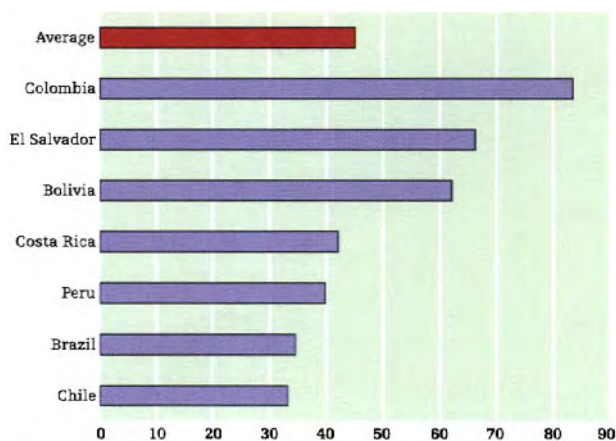
Despite not being the most important factor in lending decisions, information from credit registries is crucial for selecting the pool of potential borrowers.

FIGURE 13.2 Importance of Credit Information Relative to Other Criteria
(Percentage of banks)



Source: IDB/World Bank survey of banking institutions on credit information.

FIGURE 13.3 Banks Disqualifying Borrowers If Negative Information Is Reported
(Percentage of banks)



Source: IDB/World Bank survey of banking institutions on credit information.

Many banks disqualify clients on the basis of the information appearing in the credit reports. As shown in Figure 13.3, on average about 45 percent of surveyed banks claim that they disqualify potential borrowers if any negative information appears in the credit report. Once again, Colombia has the most banks (less than 84 percent) following this policy.

CONCLUSIONS

Credit registries are an institutional response to the problem of asymmetric information in credit markets, but they are not the only possible response. Collateral pledges and the threat of bankruptcy in extreme cases are other tools that lenders use both to screen applicants (address adverse selection) and to encourage repayment (reduce moral hazard). Perhaps the fact that Latin America and the Caribbean has advanced as far as it has in credit registries is not unrelated to the difficulties faced in many countries in the region with regard to seizing collateral (see Chapter 12). Developing a credit registry, either voluntarily in the private sector or under the auspices of the bank supervisor, may be easier than changing fundamental laws and judicial systems, and it may be politically more palatable. It is also worth remembering a basic tenet of psychology, that is, that the best predictor of future behavior is past behavior. Information contained in registries has proven to have greater predictive power than collateral pledges in determining who will repay loans and is therefore more prized by bankers than even collateral.

In order to exploit the benefits of credit registries, an adequate legal framework that encourages information sharing among lenders must be in place. In this regard, bank secrecy laws, which can restrict information flows, have to be reviewed. Imprecise privacy laws can impose limits on credit reporting and can hinder the usefulness of credit reporting agencies. However, rules that prevent the improper use of credit information must exist in order to guarantee that the information shared will not be used against the safety and security of the people recorded in the registry.

The regulatory framework supporting credit bureaus must also deal with unfair competition practices and avoid allowing use of the database for “cherry picking,” that is, enabling institutions to find and deal with the best clients of other institutions. If such practices were allowed, information sharing would be discouraged and the advantages discussed here would be nullified.

The ownership of credit registries is an important determinant of the quality of the dataset produced. Ownership by a limited group of lenders or bank associations can discourage a broader database by restricting not only informants, but also access to the system. Registries must not belong to a closed network because doing so would lead to a reduction in information sharing. The role of the government in the information sharing activity is under debate. Privately owned registries have the advantage of gathering information

from several sources, not just commercial banks. However, public registries can oblige banks to report data to the registry, but private ones cannot. This in any case is not necessarily an argument in favor of public registries. Once the value of information is acknowledged by the financial system, sharing can arise naturally and can be enforced by, for example, imposing reciprocity conditions on the use of data (only those that share can have access to the data). The business of providing and analyzing information (through credit-scoring models, for example) is profitable and attractive enough to have sufficient private agents managing it, once the value of information sharing has been socially recognized.

To strengthen the quality of the information in the database, the legal framework must provide mechanisms that promptly handle consumer complaints pertaining to information and address complaints outside the ju-

dicial system. Borrowers must be able to access their data, and there should be in place consumer-friendly procedures to challenge erroneous information quickly. However, instances of consumer access to the data should be noted in credit reports in order to avoid data manipulation on behalf of consumers.

Credit registries can succeed in their purpose of reducing information asymmetries only if the data shared are reliable and banks follow reasonable risk management practices. Despite the fact that incentives for adopting international accounting and auditing standards are in place, governments have moved slowly toward adopting them. In order to increase access to national and international financing, countries should adopt and enforce proper accounting and auditing principles.

APPENDIX 13.1. CREDIT REGISTRIES AND FINANCIAL DEVELOPMENT

Appendix Table 13.1 reports the results of estimations cited in the text. The first column reports ordinary least squares (OLS) regression results of the average development of credit markets, defined as the ratio of credit to the private sector to GDP, on standard macroeconomic indicators, the level of development of the economy, the protection of creditor rights as defined in Chapter 12, and a variable indicating the existence of credit registries. Note that these results, in particular the OLS results, should not be interpreted as causal, but rather as correlations, because the development of credit registries can be endogenous.

The results reported in Appendix Table 13.1 can

be interpreted as the average for the sample. The table reports results from quantile regression exercises, that is, regressions that focus on the relationship between variables at different locations of the distribution of the dependent variable. In short, this method explains how financial development is related to the determinants at different stages of financial development, that is, at different locations across the distribution of financial development. Quantile 50 is the median, quantiles below the median represent financially less developed countries, and those above the median are more developed countries. The variable of interest of this chapter is the credit registry dummy. Below the 50 percent quantile the dummy is significant and the coefficient is relatively high. For higher quantiles, the sign of the coefficient drops as well as its statistical significance.

APPENDIX TABLE 13.1 | THE EFFECTS OF CREDIT REGISTRIES ON FINANCIAL DEVELOPMENT, 1999–2003

Variable	OLS	Quantile				
		15	25	50	75	85
Log(1 + inflation rate)	-8.269 (4.224)*	-4.973 (4.018)	-5.773 (2.682)**	-5.694 (3.576)	-5.162 (3.864)	-7.279 (6.173)
Growth rate, 1990–2003	0.753 (0.937)	0.096 (0.726)	0.013 (0.787)	0.774 (0.697)	1.562 (1.742)	1.458 (2.193)
Log(GDP per capita)	6.773 (1.115)***	2.759 (1.565)*	3.852 (0.788)***	4.604 (1.284)***	7.779 (1.475)***	8.416 (1.946)***
Effective creditor rights	13.415 (2.511)***	8.707 (3.511)**	9.834 (1.607)***	12.920 (3.680)***	16.150 (4.655)***	18.337 (7.908)**
Credit registry	9.572 (4.657)**	9.436 (2.664)***	8.956 (1.360)***	10.160 (3.486)***	7.283 (4.824)	1.720 (7.989)
Constant	-158.007 (26.138)***	-66.501 (34.565)*	-91.006 (17.764)***	-108.826 (28.028)***	-178.719 (30.055)***	-186.470 (40.427)***
Number of countries	123	123	123	123	123	123
R ²	0.53					

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Note: The dependent variable is credit/GDP. Standard errors are in parentheses.

Source: IDB calculations.

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Access to Financing for Small and Medium Enterprises

IN Latin America and around the world, small and medium enterprises (SMEs) comprise a large share of firms, employment, and gross domestic product (GDP). A new World Bank database on SMEs (defined as firms employing up to 250 workers) suggests that they employ nearly 50 percent of the labor force in the formal economy in Mexico; nearly 60 percent in Ecuador and Brazil; around 70 percent in Argentina, Colombia, Panama, and Peru; and as much as 86 percent in Chile (Ayyagari, Beck, and Demirgüç-Kunt 2003). Developed countries have a similar pattern: SMEs represent about 60 percent of total employment in Germany and the United Kingdom, about 70 percent in France and Japan, and about 80 percent in Italy and Spain.

SME entrepreneurs identify lack of access to credit as the most important obstacle to the development of their businesses. This fact, combined with the sheer size of the SME sector around the world, explains why most countries (developed and developing) have specific programs to address SME problems and why international financial institutions devote considerable resources to address the issue of SME financing.

That SMEs comprise an important share of GDP and that they lack access to credit, however, do not necessarily justify the need for the policy remedies targeted to this group. In fact, Hallberg (2000) suggests that social and political considerations that do not have a sound economic rationale are behind many of the programs targeted at SMEs. This chapter examines the economic case for programs to facilitate access to credit for SMEs and the forms those programs should take. Before tackling these issues, the chapter explores some important questions. Do SMEs have inadequate access to credit? How do countries in Latin America compare with other developed and developing countries in this regard? If access to credit is restricted for SMEs, why is this the case?

STYLIZED FACTS

One of the main problems in assessing access to credit for SMEs is the lack of reliable data, for example, on the share of bank credit to SMEs. In most countries, the data simply do not exist. Even in countries where credit data are available from credit registries, in most cases they do not include information about the size of firms. Any guesses regarding the share of credit to SMEs have to rely on proxies, such as the size of loans. The problem is compounded for cross-country comparisons because the definition of an SME varies from country to country.¹

This section uses data from the World Business Environment Survey (WBES) to assess whether SMEs face constraints in terms of their access to credit. The WBES provides data from more than 10,000 firms in 81 countries in 1999–2000. More than 2,000 firms in the survey are from 20 Latin American countries, and 80 percent are classified as small (up to 50 employees) and medium (between 50 and 500 employees). Although a lower threshold would better reflect the realities of SMEs in the region, the survey does not provide the exact number of employees, so it is not possible to tailor the definitions of the size groups. The analysis in this chapter treats small and medium firms separately. The main purpose of the survey is to understand the constraints that hinder the development of private businesses. Among the constraints considered, the WBES has a number of questions on financing constraints. Thus, the WBES offers comparable data across countries, which can shed some light on the issue of access to credit for SMEs.

¹ The official threshold for SMEs around the world is between 100 and 500 employees (Ayyagari, Beck, and Demirgüç-Kunt 2003).

Financing Constraints: A Major Obstacle to Development

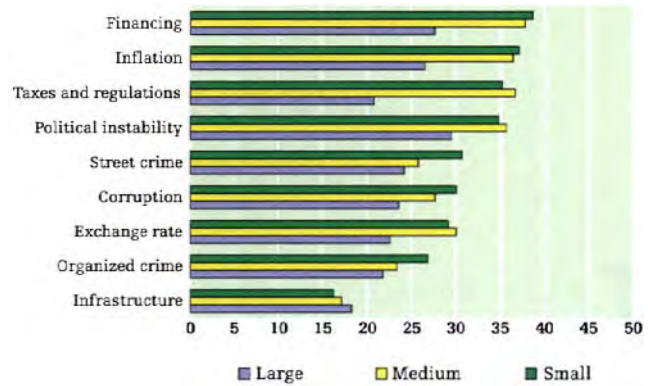
The WBES asks respondents to rate 10 general constraints on a scale from 1 to 4, with 4 indicating a “major obstacle” to the development of their business. Figures 14.1 and 14.2 report the share of firms (by size) that considered each general constraint to be major, for the world and for Latin America. Worldwide, financing constraints are the most serious obstacle, followed by inflation, taxes and regulations, and political instability. Around 38 percent of the SMEs surveyed (compared with 27 percent of large firms) reported that financing constraints are major. In Latin America, the corresponding figures are 46 and 41 percent for small and medium firms, respectively, compared with 26 percent for large firms. Other constraints, such as corruption and inadequate infrastructure, play a comparatively smaller role for SMEs.²

Financing Constraints for Small and Medium Enterprises

Are financing constraints more severe in the case of SMEs? Table 14.1 presents a number of measures of financing constraints, corresponding to small, medium, and large firms. The table reports the mean financing constraint (on a scale of 1 to 4) and the share of firms that rate financing constraints as a major obstacle. The results are similar for small and medium firms, but constraints are clearly lower in the case of large firms.

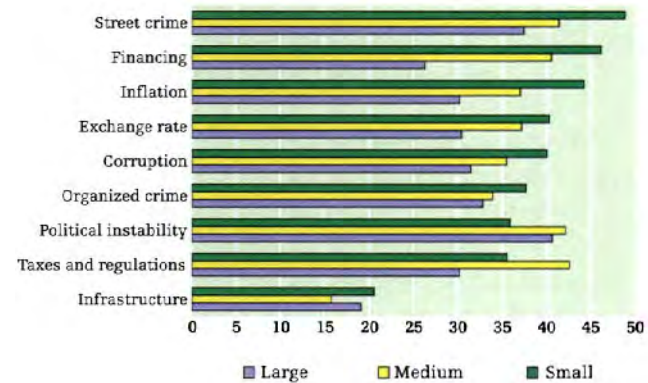
In addition to the responses based on subjective perceptions, the WBES asked other questions, based on more objective data, that can help shed light on this issue. In particular, the survey asked firms to report the share of total financing that comes from the following sources: retained earnings, equity, local commercial banks, development banks, foreign banks, family, money lender, supplier credit, leasing, public sector, or other sources. Table 14.1 reports the share of bank credit (including that from local commercial as well as foreign banks) in total financing as an alternative measure of financing constraints. The table also reports the share of firms that have some access to bank credit. According to these measures, SMEs have less access to bank credit than large firms do, and there are differences between small and medium firms.

FIGURE 14.1 Firms Reporting Major Obstacles to Development Worldwide, 1999-2000 (Percent)



Source: World Bank (2000).

FIGURE 14.2 Firms Reporting Major Obstacles to Development in Latin America and the Caribbean, 1999-2000 (Percent)



Source: World Bank (2000).

Accounting for Other Country and Firm Characteristics

There seems to be an association between firm size and the severity of financing constraints, but the link between size and financing constraints could be due to other factors, such as the age of the firm. Just as consumers without a credit record have trouble obtaining consumer credit, firms without a track record should

² The WBES also asks about a number of specific aspects of financing constraints. In Latin America, as well as around the world, the main financing issues firms complain about are high interest rates, lack of access to long-term loans, inadequate collateral, and excessive paperwork.

TABLE 14.1 SEVERITY OF CONSTRAINTS BY FIRM SIZE

Indicator	Firm size		
	Small	Medium	Large
Mean financing constraint (scale, 1–4)	2.87	2.85	2.58
Firms that rate financial constraints as a major obstacle (percent)	38.68	37.83	27.62
Financing from local or foreign commercial banks (percent)	10.77	17.16	23.96
Firms with access to bank credit (percent)	28.83	42.79	54.52

Source: IDB calculations based on World Bank (2000).

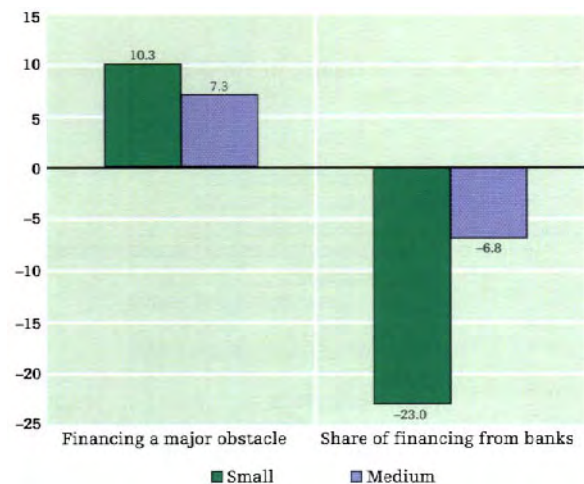
have trouble obtaining loans. Given the close association between size and age (the correlation is 0.31), the link between size and financing constraints could be due to experience rather than to size. Similarly, other firm characteristics (sector of activity, foreign ownership, and export activity) may affect financing constraints.

Appendix Table 14.2 reports the results of an analysis of the determinants of financing constraints, controlling for these and other firm characteristics. The regressions include country dummies in order to account for country characteristics that may affect financing constraints. The analysis uses two dependent variables: one based on the firm's perceptions (dummy = 1 if financing constraints are a major obstacle) and the other based on the sources of financing (the share of financing from local and foreign banks).³ Figure 14.3 summarizes the main results.

Regardless of the variable used, the results suggest that the severity of the constraints decreases with firm size. The likelihood that a firm reports a major financing constraint increases by 10.3 percent in the case of small firms and by 7.3 percent in the case of medium firms, compared with large firms. Likewise, the share of financing from banks is reduced by 23.0 percent for small firms and by 6.8 percent for medium firms, compared with large firms. With the exception of the small and medium firms in the case of the variable based on perceptions, the differences are statistically significant.

Small and Medium Enterprises in Latin America and the Caribbean

Figure 14.4 shows the share of firms that report major financing constraints broken down by region and size. Small firms in Latin America and the Caribbean are among the most financially constrained in the world, according to the perception of their executives. For small firms, only South Asia reports greater constraints. By contrast, large firms in Latin America re-

FIGURE 14.3 Firm Size and Financing Constraints for Small and Medium Firms Relative to Large Firms, 1999-2000 (Percent)

Source: World Bank (2000).

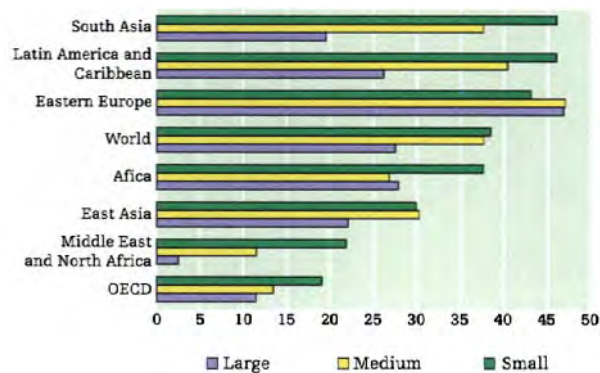
port smaller constraints than their counterparts in the rest of the world, although this result is driven mostly by European economies in transition, which comprise nearly one-third of the survey and in which constraints among large firms appear surprisingly high.

In stark contrast, small firms in Latin America exhibit comparatively high levels of access to bank financing, which are close to those for Organisation for Economic Co-operation and Development (OECD) firms (Figure 14.5).⁴ However, the similarities disappear in

³ In the case of the financing constraints variable based on firms' perceptions, the analysis also controls for what Love and Mylenko (2003) call the "pessimism" of the survey respondent, that is, the tendency of some respondents to complain about everything.

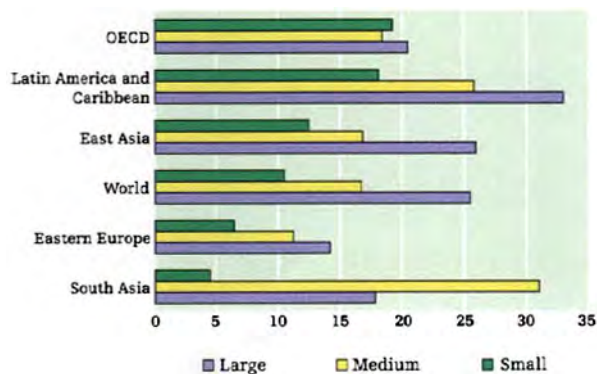
⁴ The picture is similar for the share of firms that have some access to bank financing, instead of focusing on the share of financing from banks.

FIGURE 14.4 Firms Reporting Financing as a Major Obstacle, 1999-2000 (Percent)



Source: World Bank (2000).

FIGURE 14.5 Bank Financing in Total Firm Financing, 1999-2000 (Percent)



Source: World Bank (2000).

the broader picture of the structure of financing in the two regions: while small firms in OECD countries rely on other formal sources of financing (such as leasing arrangements or equity financing), small firms in Latin America rely more heavily on informal sources (such as family and informal money lenders). In fact, informal sources of credit are three times greater in the case of small Latin American firms compared with their counterparts in the OECD.

In any case, the fact remains that although small firms in Latin America perceive that financing constraints are substantial, they seem to have better access to bank credit than their counterparts in other regions. This apparent contradiction may be due to the fact that the variable based on perceptions and the one based on financing structure actually capture somewhat different

aspects. At the same time, the results in Figure 14.5 are quite surprising; they highlight the need to control for other potential determinants of access to bank finance.

Appendix Table 14.2 presents a set of regressions that control for other firm and country characteristics that may help explain financing constraints. In addition to the variables used in the previous exercise, these regressions include interactions of the size dummies with Latin America and the OECD. The idea is to check whether small firms in Latin America, compared with their large counterparts, have particularly large financing constraints or whether the gap is more or less similar to the gap between small and large firms in other parts of the world. The signs of the coefficients for the interaction terms (positive in the case of the perception variable, negative in the case of the bank access variable) suggest that small firms in Latin America might be at a disadvantage compared with small firms in other regions. However, for the most part these differences are not statistically significant. Thus, any differences in Latin American firms are relevant across the board and not just for small and medium firms. The only exception is that, compared with the OECD, the gap in access to bank financing between large and small firms is significantly larger in the case of Latin America.

Country Experiences in Latin America

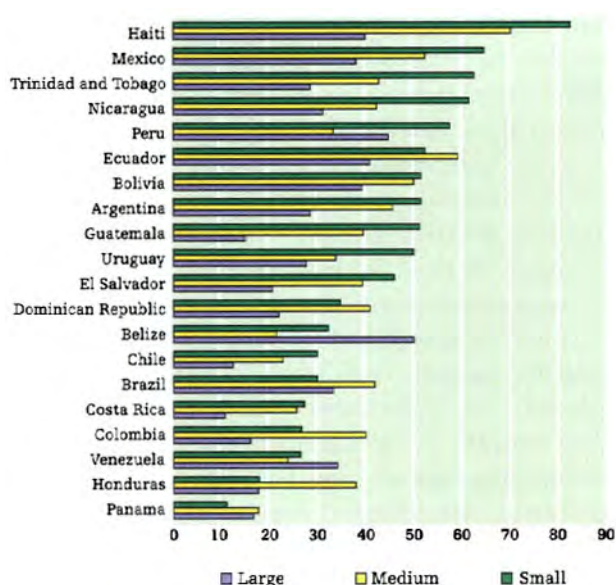
Are SMEs subject to similar financing constraints in all Latin American countries? Which countries suffer more in this regard? Figures 14.6 and 14.7 present the share of Latin American firms that report major financing constraints and the share of financing from banks, by country and firm size.

The figures show that access to financing varies depending on the country in which the firms are located. The contrast between Chile and Mexico provides a good illustration. Less than a third of the small firms in Chile report that they face major financing constraints, and these firms finance one-third of their investments with bank credit. By contrast, in Mexico, nearly two-thirds of the small firms face major financing constraints, while less than 5 percent of their financing resources are provided by banks.

REASONS FOR FINANCING CONSTRAINTS

There is ample evidence that SMEs face more adverse credit conditions than larger firms and that Latin Amer-

FIGURE 14.6 Firms Reporting Financing as a Major Obstacle, by Country, 1999-2000 (Percent)



Source: World Bank (2000).

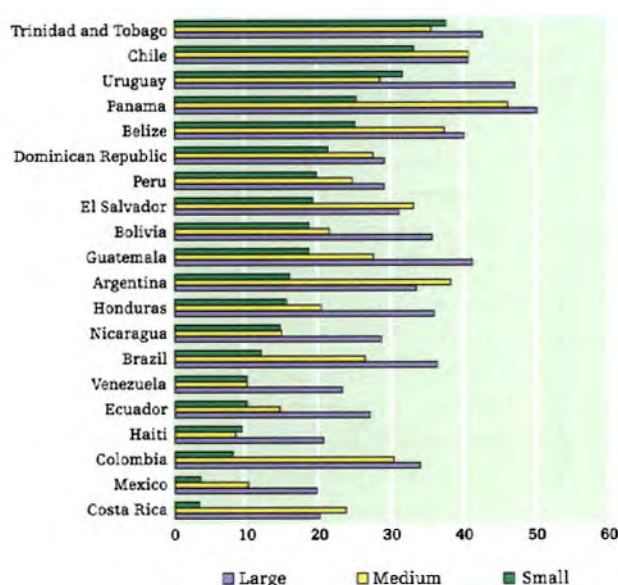
ica is no different in this regard. But is this enough to justify policy action? To answer this question, it is crucial to understand why size may matter in determining the availability and cost of credit for firms and to establish whether market failure is involved. In general, there are four main causes of credit problems for small firms: fixed lending costs, imperfect enforcement of credit contracts, bankruptcy costs, and asymmetric information.

Fixed Lending Costs

Providing loans is an activity that entails important fixed costs associated with loan appraisal, supervision, and collection. This implies that the cost per dollar lent is high for small loans. As a consequence, banks would have to charge higher interest rates on such loans to generate the required returns.

There has been much progress in this area in the past few decades, particularly in lending to micro enterprises, which would naturally experience this problem more acutely. Indeed, in what has been described as a “revolution in microfinance,” a new banking technology has been introduced that differs from the traditional technology. Instead of the formal paperwork and guarantees associated with regular bank loans, small, short-term loans are offered at high interest rates based

FIGURE 14.7 Bank Financing in Total Firm Financing, by Country, 1999-2000 (Percent)



Source: World Bank (2000).

on information gathered by bank agents (with proper incentives) who visit the firms and gather information from people who know the potential borrowers. This banking technology has proven very effective.

This micro-lending technology is not likely to be a solution for SMEs, which typically require loans that are too large to be handled in this way. In general, banks are unwilling to provide unsecured loans in excess of the small amounts usually lent to microenterprises. The policies to deal with this problem revolve around the reduction of these fixed lending costs and in some cases can be tied to the development of new technologies. A good example is credit scoring, in which banks use statistical methods and available information to cheaply and rapidly determine the probability that various credit applicants will fulfill their obligations. Development of credit registries would also help by reducing the cost to banks of acquiring the necessary information to make loan decisions. Subsidizing the development of risk assessors specializing in SMEs may be another policy worth considering.

Imperfect Enforcement and Bankruptcy Costs

Imperfect enforcement and bankruptcy costs are both problems that are inherent to credit contracts. More-

over, they tend to have particularly serious effects on small firms. Imagine that a firm refuses to pay a loan. The bank files for bankruptcy so that it can execute the guarantee. If the judicial system functions perfectly, this would happen immediately, with certainty, and at zero cost. But clearly this is not the case, even in countries with developed financial and judicial systems. There is always the probability that a borrower that defaults will get to keep part of the assets guaranteeing the loan. Thus, because of the problem of *imperfect enforcement*, the borrower may have something to gain by defaulting. This introduces incentive problems that are inherent to credit contracts.

Even if contracts were perfectly enforced, in the sense that borrowers would have to surrender the assets with certainty, the bank would incur time delays and real costs associated with executing the guarantee. Even if the bank were successful, it would generally attach a lower value to the guarantee than the borrower would. It is thus likely that there would be significant *bankruptcy costs* that would affect credit contracts because banks would try to minimize the probability of bankruptcy. This subsection explores the implications for small firms of these two realistic features of the environment in which credit takes place.

Imperfect Enforcement

Imperfect enforcement allows the debtor to capture part of the assets invested in the project by defaulting. In deciding whether to default, the debtor compares the expected payoff from defaulting with the value of continuing to operate the project while servicing the debt. With the size of the project kept fixed, the value of continuing the project increases with the firm's equity (and thus decreases with the firm's leverage) because the entrepreneur will get to retain a larger share of the project's returns. Thus, with low equity, running a firm at its optimal scale implies a high leverage ratio, which leads to strong incentives to default. In other words, as leverage increases, the default option becomes relatively more attractive. Credit constraints arise as a way to limit the firm's leverage and thereby align the entrepreneur's incentives with those of the bank. As a result, entrepreneurs with low equity will be credit constrained and will not be able to operate their projects at the socially optimal size. This is in fact the nature of the imperfect enforcement market failure. Thus, in the context of this model, firms with low equity are small precisely because they are credit constrained. Entrepreneurs with high equity will not be so constrained, and their firms will achieve the optimal size.⁵

What policy implications arise from imperfect enforcement? Not surprisingly, improving enforcement of credit contracts is the first-best policy recommendation that emerges from this analysis. In particular, strengthening creditor rights would lower the gains of borrowers from defaulting and hence ease the incentive problems that lead to credit constraints for small firms. This policy is generally recommended as a way to improve the financial system more broadly; it should be particularly effective in improving access to credit for small firms, which in the context of this model are the only ones subject to constraints.

However, even countries with well-developed financial and judicial systems do not exhibit perfect enforcement. There are three main lines of action for dealing with the consequences of this problem. First, improving the opportunities for using personal assets as collateral—by strengthening property registries or introducing reforms that allow the use of movable assets such as inventories, vehicles, or machinery as collateral—may increase the equity that entrepreneurs can bring to the project, thus mitigating the problem of imperfect contract enforcement. Second, developing credit registries that disseminate credit information among lenders would reduce incentives to default by making the punishment more severe. Third, subsidizing the cost of funds to banks would act as a welfare-improving, second-best intervention by increasing the present value of keeping the project going relative to the gains from default, thus allowing credit-constrained firms to grow toward their optimal size.

This last policy implication certainly requires a few caveats. First, the subsidy would also lead to inefficient expansion of firms that are already at the optimal size. However, in the case of a small subsidy, the losses should be second-order. These second-order losses could be avoided by targeting the subsidy to loans for small firms, provided the agency costs of ensuring that the funds go to the target group are not excessive. Second, the efficiency gains generated by the subsidy would have to be compared with the first-order losses associated with the distortionary taxation required to raise the funds to finance it. Third, the model assumes that the banking sector is competitive; otherwise, banks could appropriate the subsidy and prevent the growth of credit-constrained firms.⁶

⁵ For a more formal treatment of this issue, see Rodríguez-Clare and Stein (2004).

⁶ Actually, a constant mark-up would be a sufficient assumption.

BOX 14.1 | FORMALIZING PROPERTY RIGHTS IN PERU

De Soto (2000) defines *dead capital* as all the assets that are not formally registered and thus cannot be used as collateral for a loan. His Institute for Liberty and Democracy (ILD) reports that, in 1987, dead capital represented around US\$70 billion in Peru. In 1988 the country enacted a Property Registry Law with the main goal of integrating extralegal property into the legal system. According to De Soto, this law had the effect of saving 99 percent of the administrative cost and reducing the time to record a property from more than 12 years to a month.

In order to ensure that extralegal property was titled and recorded, a new organization was launched, the Registro Predial, which was first managed by ILD and then transferred to the government along with the new Commission for the Formalization of Informal Property (COFOPRI). Since 1996, COFOPRI has unified all the information and databases on property titles and blueprints for nearly 1.5 million titles. In the past few years, COFOPRI has applied new software and digital systems to develop a secure, fast, and low-cost property rights formalization process.

Other less interventionist policies could act on the same principle of the subsidy. In particular, policies that strengthen competition in the banking sector would lead to a reduction in lending rates and contribute to an efficiency-enhancing expansion of credit-constrained firms. An expansion of government borrowing, if it leads to higher interest rates on loans, would have the opposite effect.

In the static setting of the imperfect enforcement model discussed above, firms differ in size only because of their initial level of equity. In a dynamic setting, however, the rate of return on equity would be larger for firms that are credit constrained. These firms would grow faster than others and would eventually achieve the optimal size (Albuquerque and Hopenhaym 2002). Thus, differences in start-up equity are not likely to lead to persistent differences in size. In the context of this model, it would be difficult to claim that mature firms are small because of credit constraints. More likely, differences in size among older firms are explained by other factors, such as the kind of good produced and the inherent productivity of the entrepreneur or firm. This reasoning implies that, to the extent possible, government policy dealing with lack of credit among small firms should focus mainly on younger firms.⁷

Bankruptcy Costs

Imperfect enforcement of credit contracts implies that banks want to limit a firm's leverage in order to improve its incentives and increase the likelihood of repayment. Thus, credit constraints are imposed directly by the bank. In the case of bankruptcy costs, the firm does not

default because of the incentives the borrower might have to run away with the firm's assets, but because a negative shock affects the borrower's ability to repay. Thus, instead of bank-imposed credit limits, bankruptcy costs lead to interest rates that rise steeply with the firm's leverage. In turn, this leads firms to voluntarily limit the amount of debt they undertake, even to the point of running projects or firms that are inefficiently small. For the sake of simplicity, this section refers to both bank-imposed and firm-chosen limits to leverage ratios (that lead to smaller-than-optimal firm size) as credit constraints.

Even without bankruptcy costs, it is reasonable to expect banks to charge a higher interest rate to firms with more leverage because, other things equal, banks will recover a smaller share of loans to such firms in the event of bankruptcy. However, by itself this phenom-

⁷ Going one step further, this argument points to the problem of potentially high-productivity firms that are not created because of lack of start-up equity. This problem may be as severe as the problem of lack of credit for small firms. Imagine that there are excellent and good ideas, and entrepreneurs with low and high wealth. Under perfect capital markets, entrepreneur wealth would not be a constraint, and all excellent ideas would be exploited. But with imperfect capital markets, entrepreneur wealth matters, and it is likely that excellent ideas by low-wealth entrepreneurs will not be implemented. Bank finance may not be the optimal instrument for the capital needs of these projects, as it may entail excessive risk. This may explain why, for example, the Small Business Administration (SBA) in the United States has a program of equity injections in promising but risky new entrepreneurial ventures. Companies such as AOL, Intel, and Federal Express, among many others, were started with equity support from this SBA program.

enon would not generate credit constraints because a firm's return on equity increases with leverage, and it can be shown that the two effects exactly compensate each other. Thus, the firm would choose the optimal project size despite interest rates that rise with leverage. This is no longer the case, however, if there are costs associated with bankruptcy.

To see this, note that the probability of bankruptcy is likely to rise with a firm's leverage because even small negative shocks to returns would prevent a highly leveraged firm from servicing its debt. With real bankruptcy costs, a higher probability of bankruptcy must go together with higher interest rates to compensate the bank ex ante for the higher expected cost of bankruptcy. In this case, the financial cost for the firm of increasing its leverage is greater than the associated benefits, and the firm will want to limit its leverage to a level below that corresponding to the optimal project size. Thus, again, firms with low equity will be credit-constrained and small.⁸

Most of the policy implications discussed above for the case of imperfect enforcement apply as well in the case of bankruptcy costs. In this case, the strengthening of creditor rights would decrease the time delays, uncertainty, and legal costs associated with executing the loan's collateral. In addition, it would be desirable to implement policies to increase the liquidity of collateral (for example, to make the real estate market more liquid) in order to reduce the costs associated with the execution of collateralized assets.

Asymmetric Information

Similar results to the ones presented above arise in the better-known case of asymmetric information between banks and borrowers. Asymmetric information causes the problems of moral hazard and adverse selection.

Moral Hazard

Consider the standard problem of moral hazard in credit contracts, in which the manager's effort determines the likelihood of success of a project but is unobservable to the bank. The manager will exert effort up to the point where marginal cost equals marginal benefit, which is given by the marginal increase in the project's expected returns net of interest payments. As the leverage ratio of the firm increases, the marginal benefit of effort falls because more of the gains go to the bank and less remain in the firm. Thus, a higher leverage ratio reduces the incentives of the manager to devote effort to the project. Knowing this, the bank sets a limit to the

firm's leverage ratio. Again, low-wealth entrepreneurs run small firms that are credit-constrained.

What are the policy implications of this case? As above, it is desirable to improve the conditions for the use of assets as collateral because collateral improves the incentives of entrepreneurs to exert effort. Strengthening credit registries also helps by increasing punishment in case of failure, thus improving the incentives for managers. Similarly, a small subsidy would improve efficiency, although the same caveats discussed above apply here as well. Finally, it would be desirable to pursue policies that facilitate (although not necessarily subsidize) the use of reciprocal credit guarantee schemes in which loan decisions, monitoring, and discipline are shared with agents who are in a better position to observe effort or have leverage to induce it.

Adverse Selection

It is useful to start with a brief reminder of the main idea in the model of asymmetric information and credit rationing developed by Stiglitz and Weiss (1981). In this model, there is a known distribution of borrowers, all with the same expected returns but differing in the spread (risk) of those returns. Some borrowers are thus riskier than others. Given that borrowers earn zero net returns when the project does badly (because all income goes to pay for the loan) but get to keep all the excess returns when the project does well, borrowers act as if they were risk-loving. That is, other things equal, a more risky profile of gross returns (an increase in the spread of gross returns holding the mean constant) earns higher expected net returns for borrowers. Thus, as the interest rate charged by the bank increases, the pool of applicants gets riskier because the safer borrowers drop out of the applicant pool. This implies that, for a sufficiently high interest rate, further rate increases lower the bank's expected returns. In other words, expected returns as a function of interest rate r first increase and then decrease, with a maximum at some interest rate r^* , at which the marginal cost of adverse selection exactly compensates the direct benefit of increasing the interest rate. If the demand for loans by firms at this interest rate is greater than the supply of funds to the bank, then there will be credit rationing.

This result is not enough for the present purposes, however, because it only says that some firms will not receive as much credit as they want at the equilibrium interest rate; it does not say which firms will be affected.

⁸ A good treatment of credit constraints due to bankruptcy costs can be found in Bernanke and Gertler (1989).

In particular, the model does not indicate whether credit rationing affects SMEs more than large firms. Imagine, however, that banks have the option of acquiring information about the risk characteristics of applicants, but also that this information is costly. Assume further that this cost does not depend on the size of the firm. Then it can be shown that credit rationing will be more severe for small firms because the cost per dollar lent in this case is higher, so banks will choose to rely more on credit rationing to prevent the pool of applicants among this group from becoming dominated by high-risk types.

Similarly, it is natural to assume that the cost of acquiring information decreases with the age of the firm. In fact, it could even be argued that for new firms this signal is practically impossible to generate. In this case, credit rationing would be more severe among young firms relative to older ones.

How does collateral work in this setup? The use of collateral allows for a separating equilibrium in which banks have two instruments to affect the risk of applicants: interest rate and collateral. The bank could offer loans with a high interest rate and low collateral (which would be attractive to high-risk firms) as well as loans with a low interest rate and high collateral (which would be chosen by low-risk firms). Thus, firms would reveal their type (the term *separating equilibrium*) in choosing one bundle over the other.

As in the previous case, the policy implications that arise in this case include improving the way in which external assets can be used as collateral for loans. It would also be desirable to allow for the use of reciprocal credit guarantee schemes, thus placing the loan decisions in the hands of those that have better information about the risk characteristics of the borrower. More generally, policies should be geared toward reducing the cost of obtaining information for the bank, which could be done by establishing and applying uniform accounting standards, credit registries, and policies that allow banks to use credit-scoring technologies more intensively. Credit-scoring technologies are statistical methods that aggregate the information in a potential borrower's credit report to generate an inferred probability of default.

Another way to reduce the cost of obtaining information would be to encourage (perhaps through a system of grants) the development of expertise in assessing SME risk. Such expertise would be an important condition for the development of credit to SMEs and is in short supply in most countries. Grants may be justified because the development of such expertise involves an externality: a bank may invest in generating this capability, and trained experts may then be hired away.

Summary

There are a number of channels through which small firms may be subject to some form of credit constraints. The conceptual discussion, in particular the policy implications derived from it, is useful for several reasons. First, it suggests some potential country-level determinants of SME financing constraints (such as respect for creditor rights and availability of credit registries). Second, it provides the basis for a more detailed discussion of the policy options available to countries, as well as the experience of some countries in attempting to facilitate access to credit for SMEs.

DETERMINANTS OF FINANCING CONSTRAINTS: EMPIRICAL FINDINGS

Until recently, lack of comparable data hampered attempts to study the determinants of financing constraints for SMEs in a cross-country context. The recent availability of data from the WBES has led to a number of studies on the determinants of financing constraints. For the most part, these studies look at the impact on credit constraints of a single explanatory variable (such as foreign bank penetration, bank competition, availability of credit registries, or creditor rights) and do not attempt to bring all the potential determinants together into the analysis.

Clarke, Cull, and Martínez Pería (2001), for example, investigate the impact of foreign bank penetration on lending to SMEs. They find that foreign bank penetration increases the share of financing from banks and lowers financing obstacles as perceived by firms, particularly in the case of large firms. Love and Mylenko (2003) explore how credit-reporting institutions affect financing constraints. The authors find that private credit registries relax financing constraints and increase bank financing, particularly for SMEs. By contrast, public registries do not have a significant effect.⁹ Beck, Demirgüç-Kunt, and Maksimovik (2003) study the impact of bank concentration on firms' financing obstacles and access to credit.¹⁰ They find that in countries with

⁹ See Chapter 13 for a more general discussion of the role of credit registries in the financial system. For a more complete treatment of this topic, see Miller (2003a).

¹⁰ The impact of bank concentration is theoretically ambiguous because concentration may increase interest rates, but it may also provide incentives for banks to invest in collecting information on new clients.

low levels of institutional development, bank concentration leads to higher obstacles and a lower share of bank financing, particularly in the case of SMEs. Finally, Galindo and Micco (2004b) explore the impact of several measures of creditor rights protection on the share of financing from banks. They find that creditor rights increase access to financing by SMEs relative to the effects on large firms.

This section extends this literature by including in the analysis all the variables that various studies consider in a piecemeal approach, as well as some additional variables suggested by the conceptual discussion of the previous section. The first exercise looks at the determinants of financing constraints, irrespective of the size of the firm. In this case, the regressions include regional dummies, but not country dummies, because the focus is on explanatory variables that vary by country, but not by firm. The second exercise analyzes whether the explanatory variables have differential effects on SMEs compared with large firms. Thus, regressions include interactions between the explanatory variables and the size dummies, as well as country dummies in place of the regional dummies of the first exercise.¹¹ Appendix Tables 14.3 and 14.4 report the results of the regressions, which are summarized in Table 14.2. Appendix Table 14.1 provides descriptions and sources of the variables.

The following are the main results on the determinants of financing constraints:

- *Enforcement of credit contracts.* Effective enforcement of creditor rights reduces financing constraints as perceived by firms, and, in the case of small firms, increases access to bank financing.¹²

- *Credit registries.* Private credit registries have a positive impact on firms' access to bank finance, particularly in the case of small firms and appear to reduce perceived financing constraints, although the effect is not robust to the inclusion of other policy variables. Public registries have no specific impact on access to financing by small or medium firms, a result that is consistent with the findings by Love and Mylenko (2003).¹³

- *Crowding out.* High domestic government debt increases the severity of perceived financing constraints and reduces access to bank financing, particularly in the case of small firms.¹⁴

- *Bank concentration and bank ownership.* A concentrated banking sector increases financing constraints for small firms. There is some evidence that the importance of state-owned banks (relative to GDP) reduces perceived financing constraints in the case of small firms, controlling for the level of financial development of the economy as a whole. By contrast, foreign bank

penetration relative to GDP tends to reduce financing constraints overall but has no differential impact on small firms.¹⁵

- *GDP volatility.* Although it is not a policy variable per se, GDP volatility increases financing constraints in the case of small firms but has no discernible impact on the share of financing from banks.¹⁶

The evidence presented here suggests that policies and institutions can make a difference regarding access to credit for SMEs. However, it is important to use these results with caution because in addition to some limitations of the database, some of the results are not robust to changes in the specification. Clearly, much more research is needed on this topic in order to offer definitive answers about the key elements of strategy to encourage access to financing for SMEs. Taken together with the conceptual discussion in the previous section, however, the results presented in Appendix Table 14.4 provide a good starting point to begin thinking about policy action.

POLICY ISSUES

SMEs suffer from worse credit conditions than large firms. Market imperfections—such as imperfect contract enforcement and asymmetric information—can explain these findings. Several policies may be appropriate for dealing with these imperfections.

¹¹ Sector dummies were included in all the regressions as well. For the main results presented here, the regressions did not control for GDP per capita, a variable that is highly correlated with many of the institutional variables of interest.

¹² Results are weaker for regressions that use the creditor rights index alone and for those that control for GDP per capita.

¹³ Data on credit registries come from the World Bank's Doing Business database. The positive coefficient for public credit registries in Table 14.2 is surprising and may be a reflection of the endogeneity of these registries; countries may set them up in response to a generalized perception of severe credit constraints.

¹⁴ However, these results are not robust to the inclusion of GDP per capita.

¹⁵ Medium firms tend to complain relatively more about access to finance when foreign penetration is high.

¹⁶ GDP volatility can increase financing needs because in addition to working capital and investment, firms need financing to survive prolonged periods of negative shocks. At the same time, volatility increases risk, particularly in the case of small firms, and makes the value of the collateral more uncertain.

TABLE 14.2 | THE DETERMINANTS OF FINANCING CONSTRAINTS

Determinant	Effects across the board		Marginal effects on small and medium enterprises	
	Financing constraints	Bank finance	Financing constraints	Bank finance
Effective creditor rights	-			+(S)
Public credit registry	[+]	+		
Private credit registry	[-]	+		+(S)
Government debt	+	-		-(S)
GDP volatility			+(S)	
Bank concentration			+(S)	
Financial development * state-owned banks			-(S)	
Financial development * foreign-owned banks	[-]		+(M)	

Note: The values in the first two columns correspond to the results in Appendix Table 14.3. Square brackets around the signs indicate that the significance of the variable depends on whether it is included in the regression by itself, or together with the other policy variables. The first two columns explore the determinants of financing constraints and bank financing regardless of the size of the firms. The third and fourth columns focus on the specific impact on small and medium enterprises. The table reports the sign of the impact of each variable provided it is statistically significant.

Creditor Rights

Credit contracts fundamentally differ from spot transactions because credit contracts imply the exchange of money today for a promise to pay in the future. This type of transaction will develop fully only under a well-functioning legal framework. Lenders must rest assured that if the borrower refuses to pay, they will be able to turn to the legal system so that the guarantee can be executed and liquidated promptly and at low cost. The set of laws and institutions associated with this is commonly referred to as creditor rights. As discussed in Chapter 12, there is ample evidence that strong *creditor rights* are a key condition for the development of the financial system. Thus, although it may be surprising to the layman, one of the most effective ways to help potential borrowers is to strengthen the rights of creditors (see Kroszner 2003).

Creditor rights are particularly helpful in allowing small firms to access credit at reasonable cost. Small firms have low equity, which requires high leverage ratios in order to achieve an efficient scale of operation. Better creditor rights help align the incentives of borrowers with those of the lenders and thus allow these firms to increase their leverage ratios. In short, creditor rights are not only important for the development of the financial system; they are also particularly effective in improving access to credit under reasonable conditions for SMEs.

What are the most important policies that governments should undertake to strengthen creditor rights? Chapter 12 provides a detailed discussion of this point. An important element for protecting creditor rights entails the use of assets as collateral.

Collateral

Collateral is a key element of credit contracts. It decreases the incentives of borrowers to default, increases the incentives to devote effort to the project, and decreases bankruptcy costs for banks. The possibility of using outside assets as collateral allows firms to maintain higher leverage ratios, which is particularly important for small firms. Using collateral in this fashion, however, requires a sophisticated legal and economic structure.

In particular, there are three conditions for collateral to be useful in credit contracts: well-defined property rights, adequate creditor rights, and asset liquidity. Well-defined property rights are required so that borrowers can credibly establish ownership of the asset used as collateral. This requires the obvious laws establishing property rights, as well as well-functioning registries. No one has stressed this point more forcefully than De Soto (2000) (see Box 14.1). Creditor rights are required so that banks can execute the collateral if a borrower defaults on a loan. And, finally, asset liquidity is required so that banks can liquidate assets at low cost.

Invoice Discounting or Factoring

Many SMEs are suppliers to large firms. They may provide inputs or services to larger manufacturing firms or finished goods to large retail chains and supermarkets. In general, such transactions take place with deferred payment, usually from 60 to 90 days. This implies that, in effect, SMEs end up providing credit to larger firms.¹⁷ Given the difficulties that small firms have in securing access to credit, special mechanisms have developed to allow suppliers to obtain credit to finance their working capital requirements. These mechanisms are called *invoice discounting* or *factoring* and consist of financial agents that discount the invoice to the supplier. If the buyer does not pay the amount on the invoice, the financial agent that discounted it retains the right to go back to the supplier to collect on the loan.¹⁸

Given that SMEs have difficulties in accessing credit, it is important to find ways for them to use invoices to obtain credit on better terms. The past two decades have seen major improvements in this area in Latin America. In Brazil, Chile, Costa Rica, and Mexico, for example, invoice discounting is now a common practice. But other countries, such as Argentina, have yet to take the necessary steps for this system to develop (see Box 14.2).

Three conditions appear to be essential. First, laws must allow and protect the transfer of invoices from suppliers to financial agents. Second, laws must establish clear procedures that can be taken to enforce the buyer's payment of invoices. And, third, creditor rights of factoring agents vis-à-vis the supplier (who, in effect, is obtaining credit through this transaction) must be strengthened so that the supplier's implicit guarantee to repay the loan in the event that the invoice is not paid by the buyer can be executed quickly and at low cost.

Credit Information and Credit Scoring

One of the impediments to better access to credit for small firms is the possibility of adverse selection, which arises because banks do not possess adequate information about the risk characteristics of credit applicants. In simple models, this leads to credit rationing because banks refuse to increase the interest rate even when there is an excess demand for credit, as this would worsen the risk characteristics of their applicant pool. But banks can do more than this; they can invest resources to acquire information about the risk characteristics of applicants. The problem is that this entails costs that are not directly proportional to the size of the

firm or the loan requested because there are fixed costs involved. Thus, there would likely be more credit rationing among small firms than among large firms, for which banks would be willing to spend the necessary resources to acquire information and avoid using the interest rate as a screening device.

Thus, policies that reduce the costs of acquiring information about borrowers would alleviate the credit constraints faced by SMEs. One such policy is the promotion of credit registries, where banks can access information about the credit history of loan applicants. In addition to reducing the cost of collecting information, credit registries help to reduce the incentives of debtors to default on their loans. As with other policies, the details of design and implementation are crucial to guarantee that the system functions well. For an in-depth discussion of the policy issues involved, see Chapter 13.

In addition to encouraging the creation of private or public credit registries, governments could also encourage the use of credit-scoring technologies. These technologies, which in Latin America are used mostly for mortgage markets and consumer loans, have become prevalent in the United States for lending to SMEs. Indeed, it is customary for U.S. banks to widen their information about prospective borrowers by buying a credit score along with the credit report. Credit scoring lowers lenders' costs of processing credit information by allowing for specialization and associated economies of scale. As explained above, this should be particularly beneficial for SMEs.

Reciprocal Loan Guarantee Schemes

An interesting approach for dealing with the problems that arise from imperfect enforcement and asymmetric information entails bringing into the credit relation agents who have privileged information and/or leverage over borrowers. Consider, for example, the case of a group of suppliers and clients of a large manufacturing firm. The large firm could guarantee a loan to the supplier because the large firm has the leverage to impose an extra cost on the supplier in case of default. This could be particularly helpful when enforcement of credit contracts is weak. In addition, the large firm

¹⁷ Given that credit costs less for large firms than for SMEs, this is surprising; both parties could be better off by lowering the price of the exchange and turning it into a spot transaction. This puzzle requires more research.

¹⁸ In developed countries, there can also be nonrecourse discount of invoices, in which case the seller does not have responsibility once the invoice is discounted.

BOX 14.2 | FACTORING IN LATIN AMERICA AND THE WORLD

Factoring systems differ in a number of dimensions. In developed countries, either *recourse* or *nonrecourse* factoring is used. In the case of recourse factoring, if the buyer does not owe up to the invoice, the financial agent who discounted it retains the right to collect from the supplier. In the case of nonrecourse factoring, the seller does not have responsibility once the invoice is discounted. Recourse factoring is cheaper and usually carries less stringent requirements. However, it has an important disadvantage: when the client fails to pay on time, a small firm may suddenly find that it has to meet a payment it did not plan for. It is not infrequent for a small firm to end up with a bad credit rating and lose access to financing as a result of a client's nonperformance on a discounted invoice. In Latin America, all factoring is of the recourse variety.

The distinction between recourse and nonrecourse is probably not the most important one. In some countries, such as Brazil, the supplier has the right to discount any invoice, or *duplicata*, without further approval by the client. In addition, the law allows for the use of special courts to expedite the resolution of claims. Although factoring is of the recourse variety, the combination of the above factors (the obligatory nature of the system and the enhanced creditor rights component) makes for a

well-functioning system that serves the needs of small firms.

Other Latin American countries fall short in some of these dimensions. In Chile, for example, the system is not obligatory, so the client may deny the supplier permission to discount the invoice. The client would do this because when the invoice is discounted, the client has to deal with the bank, which can easily collect the payment, rather than the small supplier, which has less leverage and may be convinced to accept further delays, even when the supplier has the legal channels at its disposal for rapid collection. Despite this shortcoming, factoring in Chile works fairly well.

In Argentina, the law regulating the discounting of invoices has not been put into effect. In addition, although other forms of debt documents have access to special expedited court rulings, invoices do not. As a result, factoring in Argentina does not work, thus denying small and medium firms an important source of financing.

In Mexico, Nacional Financiera (NAFIN), a public, second-tier financial institution, has recently established an electronic discount system. It allows firms in certain clusters, with the blessing of their large clients, to automatically discount invoices through a number of first-tier banks at discounts that have been agreed on ahead of time.

would provide such a guarantee only to suppliers that have shown good management and reliable service and whom they know are good subjects of credit. In other words, the large firm would in effect bring its privileged information regarding the supplier to bear in the credit screening process.

Argentina has had some experience with reciprocal loan guarantee schemes, in which a number of large firms (*socios protectores*) contribute through these schemes to facilitate access to credit for their suppliers and clients (*socios partícipes*). According to the Camara de Sociedades y Fondos de Garantía Recíproca, nearly 4,000 SMEs have benefited from these schemes so far, receiving guarantees for a total of nearly 400 million dollars. In Argentina, the Law of Reciprocal Guarantee Schemes includes fiscal incentives in order to induce

the large firms to participate. In principle, however, these schemes could potentially be of interest to all parties involved, even without the need for fiscal incentives, provided they are adequately designed.

Other Loan Guarantee Schemes

Reciprocal loan guarantee schemes are a particular type of a larger class of schemes in which third parties provide a guarantee on the loans granted to SMEs. In the more common type of loan guarantee scheme, a public agency grants a partial guarantee on loans given by a group of banks to firms satisfying particular conditions (such as size, region, and industry). This type of guarantee can be seen as insurance on the loan obtained by the bank: the bank pays a fee to obtain the guaran-

tee, and the bank still bears part of the risk because the guarantee never covers the total loan.

Unlike reciprocal loan guarantee schemes, other loan guarantee schemes do not have superior information or leverage over the borrower. The question arises, then, as to whether nonreciprocal loan guarantee schemes can be justified on efficiency grounds. If banks are risk-neutral vis-à-vis a small loan (either because they are truly risk-neutral or because they can diversify away such small risks), loan guarantee schemes cannot be justified on the grounds that they reduce risk for banks. Thus, loan guarantee schemes would not induce banks to absorb the additional risk associated with lending to SMEs.

An argument for why loan guarantee schemes may enhance efficiency has to do with bank regulations that penalize banks for lending without appropriate collateral.¹⁹ As a consequence, banks demand guarantees not only to improve the incentives of borrowers to repay loans, but also to avoid such regulatory costs of lending without collateral. This may lead to credit constraints on firms that lack assets that can serve as collateral. The first-best response to this distortion would be to improve banking regulation so that capital requirements are appropriately determined by the risk of the bank's loan portfolio. If this is not possible, however, then a loan guarantee scheme may be an efficiency-enhancing second-best policy.²⁰

The design and effective administration of a loan guarantee scheme is a difficult task. Given that the bank no longer bears full risk for loan decisions, this naturally leads to moral hazard on the part of the bank, so a question arises as to how the loan guarantee scheme deals with this problem. One approach would have the scheme review every petition for a guarantee to make sure that the potential borrower is creditworthy. This would be inefficient because it implies that the credit review and risk assessment would be done twice. A more efficient alternative would be for the loan guarantee scheme to establish a system whereby the fee charged to banks for the guarantee would increase with the bank's default history. Alternatively, the scheme may establish that banks with a default ratio above a certain level would be ineligible to participate in the scheme.

Credit Subsidies and Onlending Programs

Higher leverage leads to lower incentives to repay or exert effort to improve the likelihood that the project will be successful. Roughly speaking, a high interest rate increases effective leverage by reducing the share

of profits retained by the entrepreneur. Thus, high interest rates worsen the distortions associated with imperfect enforcement, bankruptcy costs, and asymmetric information, leading to stronger credit constraints. This implies that high interest rates have particularly negative consequences for SMEs. This argument also explains the intuition for why a small subsidy to the cost of funds for banks could improve efficiency and access to credit for SMEs.

As usual, however, the problem with this policy conclusion is in the details. A small subsidy to the cost of funds for banks would not necessarily improve efficiency if banks do not behave competitively, as is likely to be the case in Latin America. Moreover, the management of a program of interest subsidies presents serious challenges of agency design that would have to be carefully considered. Perhaps this is why, instead of simple subsidies, governments usually implement onlending programs, such as the one by the National Economic and Social Development Bank (BNDES) in Brazil (Box 14.3). In these programs, a third party (usually a public development bank or an international financial institution) provides funds at below-market interest rates to finance bank lending to groups of firms restricted by size, age, location, or the gender of the entrepreneur. The common practice is that the interest rate that banks can charge on these loans can be no more than a few percentage points above the interest they pay for the funds. In a way, this type of policy works as an implicit subsidy but with strings attached, such that even with imperfect competition among banks, it would still be the case that banks pass the subsidy on to the intended firms.

Generating Expertise

Lending to SMEs is different from lending to large firms. In the case of young firms, it is more difficult to acquire information. Moreover, given the small size of the loans, it does not pay for the bank to undertake a detailed review of the creditworthiness of SMEs. Thus, for SME lending to be profitable, banks must experiment with new approaches and technologies for risk assessment and loan management. The problem is that

¹⁹ This arises because bank regulation imposes capital requirements that increase with the risk associated with the bank's portfolio. Given that the assessed portfolio risk increases with the share of loans that do not have proper guarantees, bank regulation imposes a cost to banks of lending without guarantees.

²⁰ Loan guarantee schemes may also boost bank lending to SMEs when the fees charged for the guarantees involve a subsidy.

BOX 14.3 | LOAN GUARANTEE FUNDS: THE CASE OF BRAZIL

Development banks are often the key players in financing for small and medium-size enterprises (SMEs). In Latin America, by far the largest development bank is the National Economic and Social Development Bank (BNDES) in Brazil. In 2003 alone, BNDES approved nearly 100,000 operations with SMEs and microenterprises, with total financing of more than US\$3.2 billion.

Although BNDES provides the funding, the risk of each loan is borne by accredited financial institutions. The total cost of a BNDES loan comprises four parts: the financial cost, which is set mainly by a long-term interest rate set by the National Monetary Council; a fee that BNDES charges; other charges; and the risk premium freely negotiated between the accredited institutions and the clients.¹

Despite the relatively low funding rates charged by BNDES, accredited agents often have resisted lending to SMEs, pointing to two main factors. First, SME risk has a large effect on the overall weighted risk associated with the calculation of capital requirements for regulation purposes. Second, pledgeable and/or liquid collateral has low value or is lacking. In order to facilitate such lending, a credit guarantee scheme (the Guarantee Fund for the Promotion of Competitiveness, FGCP) was established in 1997. Created with resources of the National Treasury and managed by BNDES, the FGCP guarantees part of the credit risk incurred by financial institutions in operations with SMEs that make use of BNDES's financing lines. FGCP covers

between 70 and 80 percent of the credit risk of the new operation and is granted according to a criterion that considers both the size and the region of the borrowing enterprises.

The fee charged for the provision of the FGCP is 0.15 percent of the loan times the number of months corresponding to the maturity of the loan. Paradoxically, the FGCP can significantly reduce the overall cost of lending because the fees of accredited financial institutions cannot exceed 4 percent a year in BNDES loans that come with FGCP.

The FGCP has several advantages. The final lender can obtain a significant fee from an almost risk-free operation, whereas by regulation only the part of the loan not covered by the FGCP is considered for the risk-weighted capital requirements. This implies that, for the borrower, the cost of lending tends to be significantly lower, as does the value of the collateral requested by the lender. In addition, the lower cost of borrowing, compared with market rates, increases the capacity and the incentives to honor these loans with no delay. As a result, default rates have been very low, and therefore the de facto use of the fund to cover defaulted loans has been limited.

¹ Although such fees are in principle negotiated freely, there is indirect pressure by BNDES to maintain the fees within a range. This pressure is exercised by favoring those accredited agents that offer the smaller fees to the final borrowers.

such experimentation produces positive externalities by generating knowledge that is difficult for the bank to keep for itself. Trained agents can leave the bank to work with competitors, for example, and new ideas are easy to copy.

This justifies the provision of subsidized technical assistance or outright grants to banks and other financ-

ing agents to encourage them to explore new technologies and develop the necessary expertise in order to expand credit to SMEs. In fact, this is precisely what has been done very successfully in recent years in the area of microfinance. Perhaps it is time now to build on this positive experience to implement a similar policy for SMEs.

APPENDIX TABLE 14.1 | DEFINITIONS AND SOURCES OF VARIABLES

Variable	Definition	Source
Financing constraints	Financing as a general constraint (no obstacle = 1, minor obstacle = 2, moderate obstacle = 3, major obstacle = 4)	WBES
Financing, major obstacle	Financing constraint as a major obstacle (dummy = 1 if financing constraint = 4)	WBES
Percentage of finance from banks	Share of financing from banks (local and foreign)	WBES
Finance from banks	Financing from banks (dummy = 1 if financing from banks is greater than 0)	WBES
Small	Firm size 1 to 50 employees	WBES
Medium	Firm size 51 to 500 employees	WBES
Large	Firm size 501 or more employees	WBES
Age	Firm age, continuous variable	WBES
Exporter	Dummy, 1 if firm exports	WBES
Foreign ownership	Dummy, 1 if firm has foreign owners	WBES
Government ownership	Dummy, 1 if firm is state-owned	WBES
Sector dummies	Agriculture, manufacturing, services, construction, others	WBES
Pessimism	As Love and Mylenko (2003) define the average of the quality perceptions of the firm's manager with respect to quality of education, public health, customs, courts, public works, police, military, central government, parliament, postal system, telephone	WBES
GDP per capita	Average GDP per capita in 1998–2000, in thousands international purchasing power parity dollars	World Bank's World Development Indicators
Creditor rights	Creditor rights	World Bank's Doing Business Web page; La Porta and others (1998)
Rule of law	Average rule of law	World Bank's Governance Web page; Kaufmann, Kraay, and Mastruzzi (2003)
Effective rule of law	Interaction between creditor rights and rule of law	World Bank
Private credit registry	Private firm or a nonprofit organization that maintains a database on the standing of borrowers in the financial system; its primary role is to facilitate exchange of credit information among banks and financial institutions	World Bank Doing Business
Public credit registry	A database managed by the public sector, usually by the central bank or superintendent of banks, that collects information on the standing of borrowers in the financial system and makes it available to financial institutions	World Bank Doing Business
Government's domestic debt over total domestic credit	Claims on governments and other public entities (in current local currency) over the sum of claims on governments and other public entities and claims on the private sector (in current local currency) each year for 1990–2000; period average	IMF's International Financial Statistics
GDP volatility	GDP volatility calculated as the standard deviation of GDP in the 1990s	World Bank's World Development Indicators
Bank concentration	Assets of the three largest banks as a share of assets of all commercial banks	BANKSCOPE
Financial development	Average total credit over GDP during the 1990s	World Bank data
State-owned banks	Share of state-owned banks	Barth, Caprio, and Levine (2004)
Foreign-owned banks	Share of foreign banks	Barth, Caprio, and Levine (2004)

APPENDIX TABLE 14.2 | FINANCING AS A MAJOR OBSTACLE AND SHARE OF FINANCING FROM BANKS

Independent variable	Dependent variable							
	Financing as a major obstacle	Share of financing from banks	Financing as a major obstacle			Share of financing from banks		
	1	2	3	4	5	6	7	8
Small	0.103 (0.022)***	-22.957 (3.068)***	0.099 (0.029)***	0.101 (0.031)***	0.094 (0.065)	-20.949 (3.936)***	-28.601 (4.531)***	0.927 (7.085)
Medium	0.073 (0.020)***	-6.834 (2.652)***	0.048 (0.026)*	0.055 (0.028)*	0.017 (0.062)	-3.411 (3.535)	-3.687 (4.098)	-5.524 (6.670)
Log age	-0.007 (0.007)	-1.909 (1.021)*	-0.011 (0.007)	-0.011 (0.007)	-0.01 (0.007)	-1.822 (1.001)*	-1.736 (0.998)*	-1.812 (0.999)*
Exporter	0.023 (0.016)	8.801 (2.197)***	0.027 (0.016)	0.027 (0.016)*	0.027 (0.016)	8.163 (2.137)***	8.476 (2.132)***	8.379 (2.132)***
Foreign ownership	-0.124 (0.017)***	-1.246 (2.556)	-0.121 (0.018)***	-0.121 (0.018)***	-0.12 (0.018)***	-3.12 (2.429)	-2.803 (2.423)	-2.834 (2.429)
Government ownership	0.093 (0.021)***	-6.237 (3.087)**	0.099 (0.023)***	0.098 (0.023)***	0.085 (0.023)***	-5.744 (3.207)*	-8.044 (3.230)**	-8.522 (3.275)***
Latin America			0.238 (0.088)***	0.24 (0.088)***	0.176 (0.091)*	44.678 (15.473)***	39.763 (15.585)**	40.309 (15.927)**
Latin America, small			0.035 (0.046)	0.034 (0.047)	0.039 (0.075)	-2.435 (5.402)	5.207 (5.835)	-24.473 (7.994)***
Latin America, medium			0.057 (0.043)	0.05 (0.045)	0.088 (0.074)	-7.513 (4.978)	-7.226 (5.385)	-5.476 (7.521)
OECD				-0.132 (0.077)*			43.82 (23.347)*	
OECD, small				-0.005 (0.069)			29.694 (8.177)***	
OECD, medium				-0.036 (0.065)			-1.773 (7.770)	
Pessimism	0.073 (0.009)***		0.073 (0.009)***	0.073 (0.009)***	0.074 (0.009)***			
Observations	6,714	5,141	6,714	6,714	6,714	5,141	5,141	5,141
Number of countries	63	59	63	63	63	59	59	59
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All region-size interactions			No	No	Yes	No	No	Yes
Test small = medium								
Chi2 (1)	3.15	60.92***						
Prob. >Chi2	0.076	0						

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Note: See Appendix Table 14.1 for descriptions of the variables. Regressions 1, 3, 4, and 5 are from a probit model with marginal effects coefficients. Robust standard errors are in parentheses. Regressions 2, 6, 7, and 8 are Tobit regressions (0,100). Columns 3 and 6 compare the difference due to firm size in Latin America with that in the rest of the world. Columns 4 and 7 do the same vis-à-vis the rest of the developing world (thus excluding the OECD), while columns 5 and 8 compare Latin America with the OECD.

Source: IDB calculations.

APPENDIX TABLE 14.3 EFFECTS ACROSS THE BOARD

Independent variable	Dependent variable											
	Financing constraints considered a major obstacle						Share of financing from banks					
	1	2	3	4	5	6	7	8	9	10	11	12
Small	0.121 (0.026)***	0.100 (0.026)***	0.099 (0.025)***	0.091 (0.024)***	0.119 (0.026)***	0.087 (0.026)***	-23.027 (5.642)***	-25.080 (5.466)***	-22.300 (5.320)***	-19.335 (5.701)***	-26.271 (5.427)***	-23.083 (6.271)***
Medium	0.082 (0.019)***	0.078 (0.019)***	0.076 (0.019)***	0.058 (0.019)***	0.082 (0.019)***	0.054 (0.022)**	-3.893 (4.287)	-5.271 (4.492)	-3.534 (4.128)	-6.745 (4.923)	-5.265 (4.518)	-8.784 (5.438)
Log age	-0.012 (0.010)	-0.013 (0.010)	-0.019 (0.011)*	0.004 (0.012)	-0.013 (0.011)	0.005 (0.012)	4.914 (1.761)***	3.731 (1.746)**	4.001 (1.575)**	2.470 (1.767)	2.806 (1.625)*	2.263 (1.912)
Exporter	0.016 (0.021)	0.007 (0.024)	0.002 (0.019)	-0.018 (0.022)	0.008 (0.019)	0.002 (0.021)	10.503 (3.304)***	9.058 (3.672)**	9.019 (3.053)***	10.333 (3.414)***	7.147 (3.507)**	9.407 (4.039)**
Foreign ownership	-0.131 (0.018)***	-0.135 (0.018)***	-0.122 (0.018)***	-0.102 (0.022)***	-0.124 (0.019)***	-0.101 (0.022)***	-4.084 (3.189)	-4.796 (3.373)	-2.937 (3.114)	-3.535 (3.485)	-5.969 (3.281)*	-5.767 (3.649)
Government ownership	0.102 (0.030)***	0.091 (0.029)***	0.11 (0.028)***	0.076 (0.037)**	0.116 (0.029)***	0.086 (0.038)**	14.046 (6.136)**	16.685 (6.246)***	15.198 (6.103)**	5.664 (5.340)	15.253 (6.595)**	5.731 (6.037)
Pessimism	0.070 (0.010)***	0.070 (0.010)***	0.071 (0.009)***	0.058 (0.009)***	0.070 (0.010)***	0.058 (0.009)***						
GDP volatility	0.000 (0.000)	0.000 (0.000)*	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.000 (0.002)
Effective creditor rights	-0.347 (0.093)***				-0.345 (0.084)***	-0.392 (0.148)***	18.865 (12.038)				1.975 (11.269)	14.237 (31.911)
Public credit registry		0.052 (0.037)			0.054 (0.032)*	0.007 (0.044)		10.270 (5.324)*			8.194 (5.108)	9.815 (7.896)
Private credit registry		-0.082 (0.042)*			-0.066 (0.047)	0.020 (0.076)		22.176 (4.595)***			19.562 (5.759)***	16.342 (11.079)
Government domestic debt / total domestic credit			0.213 (0.077)***		0.126 (0.075)*	0.087 (0.107)			-38.264 (8.780)***		-24.124 (10.386)**	-14.378 (14.861)

Bank concentration	0.136 (0.138)	0.003 (0.105)	0.236 (0.169)	5,109	5,040	5,136	3,178	4,740	22.305 (28.385)	7.457 (15.135)	14.128 (36.401)
Financial development	-0.001 (0.001)		0.001 (0.001)				0.105 (0.195)				-0.030 (0.240)
Financial development * state-owned banks	0.000 (0.000)		0.000 (0.000)				-0.001 (0.000)				-0.002 (0.000)
Financial development * foreign-owned banks	0.000 (0.000)**		0.000 (0.000)				0.004 (0.003)				0.001 (0.005)
Observations	6,530	6,459	6,490	4,122	5,915	3,928	5,109	5,040	5,136	4,740	2,987
Number of countries	60	59	60	37	55	35	57	56	58	53	33
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Note: See Appendix Table 14.1 for descriptions of the variables. Regressions 1 to 6 are from a probit model with marginal effects coefficients. Robust standard errors are in parentheses. Regressions 7 to 12 are interval regressions centered at 0 and 100.

Source: IDB calculations.

APPENDIX TABLE 14.4 MARGINAL EFFECTS ON SMEs

Independent variable	Dependent variable									
	Financing constraints considered a major obstacle					Share of financing from banks				
	1	2	3	4	5	6	7	8	9	10
Small	0.098 (0.031)***	0.051 (0.045)	0.094 (0.028)***	-0.041 (0.056)	0.073 (0.042)*	-32.546 (5.313)***	-36.636 (9.062)***	-17.047 (4.764)***	-20.851 (9.597)**	-37.798 (6.434)***
Medium	0.075 (0.029)**	0.033 (0.039)	0.073 (0.027)***	0.010 (0.053)	0.029 (0.039)	-5.166 (4.267)	-0.877 (7.476)	-4.884 (4.253)	-17.170 (8.823)*	-15.737 (6.407)**
Log age	-0.007 (0.008)	-0.008 (0.008)	-0.013 (0.008)	-0.008 (0.008)	0.008 (0.009)	1.957 (1.424)	1.950 (1.467)	1.785 (1.335)	1.807 (1.361)	-0.045 (1.438)
Exporter	0.025 (0.018)	0.026 (0.018)	0.018 (0.017)	0.021 (0.017)	0.018 (0.020)	4.956 (2.674)*	5.232 (2.823)*	4.789 (2.625)*	5.285 (2.621)**	6.591 (2.880)**
Foreign ownership	-0.129 (0.017)***	-0.131 (0.017)***	-0.118 (0.017)***	-0.131 (0.017)***	-0.100 (0.020)***	-3.970 (3.525)	-4.021 (3.648)	-3.812 (3.328)	-4.902 (3.370)	-2.540 (3.800)
Government ownership	0.099 (0.022)***	0.098 (0.024)***	0.111 (0.024)***	0.108 (0.023)***	0.077 (0.029)**	13.770 (5.331)***	11.135 (5.346)**	11.927 (5.094)**	11.164 (4.817)**	0.583 (4.559)
Pessimism	0.073 (0.009)***	0.074 (0.010)***	0.074 (0.009)***	0.072 (0.010)***	0.060 (0.010)***					
GDP volatility * small	0.000 (0.000)*	0.000 (0.000)**	0.000 (0.000)**	0.000 (0.000)***	0.000 (0.000)	0.002 (0.001)	0.002 (0.001)*	0.001 (0.001)	0.001 (0.001)	0.000 (0.001)
GDP volatility * medium	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)**	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.002 (0.001)
Effective creditor rights * small	0.062 (0.098)					30.619 (13.498)**				
Effective creditor rights * medium	-0.013 (0.102)					9.801 (12.405)				
Private credit registry * small		0.042 (0.042)					15.373 (7.438)**			
Private credit registry * medium		0.019 (0.038)					0.010 (6.807)			
Public credit registry * small		0.051 (0.043)					2.881 (7.717)			
Public credit registry * medium		0.037 (0.040)					-5.519 (6.475)			
Government debt / total domestic credit * small			0.059 (0.085)					-30.837 (10.552)***		

Bank concentration *	0.321	0.032	-6.120							
small	(0.109)***	(10.980)	(20.563)							
Bank concentration *	0.144		30.075							
medium	(0.101)		(19.388)							
Financial development *										
small	0.001							0.480		
Financial	(0.001)							(0.164)***		
development *	-0.001							0.024		
medium	(0.001)							(0.175)		
Financial development *										
state-owned	0.000							-0.004		
banks * small	(0.000)*							(0.005)		
Financial										
development *	0.000							0.001		
state-owned	(0.000)							(0.005)		
banks * medium										
Financial development *	0.000							-0.004		
foreign-owned	(0.000)							(0.004)		
banks * small										
Financial development *	0.000							0.006		
foreign-owned	(0.000)*							(0.004)		
banks * medium										
Observations	6,528	6,457	6,488	6,303	4,355	5,107	5,038	5,134	5,049	3,246
Number of countries	60	59	60	59	38	57	56	58	56	36
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Note: See Appendix Table 14.1 for descriptions of the variables. Regressions 1 to 5 are from a probit model with marginal effects coefficients. Robust standard errors are in parentheses. Regressions 6 to 10 are interval regressions centered at 0 and 100.

Source: IDB calculations.

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Foundations of Housing Finance

IN *The Mystery of Capital* (2000), Hernando de Soto calculates that the value of real estate is worth more than the gross domestic product (GDP). In Peru, the value of real estate is 1.25 times the value of GDP, and in Haiti it is 1.5 times. However, the value of mortgage loans barely amounts to 2.9 percent of GDP in Peru and is more than 10 percent of GDP only in Chile and Panama. By contrast, in the United States mortgage loans represent around 80 percent of GDP, and the average for European Union countries is more than 40 percent of GDP. Atrophied mortgage lending in Latin America is not only due to the low financial depth of the economies; mortgage lending is also a modest fraction of the assets of the financial system (see Table 15.1).

This chapter analyzes the causes of low housing finance in Latin America, taking into account the experience with the main policy instruments that have been used to broaden access to mortgage financing. These include state mortgage banks, various subsidy systems, and private mortgage lending systems. The issue is relevant for economic growth and well-being because the construction sector can be a powerful engine of economic growth and housing ownership may be a source of other desirable effects, such as reduced poverty and improved civic behavior (Erbas and Nothaft 2002). In addition, a smoothly functioning housing finance system can contribute to the development of the financial system and the capital market.

WHY THERE IS SO LITTLE HOUSING FINANCE

Why the region has such low levels of mortgage financing is an intriguing question. Because housing represents the largest investment in physical capital made by families and its usefulness lasts for decades and even generations, it would be desirable for families to be able to finance it over long periods. From the standpoint of lenders, housing finance offers the advantage of a guarantee because, contrary to what happens with many

other assets, there is a market for used housing and a house is an asset that depreciates slowly and cannot be concealed. Four fundamental reasons explain why there is little housing finance in Latin America and developing countries in general: (i) the inability of families to pay, (ii) obstacles to using and recovering collateral in the event of default by the borrower, (iii) the risk of interest rate fluctuations, and (iv) the maturity risk assumed by the lender in committing funds for the life of the loan.

Inability to Pay

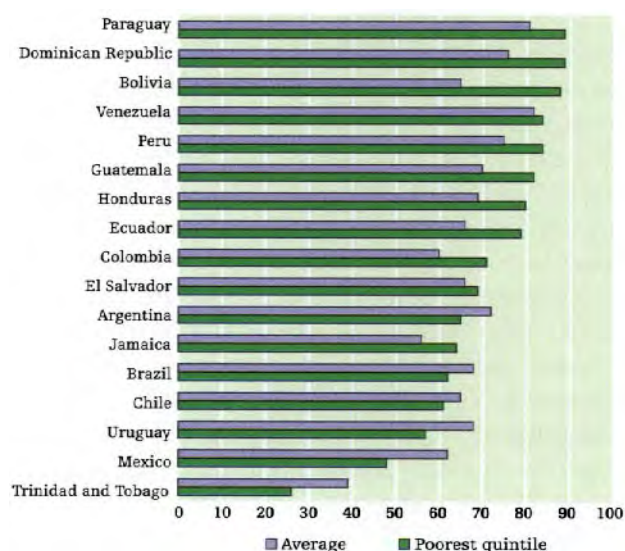
Inability to pay due to the low and unstable incomes of potential borrowers is a major reason for the low level of mortgage credit. Access to credit is strongly correlated with income level. For example, Gandelman and Gandelman (2004) estimate that the probability of access to mortgage lending rises 4 percent for every 10 percent increase in household income, based on household surveys for Uruguay. The problem is especially serious in Latin America due to sharp income concentration in the upper levels and high rates of poverty and informal employment. Typically in the countries of the region, the wealthiest 10 percent of the population receives half the income, approximately half the population lives on per capita income of less than two dollars a day, and one of every two workers does not have a stable source of revenue in the formal sector (IDB 1998; de Ferranti and others 2004).

Although there seems to be no solution to the problem of lack of access to credit due to inability to pay, such an argument ignores the fact that a significant proportion of low-income families own their homes. Indeed, Figure 15.1 shows that home ownership not only is high in the poorest income quintile in most countries, but differs little from the national average. Rates of ownership have risen considerably over time: half a century ago one of every three Latin American families owned its own home, whereas today two in three families are homeowners (Table 15.2). Thus, it seems that insufficiency of funds has not prevented a signifi-

TABLE 15.1 FINANCIAL DEPTH OF MORTGAGE LENDING IN SELECTED COUNTRIES

Country (year)	Percentage of GDP	Percentage of total credit	Source
Argentina (2001)	4.0	15.0	Cristini and Moya (2003); IDB calculations
Bolivia (2001)	8.6	16.3	Morales (2003)
Chile (2001)	10.8	17.7	Morandé and García (2003); Cámara Chilena de Construcción
Colombia (2001)	7.0	25.0	Cárdenas and Badel (2003)
Panama (2002)	24.4	26.4	Republic of Panama (2003); IDB calculations
Peru (2001)	2.9	9.5	Eyzaguirre and Calderón (2003)
Mexico	2.1	13.5	IDB calculations based on data from the Comisión Nacional Bancaria y de Valores de México
Uruguay (2001)	7.0	15.7	Gandelman and Gandelman (2003)
United States	79.6	87.2	Dübel (2004); IDB calculations
European Union	42.6	41.0	Dübel (2004); IDB calculations

FIGURE 15.1 Housing Ownership by Income Quintile (Percentage of households)



Source: De Ferranti and others (2003).

cant increase in home ownership, despite low coverage by formal credit.¹

It might be that incomes are insufficient because the housing owned by many people does not meet minimum standards of quality. A growing percentage of houses in large cities are in self-built neighborhoods that initially lacked basic services and other minimum conditions of quality. In Mexico City in 1990, 60 percent of the population was living in this type of neighborhood, compared with only 14 percent in 1952. Lima and Caracas have experienced a similar trend. However,

although self-built neighborhoods have gained importance, the quality of housing has improved according to all available indicators (Gilbert 2001). Self-built neighborhoods may have precarious beginnings, but they tend to become normal neighborhoods, not only with better infrastructure services, but also with better quality construction and a more finished appearance. Hence, the usual case is not that a family cannot pay for a house, but that it manages to do so over time, even without borrowing from the formal financial sector. The capital accumulated in informal housing, which cannot be used as collateral to obtain a loan, is proof of a huge savings effort by middle and low-income families. De Soto (2000) calculates that the value of informal urban housing in Latin America in 1997 was \$1.63 trillion dollars, or 82 percent of the region's GDP that year.

Hence, inability to pay is one reason that is less conclusive than is generally claimed as an explanation for the low level of mortgage credit. Nevertheless, a housing loan provider may perceive a high risk of non-payment, even if the borrower has the ability to pay. A reason why this may occur is the asymmetric character of information, resulting from the fact that the borrower cannot prove that his or her sources of income are sufficient. Another reason is the instability of the borrower's income, which raises the risk of default on installments, even when the borrower might have the ability to pay while the loan is in effect.

¹ The effectiveness of some informal lending mechanisms has been the basis for the development of housing-oriented micro lending systems, which are not the topic of this chapter. See Daphnis and Ferguson (2004).

TABLE 15.2 FAMILY HOME OWNERSHIP
(Percent)

City	1947-52	1970-73	1990-93
Mexico City	25	43	70
Guadalajara	29	43	68
Bogotá	43	42	54
Medellín	51	57	65
Santiago	26	57	71
Rio de Janeiro	33	54	63
Buenos Aires	27	61	72

Source: Gilbert (2001).

Among borrowers in Chile, the likelihood of making payments on time drops by 5 percent when the borrower does not have an employment contract and hence is exposed to less stable income.² As substantial as it is, the estimated rate underestimates the influence that income instability ought to have on access to credit because it comes from information on actual credit users, thereby excluding potential customers who did not have access to credit.

Obstacles to Recovering Collateral

Difficulties in the use and recovery of collateral guarantees may be the single most important reason why there is so little mortgage financing. The absence of deeds and deficiencies in deed registration systems works against potential borrowers and keeps them from using their property as collateral. These problems are especially serious in large cities in Latin America, where most housing has been built in informal settlements. De Soto (2000) highlights the importance of this issue, calculating that two-thirds of the housing and building stock in Latin America lacks deeds that could be used for loan guarantee purposes.

Even homeowners who hold proper deeds may not have access to credit or may have access only under very onerous conditions because of the difficulty lenders face in recovering the collateral when the borrower defaults on the contract. Failure to meet these conditions usually entails the lender's evicting the people living in the house. Although accepting the logic and legality of such a decision, society tends both to create controls to prevent wrongful eviction decisions and to accept delays or alternative solution mechanisms to avoid eviction. If these controls and practices are excessive, loan contracts will lose credibility, and potential

lenders will stop granting financing or will do so under conditions unattractive to borrowers, thereby severely limiting financing coverage.

Several recent studies indicate that recovery costs are a serious problem in Latin America (Box 15.1 and Table 15.3). In several of the countries examined, the costs of recovering the guarantees absorb a quarter to a third of the value of the debts and may take from one to three years. Even where the costs are low, as in Peru, lenders may incur large losses through the use and depreciation of the property. In other cases, such as in Bolivia, where the recovery process has been expedited, the cost is high for low-cost properties, thereby in practice excluding from the market a large portion of potential borrowers. Evidence on Argentina suggests that poor functioning of judicial systems may severely affect the costs and duration of recovering collateral and substantially reduce lending to families.

Real Interest Rate Fluctuations

The third reason that may explain the lack of mortgage credit is interest rate instability. The typical annual variation in the real interest rate for borrowing is 5.3 percentage points in Latin American countries, whereas in developed countries it is 1.6 percentage points. In Argentina, Brazil, Ecuador, and Peru, the typical real interest rate variation in the past decade was between 17 and 18 percentage points, and only in Belize and Panama was it similar to or less than in developed countries.³

Because the cost of borrowing on financial markets is unstable, the financial system prefers to transfer this instability to those seeking credit. However, a mortgage borrower may not be capable of undertaking such a risk because the value of a house equals several years of a family's income. According to UN Habitat (2003) indicators, in Latin America the value of a house equals around six years of average family income. For example, if 80 percent of this amount is financed, a 5 percentage point increase in the real interest rate would mean that the typical borrower would have to devote 24 percent more of his or her income to pay this higher cost of indebtedness. Few families are in a position to make such an adjustment to their budget.

² Morandé and García (2004) estimate this effect based on the 2000 CASEN (Encuesta de Caracterización Socioeconómica Nacional—National Socioeconomic Characterization) Survey, which makes it possible to isolate the influence of other borrower characteristics (income level, in particular).

³ Calculations based on data from IMF (various years).

BOX 15.1 | TIME AND COSTS FOR RECOVERY OF MORTGAGE GUARANTEES

Argentina

Argentina is an especially interesting case because it is a federal country where the procedures and effectiveness of the judicial system vary from one jurisdiction to another. For example, the theoretical costs according to provincial laws for foreclosing a mortgage for a US\$200,000 debt can range from 7.7 percent in the federal capital to 13.2 percent in Cordoba. Information from court cases shows even greater ranges. The actual costs of recovery reach 33 percent of the amount reclaimed, and the process takes an average of 18.4 months in the jurisdictions that perform worst in handling these cases, as opposed to a cost of 25 percent and a duration of 9.8 months in the best-performing jurisdictions. These differences have implications for the availability of loans. Typically, in provinces where the judicial system performs worst, the loans families receive as a proportion of their incomes are one-third of what they are in jurisdictions with the best court systems.

Bolivia

In Bolivia, the regular procedure for recovering a mortgage guarantee takes only three and a half months (the process may begin 60 days after default in payment), and procedures rarely last more than two years. However, the unit cost for a procedure is estimated to be around US\$2,000, which is 13 months of per capita income. Banks are thus reluctant to make mortgage loans for small sums, in practice excluding the bulk of the population from financing.

Chile

In Chile, the costs of recovering guarantees are moderate. Various companies in the business have estimated costs at between 7 and 13 percent of the total sum of the debt, with recovery periods ranging from 12 to 18 months. However, these periods depend on the diligence of the judges, whether the parties are engaged in parallel negotiations outside the courtroom, and whether the debtor decides to appeal rulings issued by the court. Hence, even when average costs are low, these processes are shrouded in a great deal of uncertainty.

Colombia

Recovery processes are also slow and expensive in Colombia. On the basis of information from three mortgage banks, Cárdenas and Badel (2003) calculate that these processes typically take 32, 46, or 58 months. The authors estimate that for a loan of 15 million pesos (US\$5,530) backed by a property appraised at 30 million pesos, the costs of recovery would be around 3.7 million pesos, which represents a quarter of the value of the loan. In late 2002, the country passed a law seeking to reduce the recovery process to around 12 months and make it notably less expensive.

Peru

In Peru, the direct costs of recovering a guarantee are relatively low. According to a survey of litigation lawyers, court costs range between US\$422 and US\$607, depending on whether the liquidation of the property takes place at the first auction and whether the decisions on the appraisal and allocation of the property in the auction are appealed. However, total costs are much greater because debtors make numerous appeals in order to stretch out the process. The average duration of the process of recovering a guarantee is 31 months. If there are no appeals, the process can be reduced to 18 months; otherwise, it runs more than 36 months. These periods do not include additional court cases for compensation.

Uruguay

In Uruguay, from the moment the seizure of a property is ordered, foreclosure procedures take an average of 20 months, but they may take as long as six years. Foreclosure costs are very high, representing around half the value of the debt for mortgages under US\$10,000, and approximately one-third of the debt for mortgages of around US\$50,000.

Source: For Argentina, Cristini and Moya (2003); for Bolivia, Morales (2003); for Chile, Morandé and García (2003); for Colombia, Cárdenas and Badel (2003); for Peru, Eyzaguirre and Calderón (2003); and for Uruguay, Gandelman and Gandelman (2003).

TABLE 15.3 COSTS AND DURATION OF RECOVERY OF MORTGAGE GUARANTEES

Country (source)	Credit value (US\$)	Costs		Duration (months)
		Dollars	Percentage of debt	
Argentina (Cristini and Moya 2003)			25–33	10–18
Bolivia (Morales 2003)		2,000		3–4 (after 60-day delay)
Chile (Morandé and García 2003)			7–13	12–18
Colombia (Cárdenas and Badel 2003)	5,350	1,321	24.7	45
Peru (Eyzaguirre and Calderón 2003)		422–607		31
Uruguay (Gandelman and Gandelman 2003)	10,000	4,580	45.8	24 (from the issuance of
	50,000	16,200	32.4	decree ordering seizure)
	200,000	54,600	27.3	

Typical interest rate variations are even greater in some countries.

If variations in the nominal interest rate reflected only changes in inflation rates, interest rate risks for borrowers could be corrected by indexing the amount of the principal. For example, Chile and Colombia have developed relatively successful indexing mechanisms, precisely because most of the variation in nominal interest rates in these countries comes from inflation, so that the volatility of the real interest rate is relatively modest. Even in these cases, however, this is an incomplete solution because indexing the loan transfers the interest rate risk to the creditor. Unless the creditor can fund loans by borrowing capital denominated in the same fashion, it will only be able to offer indexed loans by charging borrowers a considerable surcharge to cover that risk. Hence, the problem of interest rate instability will ultimately be reflected in high financing costs, which will severely constrain the mortgage lending market.

Maturity Mismatch

The instability of the macroeconomic environment affects mortgage lenders not only because it increases interest rate risk, but also because it raises the risk of maturity mismatch. The problem comes from the fact that the funding sources of the financial system are unstable and mainly short term, while the mortgage portfolio is long term. Even in a context of relative macroeconomic stability, it is difficult for the financial system to convert short-term deposits into long-term loans. In Colombia, for example, for more than 20 years short-term deposits backed long-term mortgage financing. However, the

system could be maintained only because of the constant intervention of the central bank in providing liquidity to the financial system whenever it needed it and because of the monopoly on short-term, interest-bearing deposits enjoyed by lending companies. As soon as the system of automatic supply of liquidity was dismantled and banking competition increased, the system became extremely fragile and collapsed in the mid-1990s.

ATTEMPTS TO RESOLVE MORTGAGE LENDING PROBLEMS

State-Run Mortgage Banks

Latin American governments have been actively involved in the housing finance market. The model adopted since the early decades of the twentieth century, which still persists to some extent in some countries, was built around one or several savings funds and a state bank. Regular contributions from government employees and other segments of steadily employed workers financed savings funds for housing. Resources from these funds were set aside to provide loans to the contributors themselves at low interest rates fixed in nominal terms.

The state bank covered the rest of the middle-class mortgage market with loans at a fixed nominal rate, financing itself with long-term bonds that drew on surpluses from other state agencies and scarce private long-term savings in little developed and generally repressed capital markets. In a number of countries, government savings funds and mortgage banks were also financed through forced investments imposed on the rest of the financial system, outside financing sources, and occa-

sionally transfers of fiscal resources. In addition to savings funds and state mortgage banks, some countries set up other subsidized financing systems aimed at lower-income borrowers and financed with general government funds.

This model of housing finance was originally intended to alleviate three of the four problems of housing finance in the region. Risks of nonpayment due to insufficient and unreliable incomes were reduced by contribution mechanisms in the funds, selection of loan beneficiaries, and aggregation of many participants. The model attempted to resolve the risks associated with interest rate variations and maturity mismatch through the use of fixed interest rates on the lending side and through mandatory contributions and long-term borrowing under privileged conditions on the deposit side. Although the model was successful in a number of countries for several decades, the effectiveness of these solutions declined over time due to political interference in lending decisions, macroeconomic instability, and growing competition for long-term savings funds.

The recent fate of some of these traditional housing finance systems illustrates the nature and seriousness of the problems. In Peru, the Mutual Credit Association for Housing and the Central Mortgage Bank, the two central pillars of the system, were officially liquidated in 1993 after a decade of decline. High inflation rates (as high as 7,649 percent in 1990) combined with fixed interest rates eroded the value of assets. Fiscal pressures induced the government to reorient a portion of the funds of these institutions toward activities other than housing finance and to severely cut back general revenue funds for sustaining them. The loss of public trust in the sustainability of these institutions prevented them from competing in the deposit market (even by paying higher interest rates). Thus, their share in the deposit market fell from more than 50 percent in the early 1980s to only 6 percent in 1990. With the close of these agencies some years later, mortgage lending for housing virtually disappeared, and it began to reemerge only after 1995 with the development of mortgage lending by private banks (Eyzaguirre and Calderón 2003).

In Argentina, the National Mortgage Bank encountered problems in the 1980s. The fundamental problem was its dependence on short-term funds (coming primarily from government bodies) that were insufficient to cover the loans granted, which were for up to 25 years and had low nominal interest rates. This disequilibrium forced the National Mortgage Bank to go to the Central Bank of Argentina for financing through rediscounts at high interest rates that were adjustable

for inflation. Despite the subsidized nature of the loans, political interference and poor administration led to high delinquency rates. In 1987, when the National Mortgage Bank was taken over, it had a default rate of 67.7 percent.

The crisis became so deep that it was resolved by turning the National Mortgage Bank into a wholesale bank in order to prevent it from being used for political purposes. As a result, in the 1990s it helped reestablish the mortgage lending system, which had been destroyed by hyperinflation, by introducing innovative instruments. These included savings bonds for housing, which could be traded on the exchange and served as a basis for gaining access to lending. In the late 1990s, the National Mortgage Bank was reauthorized to make direct loans and was partially privatized. By 2001 it was once more the largest provider of mortgage loans, but also the largest provider of mortgage loan insurance and the largest mortgage manager in Argentina. That made it an interesting example of vertical integration in the mortgage industry (Cristini and Moya 2004).

In Uruguay, the state-owned Mortgage Bank of Uruguay has dominated the housing mortgage lending market, recently with a share of more than 80 percent, although private banks have made forays into the market. The Mortgage Bank of Uruguay has enjoyed three major advantages: (i) the use of indexed units for adjusting the value of loans, thereby protecting its assets from inflation; (ii) a special regime for recovering collateral, which gives it a huge advantage over private competition because it is exempted from the foreclosure process;⁴ and (iii) a system for selecting borrowers based on their savings capability as proven by their deposits in the bank. Despite the first advantage, the bank has serious problems of mismatch between lending and borrowing because it borrows most of its funds not in indexed units but in short-term dollars. Despite the second and third advantages, the bank displays very high rates of default, several times those of private banking, because of the influence of nontechnical criteria in lending decisions and the bank's debt collection and recovery practices.⁵

⁴ Under what is called the public system, borrowers can be promising buyers, rather than homeowners. But even when they are homeowners, the Mortgage Bank of Uruguay has exceptional power to take possession of the house and to sell it to the best bidder with no court intervention. See Gandelman and Gandelman (2004).

⁵ Between June 1992 and December 2001, average loan delinquency in national currency at the Mortgage Bank of Uruguay was 17.2 percent, compared with 2.4 percent in private banks (not only mortgages, but all kinds of loans); calculations are based on statistics from Gandelman and Gandelman (2004).

Despite its advantages, the Mortgage Bank of Uruguay is involved in a restructuring as part of an agreement with the International Monetary Fund (Gandelman and Gandelman 2004).

Hence, although government banks were designed to alleviate several of the central problems facing financing for housing, the mechanisms for solution have not been effective in the face of conditions of macroeconomic instability, growing competition for savings resources, and interference in lending decisions on the basis of nontechnical criteria.

Subsidy Systems

Subsidies are an attempt to solve the problem of the inability to pay. For the purposes of this chapter, the relevant subsidies are those that seek to facilitate access to financing. Nonetheless, it is convenient to place subsidies in the context of the housing subsidy system as a whole. In the past in Latin America, subsidies were commonly provided through mechanisms that did not use public funds efficiently or that caused distortions in the housing market. Among the more common practices, the public sector constructed houses to be sold at below market value, granted subsidies (directly through transfers or indirectly through preferential access to permits or services) to builders of housing for social programs, and set price controls on construction materials.

These solutions were not very effective because they diverted fiscal resources toward middle or upper-income groups, became sources of corruption, hindered the development of sectors supplying building services and materials, and diminished the supply of housing for the working-class population. For these reasons, the current thinking is that subsidy policy should be based on transparent subsidies, focused on the poor, and oriented to subsidize people rather than housing. Subsidies should aim at making the market operate smoothly and seeking to avoid the negative externalities that can hinder the development of the housing supply, building materials, or financing (Mayo 1999). Beyond these general principles, the effectiveness of subsidies depends on the characteristics of the programs and the institutional and cultural context in which they operate (World Bank 1993).

Until the 1990s, the most common subsidy systems for facilitating access to financing for housing consisted of government agencies granting loans at below-market interest rates for the purchase of new houses built under government contract. The trend has been to move away from this practice, which suffered from the problems mentioned, toward direct subsidies to buyers. Di-

rect subsidies, combined with other tools for reducing risk to creditors, seek to facilitate access to lending that is not necessarily subsidized.

Chile has extensive experience in the design of housing subsidies that seek to facilitate access to financing and that are part of an ambitious social housing policy. The government has subsidized more than 60 percent of the housing built since 1990 (Morandé and García 2004). The country's most important program provides help for purchasing finished houses. It consists of a direct, one-time loan to a buyer who has demonstrated the capacity to save and can presumably assume the debt to finance the remaining value of the house.⁶ Other programs provide assistance for the development of step-by-step housing (that is, gradual improvement, usually by self-building), rural housing, and specific groups of beneficiaries.

Despite the declared emphasis on targeting low-income families, the results of Chile's housing programs have been limited: only 24 percent of the beneficiaries of these programs come from the poorest quintile, and only 22 percent from the next quintile (according to information for 1998; see Morandé and García 2004). The value of the subsidies may be even less progressively distributed, given the emphasis placed on savings capacity for selecting participants. Another problem is that the programs that offer financing through the Ministry of Housing have not been able to escape the problem of delinquency. Between 1998 and 2002, the delinquency rate of the portfolio held by the Ministry averaged around 66 percent.

Although the programs are designed to resolve the problem of inability to pay, they are not immune from moral hazard, which in this instance consists of the beneficiary of a state loan modifying his or her behavior because the state is a poor bill collector. Indeed, econometric studies by Morandé and García (2004) show that, controlling for individual variables that can affect ability, participants in official programs are considerably less likely to pay their debts properly. This behavior reinforces the regressivity of the housing subsidy system because, as a result of delinquency, the beneficiaries of these programs receive a total subsidy that is 50 percent higher than the beneficiaries of the step-by-step housing subsidy, who are poorer and cannot obtain loans.

Other problems with Chile's programs include maladjustment to demand and the distortions generated in markets for land and used housing due to the predomi-

⁶ Eligible houses are those constructed by private builders under the supervision of the Ministry of Housing and Urban Planning, and until recently the loans were granted directly by the Ministry.

nance of the Ministry of Housing in construction decisions. For these reasons, the Ministry of Housing and Urban Planning reformed the programs as of 2002 with a view to better targeting and decreasing the participation of the public sector in housing loan contracting and financing. From the standpoint of access to financing, the fundamental change is that loans are made by the financial system. To achieve this, the program envisions directly subsidizing the fixed costs of issuing loan contracts and the portfolio discount risks arising from banks refinancing loans by issuing mortgage-backed securities. In addition, the government grants auction insurance to cover the difference between the yield of the sale and the guaranteed value of the debt in default.

Peru has recently experimented with an interesting variety of programs that seek to improve access to financing for lower-income borrowers (Eyzaguirre and Calderón 2003). For example, the Materials Bank provides loans for self-built housing to families or groups organized under a project sponsor. Like other programs in which the lender is a government body, this one also has a high rate of delinquency (39 percent in 2002), which leads to constant losses that use up the assets and undermine the original design of the program as a rotating fund. Seeking to overcome this problem and aiming at a somewhat higher income level, the Mortgage Fund for Housing Promotion (Mivivienda) was set up in 1999.

Mivivienda allocates funding under subsidized conditions to private banks, which then handle making loans for purchasing low-cost housing and assume risks for nonpayment, but not maturity mismatch or interest rate risks. To encourage payment discipline, the program offers an ongoing 20 percent discount on monthly obligations to borrowers who are up to date. Even so, the program has not been very successful. As of 2002, it had allocated only around 20 percent of its funds and financed less than half of the 12,500 houses that had been proposed as a goal for the first year. In 2002, Mivivienda launched the *Techo Propio* (Your Own Roof) program, which is similar to the new version of the Chilean program described above. *Techo Propio* seeks to grant direct, one-time subsidies to families that contribute from their savings 10 percent of the value of the house so that they can gain access to loans granted by financial institutions.

The cases of Chile and Peru are representative of a recent trend that also extends to other countries, namely, providing a direct, one-time subsidy to home buyers so that, by tapping into their own savings, they can gain access to lending provided by the private financial system in order to purchase housing (see Table 15.4). In

some countries, the subsidies are portable, which means that they are not tied to one solution or specific housing project. However, even when the subsidy is not portable, the housing projects do not have to be chosen or contracted by the state. This practice, which was common in the past, is now quite the exception. Instead, programs have evolved toward allowing informal construction in order to reach lower-income groups.

Some programs do not envision special financing mechanisms through the financial system, either because they grant financing through a government agency (such as the Mortgage Bank of Uruguay) or because there are no conditions other than access to regular lending by the financial system for the beneficiaries of these programs (such as in Costa Rica and Guatemala). To improve access to credit, special financing mechanisms through the financial sector may envision below-market interest rates. Lower rates can be obtained, for example, when the banks refinance loans in second-tier entities that channel treasury funds or whose financing sources offer lower rates than those from which the system borrows (such as the *Mivivienda* program). Moreover, in a few cases, such as that already mentioned above in Chile, the government provides subsidies for the financial system to cover fixed costs or risks that could inhibit intermediaries from making the relatively small loans needed by low-income families.

Private Mortgage Lending Systems

Public systems blocked private mortgage financing systems until the 1990s when financial liberalization and privatization increased the importance of private systems. Except in Chile, Panama, and to a lesser extent Colombia, the development of private housing finance systems has been very limited, especially because of the problems associated with recovering collateral guarantees and the conditions of macroeconomic stability common in the countries of Latin America.

Major transformations in housing finance systems took place in a number of Latin American countries in the 1990s, when development of mortgage financing was driven by financial liberalization and greater macroeconomic stability in the region.⁷ Competition between finance companies grew, the credit supply ex-

⁷ Liberalization policies in the 1990s were characterized by the lifting of restrictions on the entry of foreign participants into financial markets, privatization of banks, elimination of barriers to the entry and exit of capital, and elimination of interest rate controls. IDB (2001) and Galindo, Micco, and Ordoñez (2002a) examine the effects of financial liberalization on credit in more detail.

TABLE 15.4 | CHARACTERISTICS OF SUBSIDY PROGRAMS

Country	Program	Demand subsidy?	One-time subsidy?	Portable?	Does it finance only dwellings built under the program?	Does it finance progressive/self-built housing?	Is it constrained to the savings capacity?	Is the credit provided by a public agency?	Does it include credit programs with private financial intermediaries?	Is the interest rate lower than the one in the market?	Does it subsidize fixed costs or risks by financial intermediaries?
Argentina	Fonavi	No	n.a.	No	Yes	No	No	Yes	No	Yes	n.a.
Chile	Serviu and others	Yes	Yes	Yes/no ^a	Yes/No	Yes/no ^a	Yes	No ^b	Yes ^b	No	Yes ^b
Colombia	Subsidios a la vivienda de interés social	Yes	Yes	Yes	No	Yes	Yes	No	Yes ^c	Yes ^c	No
Costa Rica	Bono familiar de vivienda	Yes	Yes	No	No	Yes ^d	No	No	No	n.a.	n.a.
Ecuador	Sistema de incentivos para vivienda	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	n.a.
El Salvador	Programa de contribuciones para la vivienda	Yes	Yes	No	No	Yes	No	No	Yes	No	No
Guatemala	Foguavi	Yes	Yes	No	No	Yes	Yes	No	No	n.a.	n.a.
Mexico	Fovi/SHF Programa financiero de vivienda	No	No	Yes	No	No	No	No	Yes	No	No
Mexico	Prosavi Programa especial de crédito y subsidios a la vivienda	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes
Peru	Mivivienda	No	Yes	Yes	No	No	Yes	No	Yes	Yes	No
Peru	Techo Propio	Yes	Yes	Yes	No	No	Yes	No	Yes	No	No
Uruguay	Sistema integrado de acceso a la vivienda	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	n.a.

n.a. Not applicable.

^a According to the program.

^b Since 2002.

^c The methodology of financing is not included in the program, but banks must use 25 percent of the increase in credit to finance housing through controlled interest rates.

^d Only for groups already organized.

Source: For Mexico, BBVA Bancomer (2002); for Peru, Eyzaguirre and Calderón (2003); for other countries, Rubinstein and Carrillo (2001).

panded, the cost of credit tended to decline, and the structure of payment periods increased. All these elements were central to the operation of mortgage lending markets.

Argentina and Peru offer particularly noteworthy instances of deepening of mortgage lending. It doubled in Argentina, increasing from less than 2 percent of GDP in 1991 to 4.2 percent of GDP in 2000 (Cristini and Moya 2004). In Peru, it increased from practically zero in the early 1990s to more than 3 percent of GDP in 2002 (Eyzaguirre and Calderón 2003). In both cases, the noteworthy growth in lending was made possible by the decline of inflation after the hyperinflationary crises of the 1980s and greater competition in the financial sector, which also helped lower interest rates.

Significant changes also occurred in the composition of mortgage lending. Whereas in the early 1990s the main lender in Argentina was the state through the National Mortgage Bank, by the end of the decade, private banks supplied 70 percent of all mortgage lending. This was due not only to the privatization of the National Mortgage Bank in 1999, but also to the aggressive participation of foreign (especially Spanish) banks in this market. Unfortunately, the subsequent crisis brought this successful experience to a halt.

Like Argentina, Bolivia and Peru underwent a great change in the structure of the housing lending market. In Bolivia, the reform process began in the mid-1980s and included the closing of the main providers of mortgage loans, which were two government banks: Banco de la Vivienda and Banco del Estado (see Morales 2003). Peru witnessed privatization and the entry of foreign banks in the 1990s. Currently, all lending for housing in Peru comes from private banks, with Banco Santander of Spain leading the way by far.⁸

Private mortgage lending systems have responded to the four fundamental problems of mortgage financing with a variety of innovations and successes. On the problem of inability to pay, progress has been quite modest. Mortgage lending from private finance entities has generally been concentrated on the middle and upper-income strata; see Cristini and Moya (2004) for the case of Argentina, Morales (2003) for Bolivia, and Morandé and García (2004) for Chile. Even so, in Argentina, the development of credit information registries (credit bureaus) and their growing use by finance companies to evaluate borrowers' ability to pay has improved access to housing loans. The same thing has happened in Colombia and Mexico, where the quality and credibility of information systems has improved over time.

In some countries, financial and contractual innovations have emerged to alleviate guarantee recovery

risk. Leasing has been a notable innovation in which the lender retains ownership of the property purchased until the borrower finishes paying off the obligations. In the event of default, the legal process of foreclosing on the defaulting borrower is avoided, and the process is simply a matter of removing the residents. In addition, leasing guarantees the creditor the assurance that the property will not be used as collateral for other loans.⁹ Curiously, the leasing system is more common in Chile, where guarantee recovery systems are less difficult. However, as a rule it is not used much for several reasons: (i) it does not reduce the risks of interest rate variation or maturity mismatch, (ii) it entails high administrative costs and hence accentuates the problem of inability to pay, and (iii) it does not offer the borrower enough legal certainty.

Another innovation focused on relieving the problem of guarantee recovery is a mortgage trust, which already exists in many countries. A trust facilitates the expropriation process and lowers transaction costs by avoiding the public registry whenever there is a change in ownership of the property. In this arrangement, as in leasing, ownership of the property remains in the hands of the lender until the borrower finishes paying. For similar reasons, it is not an attractive alternative for borrowers.

The most interesting developments in private mortgage financing systems may have to do with interest rate risk management in which loan amounts are denominated in units other than the legal currency. Argentina, Bolivia, and Peru have developed mortgage financing in dollars; Brazil, Chile, Colombia, and Mexico have set up instruments indexed to the general price index or workers' wages.

In Latin America, financial dollarization is not limited to mortgage financing; it basically involves a process of asset substitution in which agents make use of dollar-denominated instruments to protect themselves from inflation (see Levy-Yeyati 2003 and Galindo and Leiderman 2003). When depositors choose to save in dollars, banks are induced to lend in dollars as well, in order to reduce the risk of currency mismatch (see Galindo and Leiderman 2003). However, mortgage lending tends to be more dollarized than other loans, perhaps because houses are more likely than other

⁸ In other Latin American countries, such as Colombia and Mexico, similar changes took place in the 1990s.

⁹ Verifying the use of properties as security for multiple debts can be a thorny problem in countries with poorly developed property registries.

goods to be traded in dollars (Cristini and Moya 2004; Morales 2003). Because it also protects against inflationary uncertainty, dollarization reduces interest rate risk. However, dollarization creates a new risk because borrowers rarely have incomes in dollars that would enable them to counteract the risk of an increase in the real interest rate. This risk, which is often ignored by financial entities, may lead to serious portfolio problems. Studies by Eyzaguirre and Calderón (2003) and Morales (2003) for Peru and Bolivia, respectively, show that indeed delinquency rates increased sharply in 1998–2000, when the real interest rate rose in those countries.

Another alternative for reducing interest rate risk consists of tying the value of loans not to the exchange rate, but to the behavior of the general price index, as in Colombia or Chile, or to wage trends, as in Mexico. The Colombian indexation system, created in 1974, was the basis for a successful mortgage financing system that attained significant levels of depth (14 percent of GDP) before entering a crisis in the late 1990s. Financial intermediaries specializing in mortgage financing (savings and housing corporations, CAVs by their Spanish acronym) competed with the banking system in borrowing funds but were able to borrow in indexed units (constant purchasing power units), which gave them a monopoly on demand deposits.

Regulatory and technological changes in the 1990s dissolved the mortgage financing monopoly in Colombia. Competition between the savings and housing corporations and the banks for short-term loan funds led economic officials to link the value of the indexed units to the short-term interest rate.¹⁰ In trying to solve the problem of funding housing finance agencies, all the interest rate risk was passed on to the borrowers. The system continued for several years, but in 1999 a deep macroeconomic crisis led to sharp increases in the interest rate that were reflected in the balances of mortgage debts because of the indexation system. Declining real housing prices caused an unprecedented increase in the ratio between the value of the debts and the value of collateral, which reduced borrowers' incentives to pay their debts.¹¹ The system collapsed under a delinquency rate of more than 20 percent. It could survive in an environment of relative stability and little competition, but it was not an adequate system for the volatility typical of Latin American countries, which until then had spared Colombia.

The Colombian case makes evident the need to find a combined solution to the problems of interest rate risk and maturity mismatch risk. Colombia might have been able to avoid many of the problems if it had alternative long-term financing sources also denomi-

nated in indexed units. Chile also has a mortgage financing system based on an inflation-indexed unit of account, but with two major differences from Colombia's. One, the unit of account is strictly tied to inflation and has not been manipulated at all. Two, as opposed to in Colombia, in Chile practically the entire economy functions in indexed units of account, a practice that avoids the liquidity problems caused by competition between deposits in indexed units and deposits in pesos. The system in Chile may be regarded as the most successful in Latin America, not only because of its depth and strength during difficult macroeconomic episodes, but also because it depends very little on short-term borrowing.

The fourth risk factor mentioned earlier was handling the maturity mismatch between bank lending and borrowing. Only Chile has a system with long-term resources for financing mortgage lending through mortgage-backed securities and mortgage loans, most denominated in indexed units of account. The securities are financial instruments issued by a bank and backed by a set of mortgages. They are issued to the bearer and redeemed by payment of periodic coupons (usually quarterly), which include amortization of principal and interest. The security also has the guarantee of the issuing bank, linking the risk primarily to the bank and secondarily to the portfolios of borrowers.¹² Mortgage bonds are another instrument that is backed by a specific loan and may be issued by banks or any other creditor. The solvency of the borrower and the quality of the guarantee (of the issuing bank) back the loans. Mortgage bonds are tradable and their valuation is determined by discounting the flow of dividends to which the borrower is committed. Recently, issuers of mortgage bonds are also starting to securitize them in order to reduce the individual risk of each asset and bring about greater solvency.

Although there is a long tradition of these instruments in Chile, the great impulse for the development of mortgage financing markets took place in the early 1980s. Private pension funds were the main purchasers

¹⁰ Previously, liquidity gaps of the savings and housing corporations were resolved with liquidity funds from the central bank, thereby limiting the effectiveness of monetary policy.

¹¹ Cárdenas and Badel (2003) have proven the importance of this relationship econometrically: for each 1 percent increase in the ratio between the debt and the value of the property, delinquency rises by 0.14 percent.

¹² The notes are standard instruments and are denominated in 10, 20, 100, 200, and 500 development units. They vary according to the interest rate, amortization arrangement, and maturity of the loans backing them.

of mortgage-backed securities starting in 1982, investing around 20 percent of their portfolio in them.¹³ The existence of pension funds not only guarantees a primary market, but to a great extent stimulates the creation of a secondary market inasmuch as the funds periodically need to make adjustments in their portfolios. Recently, pension funds have also been permitted to buy securitized mortgage bonds, giving new momentum to this market. Through the use of such instruments, Chile has succeeded in creating a housing finance system that does not depend on short-term macroeconomic fluctuations.

Other countries are attempting to lessen the problem of maturity mismatch. The most advanced are Colombia and Mexico, which have established agencies for securitizing mortgage lending. Titularizadora Colombia (in Colombia) and Sociedad Hipotecaria Federal (in Mexico) have already successfully issued mortgage bonds. Peru and Bolivia are taking initial steps in the same direction, striving to base programs on capital markets that are still not very deep in order to extend the funding periods and limit the risk of maturity mismatch.

These experiences, especially the Chilean one, emphasize a crucial point: a robust and deep capital market is good for the housing market because it provides long-term savings funds and mechanisms for risk reduction that are essential for financing housing. At the same time, however, a smooth-functioning housing market is key to the development of the capital market because it provides low-risk, long-term assets that ultimately can support the creation of profitable investment instruments.

FOUNDATIONS OF A HOUSING FINANCE SYSTEM

Financing for housing is scarce in Latin America because of the four basic types of risk. Nonpayment risk reflects individual characteristics of borrowers. Collateral risk is of an institutional nature. The other two types of risk result from the macro and financial environment of the economy. A successful housing finance strategy must deal with these four problems simultaneously.

Explicit and Focused Subsidies

Due to low average income levels and high income concentration, inability to pay is a constraint on access to mortgage lending in Latin America. However, this ar-

gument should not be exaggerated: many low-income families manage to build a decent house for themselves over a period of years, even though they do not have access to credit. A system of explicit and focused subsidies can improve access to credit for families with a limited ability to pay. The problem of access depends on the ratio between the actual price of the house and the family's regular income. Of course, subsidizing the price of the house, its materials, or interest rates would improve this ratio, but experience has shown that these mechanisms are not effective for sustainably resolving the problem of access. They open the way to significant diversion to families with the ability to pay, distort housing markets by limiting the supply of housing for low-income families, and do not ensure the financial or administrative stability of the institutions responsible for lending.

The best current practices consist of granting one-time subsidies directly to families that belong to the target socioeconomic stratum and have savings that show that they are disciplined and have the ability to pay. Naturally, families that lack this ability can still be beneficiaries of housing subsidies, but they should not have access to credit. To avoid the distortions generated by government interference in housing supply, it is not a good idea to tie direct subsidy programs to a preselected supply of houses or to limit subsidies to finished or new houses. Given their target population, direct subsidies to housing should open up options for solutions that, even if not ideal, may be the most suited to the needs and possibilities of the beneficiaries.

The program of direct housing subsidies should take into account how beneficiaries are going to have access to credit. In the light of past experience, it is not necessary or advisable that the lending institution be a state agency. Instead, the program needs entities capable of putting together and managing mortgage portfolios with risk management criteria. However, mortgage lines of credit in the private financial system are not sufficient, because the conditions of these lines may keep low-income families from having access to financing because of the high fixed costs of information and registration and the high relative costs of risks of default.

Some countries have made an effort to resolve these problems by requiring the financial system or private mortgage banks to set aside a certain percentage of loans for housing for social programs. This is generally not a good solution because it does not respect the

¹³ Today private pension fund assets represent more than 60 percent of GDP.

fact that not all banks are familiar with, or interested in, the low-cost housing niche, nor can they be efficient in it. It is a better idea to establish lines of credit that are more attractive from a financial standpoint for those banks with relative advantages in this market. To improve the attractiveness of such financing, credits may be partially refinanced with funds obtained at a second-tier financial entity, which in turn has obtained the funds in preferential markets (financing from multilateral agencies, for example) or receives explicit fiscal transfers for that purpose. If competitive conditions on the mortgage lending market permit, banks should have freedom in the rates that they charge borrowers above and beyond the costs of these second-tier funds. Such a procedure provides an incentive for the most efficient banks to keep assets in the program.

To resolve the problem of high fixed information and registry costs and the high relative costs of default risks, it is not enough that banks have access to cheap funding for refinancing loans. As Chile and Mexico are beginning to experience, the solution may consist of directly subsidizing intermediaries for these costs. For example, it would be desirable to subsidize the costs of issuing lending contracts, the costs of real estate registration, and court costs of foreclosure and auction of properties in the event of failure to pay. The risk factors that may discriminate against small mortgage borrowers include the risk of errors or gaps in the history of the deed registration of the real estate or land and the risk of the auction of foreclosed real estate producing a sum less than the amount of the loan. In designing such subsidies, care should be taken not to reduce the incentives for banks to monitor the quality of their portfolio, because there is a risk of replicating the same old problems of delinquency and unsustainability of previous government lending systems.

Property Rights and Creditor Rights

Because houses are durable goods, cannot be concealed, have developed secondary markets, and have a use value for other people, they are potentially a good loan guarantee. However, mortgage lending represents a tiny fraction of the value of the total housing supply and the credit operations of the financial system. This apparent paradox is largely due to the difficulties and costs imposed on creditors in repossessing houses offered as collateral when nonpayment occurs. Typically, such costs consume between a third and a fourth of the value of the loans guaranteed. This means that the rights of mortgage lenders are weakly protected. As happens more generally with the total credit supply, there tends

to be less mortgage financing supply where creditors are less protected.

An alternative solution to these problems would be to create nonjudicial procedures for speeding up processes of collateral guarantee recovery. Some countries allow loan contracts to provide for this procedure, thereby significantly reducing recovery costs and time. Another alternative mechanism is to postpone final granting of the deed until loan obligations have been met, and hence legal ownership of the property remains in the hands of the creditor in the event of default. This is a less adequate solution because it does not offer the borrower sufficient legal security. A more complete solution consists of thoroughly reforming the legal procedures so as to offer both parties effective protection, without ruling out the option of nonjudicial procedures. Reform of the legal procedures should also provide for creating courts specialized in these procedures and introducing competition between private firms devoted to auctioning real estate under the oversight of the judiciary.

Even if guarantee recovery processes operate smoothly, they may present obstacles to access to mortgage credit for low-income families because they represent a fixed cost. Hence, it is advisable to subsidize this cost as part of a focused subsidy program.

Other programs of a legal and administrative nature limit the use of a house as a loan guarantee. In large Latin American cities, where nearly half the houses were built in what were originally illegal neighborhoods, many properties are not deeded, and hence they cannot be used as collateral. In Lima, 24 percent of the approximately 200,000 families who received deeds in 1998 and 1999 went to the financial system to expand or remodel their houses shortly thereafter (Gilbert 2001). Although the evidence is not very conclusive, granting deeds may also produce other effects, such as improved homes, broadened markets for used housing, increased family mobility, and increased workforce participation.

Protection from Interest Rate Instability

Interest rate instability militates against the development of the mortgage lending market. Even in developed countries, mortgage financing at fixed interest rates only prevails in a few cases because it can firmly be established only where there is a long tradition of macroeconomic stability and financial development. Recently in Latin America, only Chile, Mexico, and Peru have developed debt markets in domestic (nonindexed)

currency at a fixed rate with maturity greater than five years. Indexing mortgage debts is a more promising solution to this problem than dollarization. During periods of moderate inflation, indexation may be successful, provided the indexation rule is credible and stable, as shown by the contrast between the cases of Chile and Colombia in the 1990s.

Nevertheless, the indexation system does not guarantee success, which requires the development of stable sources of long-term saving that are also indexed so as to avoid problems of maturity mismatch. In Chile, this was made possible by the emergence of institutional investors, a development spurred by the pension system and high sustained rates of growth. The main risk faced by indexed financial systems is that indexation spreads to the rest of the economy. Chile and Israel have had to struggle with deep-rooted practices of wage indexation that have limited the effectiveness of monetary policies and reduced labor market flexibility, with unfavorable consequences for employment.

Financing systems based on indexed instruments are more justified when the inflation rate is persistent and the credibility of the monetary and fiscal policies is taking firm hold. Currently, the region as a whole has reached low inflation levels; hence it could be thought that there is no need to strive to develop markets in long-term financial instruments indexed to the price level as an intermediate step toward achieving long-term markets in domestic currency. However, current inflation levels are not necessarily a guarantee of future stability, particularly taking into account the fiscal fragility of some countries. From this perspective, it is reasonable to allow the development of indexed mortgage lending, provided it is financed with instruments that are also indexed, with a high proportion of them being long term.

Long-Term Financing and Capital Markets

There is no getting around it: the sustainability of mortgage lending systems requires long-term financing sources, and this entails the support of the capital market to mobilize savings funds. In addition, good mortgage lending systems that provide profitable long-term investment opportunities may in turn contribute to the development of the capital market.

Who the long-term investors can be and in what instruments they could invest are two central questions that must be answered in a mortgage lending development strategy. In most countries, the investors already exist: they are the insurance companies and pri-

vate pension funds that have long-term savings seeking profitable and safe investment options. Still needed are long-term financial instruments. International experience suggests what might be the most viable options for achieving it.¹⁴

The most important world trend is the securitization of mortgage loans. There are two major ways to do this: (i) through the issuance of bonds by financing institutions backed by their mortgage portfolio and their own net worth, and (ii) through the issuance of mortgage-backed securities by some nonlending institution. European countries prefer the former arrangement; the United States mostly uses the latter method. Some Latin American systems, such as those in Colombia and Mexico, have drawn inspiration from mortgage-backed securities.

Under the European system, the banks lend for the long term and issue a bond backed by their own mortgage loans. In practice, the guarantee given by the loans is less important than the guarantee provided by the capital of the issuing banks. In this system, the bank maintains the loan on its balance sheets and assumes the credit risk. Hence, this system requires capital levels high enough to deal with the credit risk and needs appropriate regulation for appraising that risk and a solid and modern bank oversight system to guarantee that those levels are maintained. Through this system, European banks finance 19 percent of the loans in their mortgage portfolio. However, 62 percent of loans are financed with deposits, some of which are short term.¹⁵ This suggests that it is not necessary for all mortgage lending finance resources to be long term. However, the more unstable the macro environment, the greater the risks of short-term financing, and hence the more important it is to develop long-term instruments.

In the mortgage-backed securities system, mortgage loans are not kept in bank balances. The financial institution making the loan sells it to a securitization agent shortly after issuing it. In the case of the United States, mortgage banks keep the loan on their balance sheets for one or two months at most and then sell it to some securitization institution. The main institutions of this type are Ginnie Mae, Freddie Mac, and Fannie Mae, which, although they are private, are perceived as government-guaranteed entities. The loans are se-

¹⁴ For a more detailed and complete description, see BBVA Bancomer (2003).

¹⁵ The balance of funding comes from savings accounts (5 percent), mortgage-backed securities (1 percent), and other sources (13 percent). Information from the European Mortgage Federation (cited by Hardt 2003).

curitized by these institutions and sold on markets that enjoy a great deal of liquidity. In this arrangement, the investor assumes credit risk.

This system became popular in the United States in the 1980s, when most mortgage lending was financed with short-term deposits. A sharp increase in interest rates in the early 1980s, which had serious repercussions for the stability of the financial system, led to the development of this new system. Today, practically the entire mortgage system is financed by mortgage-backed securities.¹⁶ In Europe, mortgage-backed securities have begun to develop, but their growth has been slow because of regulatory frameworks that hinder their expansion. International experience suggests that this type of system is not built overnight because of the following complex macroeconomic and institutional requirements:

- A stable macroeconomic environment that prevents generalized fluctuations in the ability of borrowers to repay and limits the uncertainty of investors
- Solid securitization institutions with access to capital that guarantee a high risk qualification of their issues and that provide investors with guarantees
- An adequate legal framework to guarantee property rights and enable lenders to enforce their rights to collateral in the event of nonpayment, without incurring excessive costs
- Standardized loans with homogeneous conditions that can be easily securitized so that flows are highly predictable by investors
- Risk appraisal techniques that are put forward and tested by the banks originating the loans and backed by banking supervisors, thereby assuring investors that there is a credible and valid process for selecting the borrowers of the loans backed by the securities
- Smoothly operating property registries so that

transfers of ownership can be carried out efficiently and at low cost

- An adequate system for appraising the value of housing (thereby also helping to broaden the real estate market and make it more transparent)
- A tax system that does not discourage financial transactions and that facilitates the transfer of risk assets to entities capable of managing them.

CONCLUSION

A strategy for financing housing must deal with the four fundamental problems limiting mortgage lending: low-income families' lack of ability to pay, guarantee recovery, interest rate fluctuations, and maturity mismatch. To some extent, each of these problems is rooted in deep problems of a distributional, institutional, or macroeconomic nature that go beyond the realm of financial policies and the housing sector. Hence, the possibilities for developing lending for housing will always be limited by the degree of development of the country and by the characteristics and depth of its capital markets. The potential is limited, but not determined, because proper understanding of these problems makes it possible to design subsidy and incentive systems, financing institutions, and instruments and financing policies that considerably improve access to credit and broaden the supply of long-term financing for housing.

Although it is an illusion to think that housing loans in Latin America could reach 70 or 80 percent of GDP as in developed countries, past and recent experience in a number of Latin American countries suggests that rates of 20 percent of GDP are not impossible. This modest goal would require that the current size of housing finance systems be multiplied several times in most countries of the region.

¹⁶ Fannie Mae handles 39 percent of issues, Freddie Mac 29 percent, and Ginnie Mae 9 percent. Other private companies have only a 23 percent share of issues (BBVA Bancomer 2003).

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PART V

**The Road Ahead
in Financial Regulation**

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The Challenges of Basel II

THE new international accord on bank regulation and supervision, Basel II, is due to be finalized in 2004 for implementation in member countries of the Basel Committee for Banking Supervision before the end of 2006. As no country in Latin America and the Caribbean is a member of the Basel Committee for Banking Supervision, and the International Monetary Fund (IMF) and the World Bank have said that implementing Basel II will not be considered a requisite in terms of their financial sector assessments, whether the region should adopt the new accord is an open question.¹ At the same time, countries in the region all claim that they calculate capital requirements according to the Basel I methodology, and in terms of its international acceptance, the 1988 agreement stands as one of the most successful financial standards. A central question is whether Basel II will become as popular a standard as Basel I. In turn, this will depend on whether the countries in the region find the new standard appropriate and whether market or peer pressure encourages countries to adopt it.

Moreover, Basel II contains many alternatives, including the standardized approach and the more advanced internal rating-based (IRB) approaches. A secondary but important question is then, if Basel II is to be adopted, how should countries in the region implement it? To date the official sector has published little guidance, and there appears to be an urgent need for navigational aids (see Powell 2004). This chapter suggests that Latin America and the Caribbean largely falls between the standardized approach, which may yield little in linking regulatory capital to risk, and the IRB approaches, which appear complex. Hence, an intermediate approach is suggested, perhaps as a transition measure, the centralized rating-based (CRB) approach (see Powell 2004). Furthermore, although Basel II has been written with internationally active banks in mind, it pays surprisingly little attention to a set of important cross-border issues. Given the importance of foreign banks in Latin America and the Caribbean, their regulation by the home and host supervisors and the

coordination of their supervision are key issues facing banking regulators.²

RELEVANT ASPECTS FOR LATIN AMERICA AND THE CARIBBEAN

There are many general descriptions of Basel II, including those available on the www.bis.org website. This chapter focuses on the aspects of Basel II that are particularly relevant for Latin America and the Caribbean. The new accord consists of three pillars: Pillar 1, Regulatory Requirements; Pillar 2, Supervisory Review; and Pillar 3, Market Discipline. After some brief words on Pillars 2 and 3, the chapter focuses largely on Pillar 1.

Pillar 2 echoes much of what was discussed in Chapter 6 on banking regulation and supervision. It suffices to say that countries complying fully with the Basel Core Principles for Effective Banking Supervision (BCP) would mostly comply with Basel II, Pillar 2. Unfortunately, the region has not done well when it comes to BCP compliance, especially on issues regarding supervisory independence and powers, remedial actions, and analysis of other risks. The countries would then have to become much more fully compliant with the BCP to implement Basel II, Pillar 2.

Although it is entitled Market Discipline, Pillar 3 focuses more on the disclosure of a bank's capital requirements according to various breakdowns and the actual amount of bank capital. Given the pattern of BCP compliance, the results from studies reviewed in Chapter 6 regarding the ineffectiveness of many indicators of strong supervision in reducing the probability

¹ Also relevant is the recent decision of the United States to keep the vast majority of U.S. banks on Basel I, to make Basel II's advanced approaches obligatory for fewer than 20 top banks, and perhaps to allow only a handful of others to adopt Basel II—and if so only the advanced approaches.

² See the recent Basel Committee for Banking Supervision's high-level principles regarding cross-border issues, BIS (2003), available at www.bis.org.

of a banking crisis, and indicators of moral hazard that increase that probability, there is a need for measures to enhance private market discipline. The question perhaps is whether Pillar 3 goes far enough. Chapter 8, which focuses on market discipline, provides a discussion of the types of policies that might be employed in the region.

The main motivation for Pillar 1 is that capital requirements are not adequately linked to risk-taking under Basel I.³ This is particularly true in Latin America and the Caribbean, where in many countries risk is defined by accruals rather than by forward-looking criteria. Under such a definition, a loan is only perceived as risky when the loss is already realized and banks start to build up capital to buffer such a loss, when it is too late. One of the main problems is that this causes banks to behave procyclically, generating high volatility in credit markets. To avoid these types of pitfalls, Pillar I of Basel II proposes several alternatives to attaching capital requirements to asset risks.

In terms of underlying credit risk evaluation, the alternatives include the following: (i) the standardized simplified approach, (ii) the standardized approach, (iii) the foundation internal rating-based (F-IRB) approach, and (iv) the advanced internal rating-based (A-IRB) approach. Each general approach to underlying credit risk evaluation involves choices regarding credit risk mitigation techniques, securitization risk, and operations risk. Countries have to decide whether to stay with Basel I or, if they move to Basel II, which of the many alternatives on offer should be adopted. Table 16.1 organizes the many choices under Basel II in a four-by-four matrix.

Arguably, the most relevant options for developing countries are the standardized approach and the simplified standardized approach.⁴ The latter is the closest cousin to Basel I and may be understood as a collection of the simpler approaches within the standardized approach across the columns in Table 16.1. Under the simplified standardized approach, the only way in which bank capital requirements become more sensitive to risk is through the use of official export credit agency country ratings published on the Organisation for Economic Co-operation and Development website.⁵ Although this may also feed into bank ratings for use in interbank lending (under this approach banks would be rated one rating “bucket” or group worse than the sovereign), it would not yield capital requirements more sensitive to risk for nonbank corporate clients. Hence, it would result in a flat minimum capital charge for corporate borrowers of 8 percent in a similar vein to Basel I.

Moreover, because there is little risk differentia-

tion for corporate borrowers, there are also only minimal changes for credit risk mitigation techniques and securitization risk. In relation to securitization risk, standardized simplified approach banks can only invest; they cannot originate, which may be a significant restriction for a country wishing to develop local capital markets. A difference relative to Basel I, however, is the introduction of a specific capital charge for operational risk. As there is no reduction in capital charges for loans to higher-rated corporate borrowers, this will essentially be an add-on to capital required for credit risk. The simplified standardized approach is relatively easy to monitor, with the extra supervisory task related to operational risk resulting in higher overall capital requirements relative to Basel I, but its implementation would result in little gain in terms of relating bank capital requirements to risk.

The standardized approach also allows for the use of external ratings by private rating agencies to fix capital requirements. Table 16.2 illustrates how the system works. Thus, a corporate borrower with a rating from a recognized credit rating agency may have a lower capital charge than the current minimum of 8 percent if the rating is a reasonably good one (better than or equal to A-), or a higher charge (up to 12 percent) for poorer ratings. Interestingly, if the corporate borrower is non-rated, it will continue to have an 8 percent charge, so there may be a disincentive for a corporate borrower to be rated if the rating is likely to be a poor one.

The use of external ratings is a simple way to relate bank capital requirements to risk for rated corporate borrowers and is thus easy to monitor. The main drawback of this approach for Latin America and the Caribbean is the low penetration of rating agencies in the region. The majority of bank portfolios are currently unrated, and hence this approach may also do little to link bank capital to risk. An argument might be made that the increased use of external ratings should set in motion incentives for corporate borrowers to become rated. Here the danger is that, unless such ratings are carefully monitored by the private sector or otherwise, there may be a race to the bottom in terms of the quality of the ratings. And, as pointed out, there is little incentive for a corporate borrower to be rated if it knows that the rating may be a poor one.

³ Rojas-Suárez (2001) provides a detailed analysis of the weakness of Basel I in this aspect, especially in emerging market economies.

⁴ The simplified standardized approach is in effect a collection of the simplest (Pillar 1) alternatives of the standardized approach.

⁵ www.oecd.org.

TABLE 16.1 | ALTERNATIVES UNDER BASEL II

Approach	Basic credit risk measurement technique	Credit risk mitigation	Securitization risk	Operational risk
Simplified standardized	Export credit agencies (www.oecd.org, Trade Directorate, ECA page).	Simple: risk weight of collateral substitutes that of claim.	Banks can only invest (cannot offer enhancements or liquidity facilities). Risk weight=100 percent.	Basic indicator: capital = 15 percent gross income.
Standardized	Export credit agencies or credit rating agencies (S&P, Moody's, Fitch).	Simple: (as above). Comprehensive: exposure amount reduced subject to claim and collateral haircuts.	Standardized: uses export credit agency ratings (only investing banks can use below BB+).	Basic indicator or standardized approach where bank capital = weighted sum of gross income across activities.
Foundation internal rating-based	Banks' internal ratings for default probability, and the Basel II formula sets the capital requirement (loss given default 45 percent for senior and 75 percent for subordinate).	Comprehensive, then loss given default adjusted given reduction in exposure and capital requirement provided by Basel formula.	Investing banks may use bank ratings according to a standard scale. Originators may use supervisory formula.	More sophisticated banks will be expected to graduate to the advanced measurement approach where the capital requirement is given by the own risk measurement system.
Advanced internal rating-based	Banks set the internal rating (default probability), loss given default, exposure at default, and maturity. Capital requirement still given by Basel formula.	Own model determines loss given default and exposure at default, and capital requirement is given by formula.	As for foundation IRB.	As for foundation IRB.

Source: www.bis.org.

The standardized approach also includes a set of specific changes in the Capital Accord that in particular affects the capital requirements on mortgages, retail exposures, lending to the sovereign in local and foreign currency, and lending to other financial institutions. On the first three, the standardized approach introduces lower charges for credit risk. For example, the minimum capital charge on a residential mortgage will fall from 50 percent of 8 percent to 35 percent of 8 percent; that is, the risk weight is reduced from 50 percent to 35 percent. In relation to lending to the sovereign, there is now an explicit discussion that allows, as a "preferential treatment," a zero-risk weight (zero capital charge) for lending to a bank's own sovereign if that lending is funded and denominated in local currency.

It is understood that the local currency of Italy is the euro and that of Panama and Ecuador would be the dollar. However, if lending is in foreign currency, then the loan should have the relevant capital charge depending on the rating of the sovereign. If the preferential risk weight is applied to the sovereign, then there is also a reduction in the capital charge of lending to another bank relative to the capital charge that would otherwise result. In particular, if the loan has a maturity of fewer than 3 months and is lent and funded in local currency, then the rating of the bank can be increased by one rating bucket from the bank's actual rating. However, the rules on interbank lending are likely to lead to significantly higher charges than those in Basel I, which allowed a 20 percent risk weight if the loan was for fewer than 6 months.

TABLE 16.2 THE BASEL II STANDARDIZED APPROACH
(Percentage of benchmark capital requirement)

Characteristic	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	Unrated
Claims on sovereigns	0	20	50	100	150	100
Claims on banks option 1 (rating refers to sovereign)	20	50	100	100	150	100
Claims on banks option 1 (rating refers to bank)	20	50	50	100	150	50
Claims on banks option 1 (preferential treatment for short-term claims)	20	20	20	50	150	20
Claims on corporate clients	20	50	100 ^a		150 ^b	100

^a BBB+ to BB-.
^b Below BB-.

Source: www.bis.org.

These special rules are all subject to national discretion, and hence it is left as an open question whether each jurisdiction wishes to apply them to fix minimum capital requirements. In the case of Latin America and the Caribbean, it is doubtful that a reduction in capital charges is warranted on risk grounds for mortgages (given poor creditor rights and ineffective legal systems), retail credit (given the importance of systemic risk), or lending to the sovereign (given the experience reviewed in Chapter 6). On lending to other financial institutions, the case is perhaps more mixed. However, it is fair to point out that there has been a startling lack of empirical work in developing countries in attempting to estimate the appropriate relative risks of various types of loans.

The final two approaches are labeled F-IRB and A-IRB. The main difference relative to the standardized approach is that under these approaches, the banks rate their clients, and these internal ratings are used to set capital requirements. In fact, the bank must first develop a rating system with a specific minimum number of rating buckets. It must then map each rating bucket to a probability of default. Under the F-IRB, these default probabilities are then fed into a published formula and, together with a set of other parameters determined by the supervisor, a capital requirement is thus calculated. In the case of A-IRB, the bank determines some of the other parameters by the supervisor established under F-IRB. For example, under A-IRB, banks may determine the loss given default, the exposure at default, and the loan maturity.

For a bank with a portfolio of loans, the formula that is applied to each individual loan in turn ap-

proximates the so-called value at risk of the portfolio. The formula thus has embedded in it an estimate of the structure of correlations of default probabilities between the individual loans.⁶ The formula is discussed in Box 16.1. The value at risk is defined as the maximum loss subject to a particular probability. In other words, a 99.9 percent value at risk is the maximum loss that would be expected once in 1,000 repetitions. If banks' capital covered the 99.9 percent value at risk, and the horizon was 12 months, then the bank would be expected to use up its capital one year in a thousand years, or one bank in a thousand such banks would exhaust its capital.

There has been wide discussion regarding the technicalities of the IRB approach, and even regulators have appeared to disagree among themselves as well as in discussions with the private sector.⁷ A recently announced change that is especially relevant for Latin America and the Caribbean has to do with the relation between capital and provisions. Indeed, most economists would agree that the sum of bank provisions and capital should add to value at risk, and not just capital. Modern theory has it that provisions should reflect expected loss (the mean of the probability of loss distribution), and capital should reflect the difference between the expected loss and the value at risk (known as the unexpected loss). However, in the Basel II proposals,

⁶ The formula is an estimate of a single factor portfolio model of credit risk in which each individual exposure's risk is modeled along the lines of Merton's classic model of corporate default risk. See Merton (1974) and Gordy (1998) for details.

⁷ A wide selection of comments is available on www.bis.org.

BOX 16.1 | THE MATHEMATICS OF THE INTERNAL RATING-BASED APPROACH

The formula to calculate the capital requirement is a function of the probability of default (*PD*), the loss given default (*LGD*), the maturity of the loan (*M*), and the exposure at default (*EAD*). *N*(*X*) denotes the cumulative normal distribution function, and *G*(.) denotes the inverse cumulative normal distribution function for a standard normal variable. The formula is:

$$\text{Capital_Requirement}(K) = \text{LGD} * N[(1 - R)^{0.5} * G(PD) + (R/(1-R))^{0.5} * G(0.999)] * (1 - 1.5 * b(PD))^{-1} * (1 + M - 2.5) * b(PD)$$

where

$$\begin{aligned} \text{Maturity_Adjustment}(b) &= (0.08451 - 0.05898 * \log(PD))^2 \\ \text{Correlation}(R) &= 0.12 * (1 - \text{EXP}(-50 * PD)) / (1 - \text{EXP}(-50)) + \\ &0.24 * [1 - (1 - \text{EXP}(-50 * PD)) / (1 - \text{EXP}(-50))] \end{aligned}$$

The formula is for corporate, sovereign, and bank exposures, and the capital requirement is 99.9 percent of value at risk for 1 unit of exposure. As discussed in the text, the formula is an approximation

of the value at risk of a portfolio of correlated assets, where asset returns are driven by a single factor.

The risk-weighted assets (*RWA*) are *K* multiplied by *EAD* multiplied by 12.5 (=100/8), and the capital requirement is then 8 percent of the *RWA* as in the Basel I methodology.

$$\text{Risk_Weighted_Assets}(RWA) = K * 12.50 * EAD$$

For small and medium-size enterprises (where the reported sales of the consolidated group of which the firm is part are less than 50 million euros), there is an adjustment to the correlation, *R*, such that:

$$\begin{aligned} \text{Correlation}(R) &= 0.12 * (1 - \text{EXP}(-50 * PD)) / (1 - \text{EXP}(-50)) + \\ &0.24 * [1 - (1 - \text{EXP}(-50 * PD)) / (1 - \text{EXP}(-50))] - \\ &0.04 * (1 - (S - 5) / 45) \end{aligned}$$

where *S* denotes sales in millions of euros, and sales of less than 5 million euros are set equal to 5 million euros, allowing for the maximum allowable reduction in capital requirements.

the formula for capital is calibrated to cover the whole value at risk. This conservative position seems reasonable because there is no international standard as yet on provisions and hence no guarantees that a country's provisions actually reflect expected loss. However, in countries where provisions are equal to or exceed expected loss, there is a possibility of double counting. Indeed, in Latin America and the Caribbean provisions tend to be high. This may be related to the fact that regulators frequently have more freedom to set provisions than capital, which is frequently fixed by law. In the final version of Basel II, banks will be able to deduct appropriate provisions from value at risk to calculate the Basel II IRB capital charge, which will minimize problems of double counting.

However, there remains a significant issue for the region regarding the overall calibration of the IRB approach. To date it has been calibrated such that it approximates a 99.9 percent value at risk for a typical G10 corporate loan book. This calibration may not be appropriate for Latin America and the Caribbean. Balzarotti, Falkenheim, and Powell (2002) and Balzarotti, Castro, and Powell (2003), working with pre-crisis Argentine

data, suggest that recalibration may be required, and the second paper suggests a simple technique to do so. The tentative conclusion of Majnoni, Miller, and Powell (2004) on data from Argentina, Brazil, and Mexico also suggests that the value at risk of banks in the region may call for greater capital than the Basel formula. However, there is surely much more work to be done in estimating credit portfolio risk for banks in Latin America and the Caribbean.

The IRB approaches imply a dramatic change in bank risk management and supervisory tasks. Banks must develop their own rating methodology and a technique to map those rating buckets to default probabilities. The IRB documentation stipulates that banks must have a significant time-series history of internal ratings and their performance over time to "back test" the methodology to ensure that it is working effectively and that the stated defaults are good estimates of the actual outcomes. Although it might be argued that in developed countries this change in regulation brings regulation closer to the practice in (some) large and more sophisticated institutions, in developing countries banks lag behind in terms of their risk management so-

phistication and systems. It will require a huge effort on the part of most banks in Latin America and the Caribbean to comply with these recommendations, and a huge effort on the part of supervisors to monitor them effectively.

However, as Table 16.1 indicates, Basel II, Pillar 1, includes more than simply changes in the underlying credit risk assessment. Indeed, Basel II introduces several advances over Basel I in terms of credit risk mitigation techniques, securitization risks, and the new charge for operational risk. In terms of credit risk mitigation techniques, a simple approach uses the external credit ratings of securities or other instruments provided as collateral to reduce the capital charge of a standard loan. This is especially important for repo markets and other markets where rated securities are used as collateral. A more complex, comprehensive approach would take into consideration the type of security and its statistical price behavior, including its volatility, in finer calculations for the determination of the capital charge. In terms of securitization risk, Basel II also makes advances relative to Basel I for banks investing in securities and those issuing securities but retaining some risks on their balance sheets. These changes are important for countries that have significant capital markets or wish to develop them. Ensuring that banks have appropriate incentives to securitize assets on their balance sheets may be an important element in the development of capital markets in the typically bank-dominated financial systems of developing countries.

Finally, this is the first time that the Basel Committee has recommended a specific capital charge for the operational risk charge, which is an important element of bank risk. Previously, it was understood that some unspecified part of the overall 8 percent charge for credit risk covered operational risk. For the distribution of ratings found in a typical G10 country, and given the potential reductions in capital charges for mortgages and small and medium-size enterprises, the calibration of the standardized approach plus the addition of the operational risk charge should net out. In other words, the additional capital charge for operational risk should roughly equal the reduction in capital for credit risk given that most companies in a G10 country will have ratings that imply a reduced capital charge. However, for the case of a developing country with a much lower rating penetration and possibly a worse distribution of ratings (that is, more lower ratings), this will not be the case, and the standardized approach is likely to imply higher capital requirements.

The basic indicator approach to setting the opera-

tional risk capital charge is that it will be 15 percent of a bank's gross income. The standardized approach sets the charge equal to the sum of a bank's gross income across business lines, each multiplied by a different percentage. Banks adopting the IRB approaches are likely to have also developed their own operational risk models, and the final approach allows a supervisor to authorize an appropriate model for the bank to estimate its operational risk capital charge based on the bank's history of losses. It is likely that the basic indicator and the standardized approach to operational risk will be the most relevant for the region.

The quantitative impact study conducted by the Bank for International Settlements (BIS) appears to indicate high and variable operational risk capital requirements for banks from developing countries.⁸ One view is that banks in developing countries tend to have higher gross income due to lower scale and higher costs and risk than their G10 counterparts. A second view is that those banks did not respond well to the study questionnaire, especially to the definition of gross income. Again, the appropriate calibration of the capital requirement for operational risk is an area that has received scant attention to date in Latin America and the Caribbean, so there is considerable uncertainty as to whether the current calibration is appropriate.

IS BASEL II GOOD FOR LATIN AMERICA AND THE CARIBBEAN?

The Basel Committee, the IMF, and the World Bank have all suggested that developing countries will likely need more time to implement Basel II than the 2006 deadline established for developed economies. Moreover, the IMF and the World Bank have suggested that, in terms of their ongoing Financial Sector Assessment Program, implementation of Basel II will not be considered a requisite.⁹ Thus, it is an open question whether countries in the region should implement the new accord or whether they should continue to consolidate Basel I and improve BCP compliance with a view to possibly moving to Basel II at some date in the future. Given the large number of alternatives on offer, the

⁸ The Quantitative Impact Study 3 is available on www.bis.org.

⁹ One view is that many developing country supervisors will not wish to be seen as lagging behind this new "standard" and some country authorities may be concerned that the market may punish them for nonimplementation, even if the international financial institutions do not.

official sector has so far provided little guidance as to which of the many options countries should choose. In an attempt to fill in this void, Powell (2004) suggests five country characteristics that might assist countries in navigating the so-called sea of standards. These are the following:

1. The degree of compliance with Basel Core Principles (and Basel II, Pillar 2)
2. The penetration of rating agencies and the operation of the rating market in general
3. The current level of bank capital and the feasibility of increases in bank capital ratios
4. The depth or strength of desire to develop domestic capital markets
5. The availability of information and degree of sophistication of banks and/or the supervisor in assessing and monitoring loan loss provisioning.

Figure 16.1 shows how countries may wish to choose among the various alternatives based on these characteristics, and the following sections discuss them in more detail.

Compliance with the Basel Core Principles

The data reviewed in Chapter 6 on banking regulation and the IMF and World Bank's Financial Sector Assessment Program illustrate that many countries (especially developing countries) are far from fully compliant with the Basel Core Principles for Effective Banking Supervision. On average, developing countries lag behind their G10 counterparts (see World Bank 2002). Lack of compliance is of particular concern in the following areas: (i) effective consolidated supervision; (ii) supervisory independence, resources, and authority; and (iii) effective, prompt corrective action. If supervisors lack resources and the basics of effective banking supervision, *correcting this should be the first priority, and more complex rules on capital requirements (Basel II Pillar 1) may well be counterproductive*. Basel II also introduces a significant change in the level of consolidation required for banking supervision—from the bank itself to its holding company. The many countries that do not comply with more modest versions of consolidated supervision remain far from the spirit of the Basel II proposals.

However, full BCP compliance is too strict a precondition for moving to Basel II—after all, many G10 countries are not compliant with all the BCPs. In general, a country should be BCP compliant to the degree required to implement the appropriate alternative cho-

sen within the Basel II framework. For example, if a supervisor does not have the resources (including data, information, technical competence, staffing, and management) to consider whether the calibration of the Basel II IRB approach is appropriate for that country, or to monitor effectively how banks would apply the IRB methodology, then a simpler alternative should most certainly be adopted.

The Credit Rating Industry

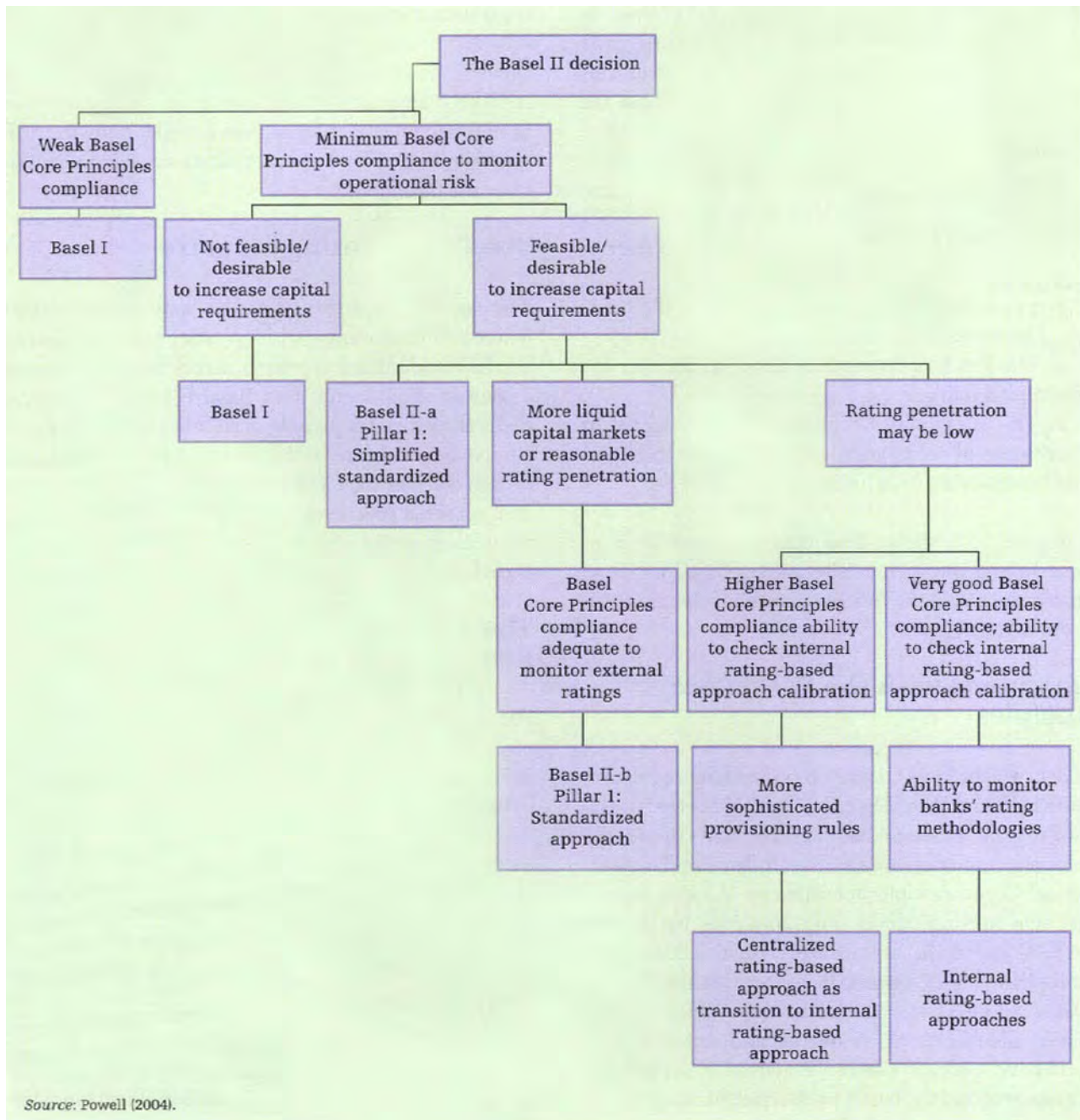
The second characteristic is the state of the ratings market.¹⁰ For a country with no ratings market to speak of, the standardized approach makes little sense. Such a country should stick with Basel I, adopt the simplified standardized approach, or, if it has reasonably high compliance with the BCPs, consider an alternative approach (such as the CRB discussed later in this chapter) as a potential precursor to Basel II's IRB. For a country with an active ratings market, the standardized approach makes more sense.

The Feasibility of Increasing Capital Requirements

For a country adopting the simplified standardized approach, or a country with a shallow market for ratings adopting the standardized approach, Basel II would likely imply a sharp increase in bank capital requirements. This would especially be the case if the risk weight on mortgages is not dropped to 35 percent, no extra benefit is given to retail exposure, and tighter rules are employed on lending to the sovereign. The source of the extra capital charge is operational risk. For a country adopting IRB or the standardized approach with a deep ratings market, the add-on for operational risk may be offset by lower capital charges for higher-rated claims. However, for a developing country adopting the standardized approach or standardized simplified approach, this is unlikely to be the case. An increase in capital requirements may not be bad, but a developing country considering adopting Basel II should consider carefully the current level of bank capital and the feasibility of increasing it.

¹⁰ Felaban (2003) and CLAAF (2001) discuss the problems of adopting Basel II in countries with underdeveloped credit rating agencies.

FIGURE 16.1 Basel II Decision Tree



Depth of Capital Markets

Basel II includes significant enhancements for the credit risk implications of securitization risk and credit risk mitigation techniques. A country with a fairly inactive ratings market may still benefit from the use of ratings in these areas. For example, if a country has an active market for securitized claims (which are growing in importance in some countries), then those claims will most likely be rated, and hence the Basel II standard-

ized approach regarding securitization risk might be gainfully adopted. If a country wishes to develop capital markets, then ensuring that banks have the right incentives to securitize claims is important. Basel II does a much better job here than Basel I.

A similar argument can be made for credit risk mitigation techniques. Basel II makes significant enhancements, so that if markets using securities as collateral are important—or a country wishes to develop them—moving to Basel II may be appropriate.

Assessing and Monitoring Loan Loss Provisioning

The final characteristic suggested is the sophistication of the supervisor and banks in terms of provisioning rules, monitoring, and control. The spirit of Basel II is to replace a set of ad hoc rules regarding capital requirements with a more robust estimate of credit risk reflecting value at risk. Value at risk may be decomposed into expected loss and unexpected loss subject to a statistical tolerance value. According to current theory, provisions should reflect expected loss, whereas capital should reflect unexpected loss (see Rojas-Suárez 2001). For an economist, the appropriate levels of provisioning and capital for credit risk both come from the same probability distribution—they simply reflect different statistics of that same distribution.

Considering this more general approach, a supervisor that has advanced in terms of more forward-looking provisioning rules has also advanced in terms of considering finer risk-based capital rules. In several countries in the region, supervisors have set up centralized databases to monitor the large debtors of the financial system and ensure that each lender knows the total debt outstanding of larger borrowers. In some cases these databases have been expanded to cover most loans in the financial system and they are used to monitor and control provisioning requirements. Miller (2003b) reviews the design and use of these databases (see Chapter 13). Although in most countries, such requirements are not forward looking but reflect arrears, if such a database is in place, the move to a more forward-looking system for provisioning and capital is certainly more feasible. For example, some countries have incorporated into these databases a bank rating that includes not only backward-looking variables, but also cash-flow type analyses.

The ability to assess and monitor loan loss provisioning reflects the sophistication of the supervisor and banks in terms of information on provisioning and loan losses. A supervisor that has regularly tracked loan losses across banks and developed monitoring tools—such as transition probability matrices and simple credit scoring techniques to monitor provisioning rules—is in a much better position to implement Basel II's IRB approach or the simpler CRB approach detailed below. Still, it is likely that the IRB or CRB will be appropriate only for the larger and more sophisticated banks. Indeed, for a country with a highly concentrated banking sector, where a few large and sophisticated banks control a large percentage of the sector, there are added benefits in moving to IRB or CRB at least for those banks.

Summing Up

The five characteristics may provide some navigational aid for countries regarding the Basel standards. Countries that do not comply with many of the basic Basel Core Principles should probably stay with Basel I. However, if it is desirable to increase bank capital requirements, then Basel II's simplified standardized approach should be considered if the extra burden of supervising operational risk is feasible. Countries that have only a shallow market for ratings will reap limited benefits from the standardized approach and should be advised that this will also lead to an increase in capital requirements. They should either stick with the simplified standardized approach or, if they have developed sufficient supervisory capacity, consider Basel II's IRB or the CRB. However, countries that have deeper capital markets or a strong desire to develop them should reconsider the standardized approach for its enhancements to securitization risk and credit risk mitigation techniques. Finally, countries that have made advances in terms of forward-looking provisioning rules and have the information and systems to control banks' provisioning practices are better placed to consider IRB or the simpler CRB approach.

THE CENTRALIZED RATING-BASED (CRB) APPROACH AS A TRANSITION TO BASEL II IRB

On the one hand, most countries in Latin America and the Caribbean have shallow markets for ratings such that the standardized approach yields little in terms of linking banks' capital with risk. On the other hand, the drawbacks of Basel I (and in the simplified standardized approach) are well known. The financial authorities want to increase the link between capital and risk, but many supervisors may feel that they are well away from being able to implement and effectively monitor the IRB approach, which gives greater autonomy to regulated institutions.

Due to these considerations, perhaps as a transitional tool, a methodology might be considered in which the supervisor dictates a rating scale and asks banks to rate borrowers according to that centralized scale.¹¹ Each rating would then correspond to a probability of default and, combined with other loan information, that rating would imply a capital charge. This system would have the drawback that each bank would

¹¹ This proposal is outlined in Powell (2004).

be forced to use the same scale, which may not be the particular scale most appropriate to the borrowers of that bank. For example, a bank specialized in a particular type of lending or sector would not necessarily wish to use the same scale as a more general bank or one specialized in another business. The rating scale could be devised to be appropriate for the larger institutions in order to minimize costs for countries with a more concentrated banking sector.¹²

The benefit of this approach is that it makes it possible for the supervisor to monitor and control banks' ratings and hence more effectively monitor and control their capital sufficiency in relation to risk. In particular, the supervisor would be able to easily monitor banks' average ratings and ratings for the same borrower, type of borrower, type of loan, and economic region. These kinds of comparisons, combined with simple procedures for spotting outliers and keeping track of the banks' ratings of their main borrowers, are extremely valuable tools for a bank regulator. Naturally, for countries that had already developed a bank rating system for the purposes of provisioning, this proposal would build on those systems.

This methodology is not truly an IRB approach because "internal" in IRB normally refers to the scale and not just the rating. However, the type of minimum criteria discussed in Basel II's IRB could serve as the minimum criteria for this system, for example, in terms of the number of rating buckets and the history of information. Moreover, Basel II's IRB curve could be used to calculate the capital charge based on the centralized ratings and a mapping of those ratings to default probabilities. The centralization of the rating scale provides another advantage because the supervisor can use actual loan data to check the mapping and calibration of the curve bank-by-bank and systemwide.

Furthermore, there is a simple way for a country to adopt a CRB approach and be fully compliant with Basel II at the same time. In particular, a country could adopt the standardized approach but still employ the CRB approach to calculate the total value at risk (after all, Basel II's IRB approach is currently calibrated to cover the whole value at risk). The difference between the total CRB calculated value at risk and the capital charge given by the standardized approach could be used as an estimate of the forward-looking provisioning requirement appropriate on a loan. Under the revisions to the Basel II proposals currently underway, it is understood this would then allow a country to be fully Basel II compliant and link banks' reserve policies closely to risk using the simpler CRB approach.

Finally, the CRB approach could be used as a pre-

cursor to IRB. Once the CRB approach was working, the supervisor could work with banks to approve their rating scales and rating methodology by using the basic CRB approach as a reference tool.

REGULATION OF FOREIGN BANKS IN LATIN AMERICA AND THE CARIBBEAN

As noted in Chapter 10, foreign banks have become particularly important for the region's local banking markets. Moreover, banking has become global and not just international.¹³ Table 16.3 summarizes BIS reporting on bank activity around the globe.¹⁴ The figures indicate that BIS reporting banks had total claims of US\$14.7 trillion, of which US\$1.4 trillion was lent to developing countries and US\$468 billion to Latin America and the Caribbean. This implies that BIS reporting banks lend more to the region than any other developing country region. Moreover, US\$468 billion is a significant fraction of the the US\$595 billion that makes up total domestic credit in Latin America and the Caribbean. Hence, the regulatory treatment of these banks is of critical importance to the region.

Of the US\$468 billion, US\$223 billion is international claims (cross-border claims or local lending in foreign currency), and US\$245 billion is local claims (local lending of entities consolidated in BIS reporting banks in local currency). Unfortunately, there is no breakdown of international claims into cross-border versus local lending in foreign currency. However, it is clear that the local lending component of foreign bank activity in developing countries, and in Latin America and the Caribbean in particular, has grown considerably. Hence, how the local subsidiaries and branches of BIS reporting banks are regulated is also of growing importance.

The international claims consist of US\$38 billion in lending to banks, US\$45 billion in lending to governments, and US\$137 billion in lending to non-bank private corporations. Although sovereign lending

¹² A slightly more complex version could have a centralized portfolio rating scale.

¹³ Internationalization refers to cross-border lending, whereas globalization refers to banks setting up brick and mortar operations in multiple countries. There was a marked increase in globalization in the 1990s.

¹⁴ BIS reporting banks are those incorporated in countries that have joined in the homogeneous reporting requirements stipulated by the BIS, which are generally countries in the G10 and one or two offshore centers. The figures refer to the end of September 2003.

TABLE 16.3 CLAIMS OF BANK FOR INTERNATIONAL SETTLEMENTS REPORTING BANKS, 2003
(Billions of U.S. dollars)

Country group	Total	International claims		Sovereign claims	Nonbank claims	Local claims
		Total	Bank			
All	14,659	10,240	4,567	1,555	4,008	4,419
Developed	12,085	8,473	4,071	1,360	2,948	3,612
Developing	1,459	884	249	169	456	575
Africa	180	144	44	24	76	36
Asia Pacific	447	282	103	52	121	165
Europe	363	235	64	47	122	128
Latin America	468	223	38	45	137	245
Offshore centers	1,031	799	212	8	574	232
Unallocated and other	85	85	35	17	31	0

Note: Values are BIS consolidated banking statistics.
Source: www.bis.org.

remains important in international claims, it is clear that international banks are significant in lending to the nonfinancial private sector. Assuming that the same proportion of local claims goes to the nonfinancial private sector as international claims (undoubtedly an underestimate), then total lending to the nonfinancial private sector would be about US\$290 billion compared with total domestic credit to the nonfinancial private sector of US\$334 billion.

Foreign banks play an important role in the region, and hence their regulation and behavior is of critical importance. A debate revolves around whether foreign banks provide stability in credit intermediation or induce instability (Martínez Pería, Powell, and Vladkova 2002; CLAAF 2002; Galindo, Micco, and Powell 2003). Furthermore, foreign banks raise a set of regulatory issues. This section considers two such issues: the mode of entry and Basel II implementation.

Foreign Bank Authorization and Mode of Entry

In general terms, foreign banks may enter local markets through a controlling or 100 percent stake in a subsidiary, or through a branch operation. Table 16.4 illustrates the approaches countries have taken, with the majority allowing both legal forms.

The selection of mode of entry involves trade-offs. For example, a branch would be first and foremost regulated within the context of the consolidated entity by the home regulator, and a common view is that a branch would tend to be backed to a greater degree by the main office of an international bank. A subsidiary would be

TABLE 16.4 APPROACHES FOR FOREIGN BANK ENTRY, SELECTED COUNTRIES IN LATIN AMERICA

Subsidiary or branch	Subsidiary	Branch
Argentina	Costa Rica	Guatemala
Aruba	Mexico	Paraguay
Bahamas		
Bolivia		
Brazil		
Chile		
Colombia		
Ecuador		
El Salvador		
Peru		
Venezuela		

Source: Cemla (2002).

regulated by the local regulator as a bank (as well as most likely by the home regulator under consolidated supervision) and hence would require capital within the host country and would come under the full monitoring of the local authorities. However, some countries, including Argentina, require that the branches of international banks also have local capital as if they were local banks. Although subsidiaries might be separate legal entities on paper, in practice, if the institution is run as an integrated global organization (rather than an essentially autonomous organization that responds to a majority shareholder), international courts might de-

cide its head offices have greater responsibilities (see del Negro and Kay 2002).

These issues are relevant when considering what would happen in the unlikely event of a major problem in a local institution or an international bank. In turn, this depends on the underlying bankruptcy code of a country. If the local (host) code is one of *single entity resolution* (such that an incorporated company is liquidated as one entity in its location of incorporation), then it would seem advisable that foreign banks enter as subsidiaries such that local liabilities are backed by local assets and capital. If the local bankruptcy code were one of *separate entity resolution*, then if an international bank failed, the host country would expect any local assets and local capital to be employed first to pay local liabilities; net assets would then be transferred to the international entity even if the local entity were a branch. Therefore, if branches provide greater protection against other shocks, domestic liability holders might be better protected if foreign banks entered as branches. However, if the country follows the practice of many developed countries in not asking for local capital for branches, then arguably a subsidiary might again be preferred. This said, however, it should also be noted that inconsistencies remain across bankruptcy regimes in different countries. Given the globalization of banks, the international financial system needs to resolve this concern.

Cross-Border Issues and Basel II

Basel II does not change the basic premises on which cross-border banking regulation has developed; currently local host regulators may apply a different regulatory standard than home supervisors and banks. Indeed, banks may well be asked to satisfy the local regulations at the level of subsidiary or branch and the regulations of the home supervisor on a consolidated basis internationally.¹⁵

As some countries will remain with Basel I, and Basel II contains several alternatives, dual regulatory treatment is likely to remain the normal state of affairs. And because an international bank may operate in many locations, the organization may have to comply with multiple regulatory regimes. At the same time, there is clearly an argument that calls for greater homogeneity of regulatory treatment and reduction in regulatory costs for both supervisors and banks.

The issue for a host regulator is that the risk of the subsidiary is not necessarily the same as the risk of the international bank. The risks might be treated in the same way if the international bank gave a compre-

hensive and transparent guarantee to the subsidiary, but this would not normally be the case. If there is no transparent and comprehensive guarantee, and if the subsidiary is large for the host country, then it is more likely that the local regulator will insist on rules that (i) ensure adequate protection to the local financial system and (ii) are designed so that the local regulator can understand, monitor, and enforce them.

At the same time, an overriding objective of Basel II should be to use the cross-border supervisory issues as a springboard for supervisory cooperation and, where possible, for knowledge transfer in order to enhance BCP compliance across the globe. Indeed, greater cooperation and knowledge transfer are likely to lead to faster regulatory homogeneity. For example, a simple idea is that whenever an onsite inspection is made of an international bank in a developing country, the host supervisor should have the option of sending its own staff to accompany the inspection. However, there are surely other modes of cooperation that could be developed and formalized to enhance knowledge transfer.

Many of the international banks operating in Latin America and the Caribbean are likely to adopt the IRB approach on a global consolidated basis. Perhaps of particular interest is the case where an international bank adopts IRB, and the local subsidiary, due to local regulations, must apply either Basel I or Basel II's standardized approach.

In the interests of regulatory efficiency, and especially if the subsidiary is not too large compared with the international bank, there must be a good case for the home supervisor to simply allow the international bank to use the standardized approach—at the very least for local claims in local currency—to calculate the consolidated capital charge. Although this would raise some issues of consolidation, it might reduce regulatory costs without much loss in terms of linking capital to risk.¹⁶

In some cases, particularly for the more sophisticated emerging economies, the host may allow an IRB

¹⁵ As noted by Felaban (2003), the fact that banks may be subject to different regulatory frameworks might generate undesirable effects due to regulatory arbitrage. If, in the same country, similar banks are subject to different regulations, it is likely that some distortions would arise. For example, there would be some risk that the best corporate debtors might move to the banks that adopt the IRB, given that under the new approach these would require lower capital.

¹⁶ An important aspect of the use of the standardized approach is the question of which ratings should be used. Local regulators will no doubt employ the local currency ratings for domestic corporations. In this proposal, the home supervisor should also accept these ratings, especially for local currency instruments.

approach for the subsidiaries of foreign banks. However, this does not necessarily mean that the regulatory treatment would be the same in the home and host countries. Indeed, it seems unlikely that the IRB curve would be calibrated correctly for Latin American and Caribbean risks (see Balzarotti, Castro, and Powell (2003) on Argentina). Several of the supervisory parameters for the foundation IRB approach may need to be reconsidered—such as loss given default and exposure at default. Basel II is understood to be a minimum; many countries have implemented Basel I with stricter requirements, so this type of recalibration for Basel II should be noncontroversial.

In the interests of regulatory efficiency, the home supervisor might use the regulatory capital estimate of the host supervisor in calculating the total capital charge of the bank. Pillar 3 (on market discipline) uses the concept of materiality to suggest the disclosures a bank should make regarding capital and capital requirements, by subsidiary and type of risk. If the home supervisor allows the bank to use the local regulations toward its home capital requirement, then under Pillar 3 and the local regulator's rules, the bank would have to disclose the requirement and its actual level of capital.

However, in the case where the home supervisor does not allow the bank to use its local capital requirement for the purposes of the home supervisor, if the bank is large for the host, then the bank should be asked to reveal the capital requirement of the subsidiary and the capital according to the rules of the home supervisor. In other words, in the case of a subsidiary in a developing country, what is material should be decided by the host regulator and not by the home regulator.

This argument is reinforced by the fact that most foreign banks have entered developing countries through the purchase of domestic institutions and not through start-ups. In turn this implies that valuable information has been lost. Typically the domestic institution would have been quoted on the local stock market and would have other fixed liabilities outstanding, such as bonds. Foreign purchase is typically associated with stock market delisting and, depending on the bank and its internal organization and funding strategy, local debt instruments may cease to be issued or be issued in much smaller quantities. This implies that, in terms of

the potential for risk assessment, the transparent market prices of equity and debt are replaced by a normally nontransparent guarantee from the parent.

This reasoning begs the question whether applying Pillar 3 to the subsidiary in each host country, regardless of whether it is material to the group, goes far enough. Indeed, a complementary strategy would be to ask the subsidiary to issue a specified quantity of subordinated debt locally. This would at least ensure that there was some market and hence price discovery on the risk of the subsidiary, and hence some market assessment of the value of the parent's guarantee.¹⁷

CONCLUSIONS

This chapter has presented a brief discussion of the new international agreement regarding minimum levels of bank capital, Basel II, and its relevance for Latin America and the Caribbean. More than 100 countries worldwide have adopted Basel I, and all countries in Latin America and the Caribbean claim to calculate bank capital requirements according to the Basel I methodology. It is therefore natural that serious consideration will be paid to these new proposals. Moreover, the proposals include many alternatives, so the question is not only whether to implement Basel II, but if so, how. At the same time, it is of interest that the IMF and World Bank have indicated that Basel II will not be required as part of the Financial Sector Assessment Program, and the United States has stated that it will keep the majority of U.S. banks on Basel I.

Simpler (standardized) approaches may not give much in terms of relating regulatory capital to risk, while the more advanced (internal rating-based) approaches look complex and difficult to monitor, especially considering the pattern of compliance with the Basel Core Principles as reviewed in Chapter 6. This chapter has suggested an intermediate approach, which, following Powell (2004), is labeled the centralized rating-based approach, as a potential transition measure. The chapter has discussed a set of cross-border issues that, surprisingly for an international agreement, remain largely unresolved.

¹⁷ See Calomiris and Powell (2002) for a review of Argentina's experimental subordinated debt regulation.

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Money Laundering: What Do We Know?

THE term *money laundering* has several interpretations, but there is broad agreement on the key objective of money laundering: to make possible the legitimate use of the proceeds of crime while maintaining, to the extent possible, the value of the acquired assets. Obviously, this cannot be done in the open; it takes place through means to conceal and disguise the actual origins of the assets. In short, *money laundering* describes the process by which “dirty” money is turned into “clean” money.¹

Although money laundering attracts the most attention when it is associated with trafficking in illicit narcotics, and more recently with terrorist activities, enterprising criminals of every sort—from stock cheaters to corporate embezzlers to commodity smugglers—launder money for two reasons. First, the money trail itself can become evidence against the perpetrators of the offence. Second, money per se can be the target of investigation and action (United Nations 2000). Money laundering may occur almost anywhere in the world, and has become a significant global problem in the past few years, with serious social and economic consequences.

HOW DOES MONEY LAUNDERING WORK?

The process of money laundering is usually divided in three stages: placement, layering, and integration.² According to Spremann (2001), the first and most difficult step involves *placing* illegal funds in both financial and nonfinancial systems. For example, in the case of the former, this might be achieved through creating a series of small cash deposits, each of which is below the minimum level for reporting under money laundering regulations, or by purchasing a series of money orders that are then collected and deposited into accounts in another location. Alternatively, the funds may be deposited in an account supported by an apparently legitimate business transaction. Funds might be placed in the nonfinancial system through real estate purchases

and related transactions. Whatever the method, the aim is to place the funds in the economy in a way that does not arouse suspicion and thus minimizes the risk of detection. Clearly, money launderers who are better at exploiting legitimate financial and nonfinancial transactions are less likely to be exposed (Hampton 1999).

Once funds are in the financial system, *layering* further conceals their origin or ownership, removing them from identification with the launderer and hence disguising any audit trail. This is achieved through a series of normal business transactions in which the funds may be converted into another form or placed in another location. One of the easiest methods involves electronic funds transfer in which funds can be swiftly moved through a variety of bank accounts. It has been pointed out that the development of online banking, smart cards, and electronic cash has created additional money laundering opportunities (Spremann 2001).

After completion of the first two phases, the funds can no longer be connected or traced back to the criminal activity from which they were originally generated. Thus, the funds can be *integrated* in the economic/financial system and appear to have been legally earned by the money launderer. Integration can involve any number of techniques, such as using shell companies to lend the proceeds back to the owner, or through over-invoicing or producing false invoices for cross-border trade.

¹ Money laundering is not a modern phenomenon. In his book *Lord of the Rim*, historian Sterling Seagrave describes how merchants in China concealed their wealth more than 3,000 years ago, moving cash outside the jurisdiction, trading at inflated prices, and converting money into movable assets to avoid banishment. Although the mechanisms and reasons have changed, all these techniques are still used by money launderers.

² However, a simple characterization of the money laundering process is difficult because some may consider a specific action as part of the integration step, and others might include it in the placement or layering step.

WHAT ARE THE ECONOMIC IMPLICATIONS?

Given the clandestine nature of money laundering, it is difficult to assess the size of its economic repercussions. Some estimates calculate that money laundering accounts for between 2 and 5 percent of global gross domestic product (GDP), which amounts to about 1.5 to 2.0 trillion dollars a year (IMF 2001a). Using a similar methodology for Latin America, a rough estimate of money laundering in the region appears to be somewhere between 2.5 and 6.3 percent of annual regional GDP. The methods typically employed to calculate the effects of money laundering on GDP include measuring the following:

- The discrepancy between income and expenditure measures of GDP reported in national accounts statistics, assuming that expenditures are reasonably well reported but that elements of income are concealed or underreported
- The discrepancy between the official and actual labor force, assuming that a decline in participation in the official market may reflect increasing activity in the underground economy
- The discrepancy between official GDP and total nominal GDP (transactions approach), assuming a constant relationship over time between the volume of transactions and official GDP (Fisher's quantity equation)
- The discrepancy between actual or excess demand for money and the demand for money that can be explained by conventional or normal factors (currency demand approach), assuming that cash is the primary means of payment used to settle transactions in the underground economy
- The discrepancy between actual and official GDP estimated on the basis of electricity consumption, assuming that economic activity and electricity consumption move together, with an electricity/GDP elasticity close to one.

It is widely acknowledged that money laundering has four main implications. The first is *economic distortion*. On average, money launderers do not care about profit generation from their investments. They are only interested in protecting their proceeds and disguising their illicit origin. Hence, money launderers may place funds in inefficient activities, and high opportunity costs may impair economic growth.³ Laundered funds may harm private sector development because the investment decisions do not follow common commercial

considerations, but just mingle the proceeds of illicit activity with legitimate funds. Money launderers usually offer products at prices below manufacturing cost, making it difficult for legitimate activities to compete, crowding out the private sector by criminal organizations, and resulting in negative macroeconomic effects in the long term. In addition, monetary instability can cause irremediable misallocation of resources by distorting asset and commodity prices. Furthermore, money laundering can cause inexplicable changes in money demand and greater volatility in international capital flows, interest rates, and exchange rates due to unanticipated cross-border asset transfers. In short, money laundering may result in instability, loss of control, and economic distortion, making it difficult for the authorities to implement economic policy (USAID 2003).

Second, money laundering has important implications for *financial integrity and reputation risk*. Liquidity problems and runs on banks may occur when large sums of laundered money arrive at a financial institution or suddenly disappear. Market factors do not drive these movements. In fact, money laundering activities may cause bank failures and financial crises. Money laundering may also tarnish the reputation of financial institutions. Once a bank's reputation is tarnished, the effect may go beyond the sector, affecting professionals, such as accountants and lawyers. This negative reputation may diminish licit opportunities and attract criminal activities, resulting in negative effects for economic development of the affected country in the global economy (Bartlett 2002; Bair 2003).

Third, money laundering affects *government resources*. Although money laundering and tax evasion are closely related, the processes differ. Tax evasion implies hiding the existence of legal earnings; money laundering does exactly the opposite. In fact, money launderers tend to overreport the earnings of their licit businesses in order to mix both legal and illegal profits, although doing so brings a higher tax burden. Money laundering makes tax collection more difficult for the government and diminishes revenue because related transactions frequently take place in the underground economy, which ultimately harms honest taxpayers.⁴ It also may divert public funds to the detriment of expenditure in other significant areas (United Nations 1998; James 2002).

Fourth, money laundering has grave *socioeconomic repercussions*. If left unabated, money laundering allows

³ However, it would not be unusual for some money launderers to have self-sustaining legitimate businesses.

⁴ However, there is an incentive for money launderers to pay taxes in order to legitimize their investments.

criminal activities to flourish, which leads to greater social ills and increases the implicit and explicit costs of enforcement. There is a clear-cut link between the scale of money laundering and the level of corruption at the domestic level (Castle 1999). Thus, an environment that facilitates money laundering helps to expand corruption, which allows economic activity to shift from formal to informal markets, and the socioeconomic undertow of money laundering may even lead to increased poverty. Given the evidence of increasing dirty money flows to markets with poorer financial systems, which are the most vulnerable to organized crime, the potential negative socioeconomic effects of money laundering are multiplied in emerging markets (Dowers and Palmreuther 2003; Drayton 2002).

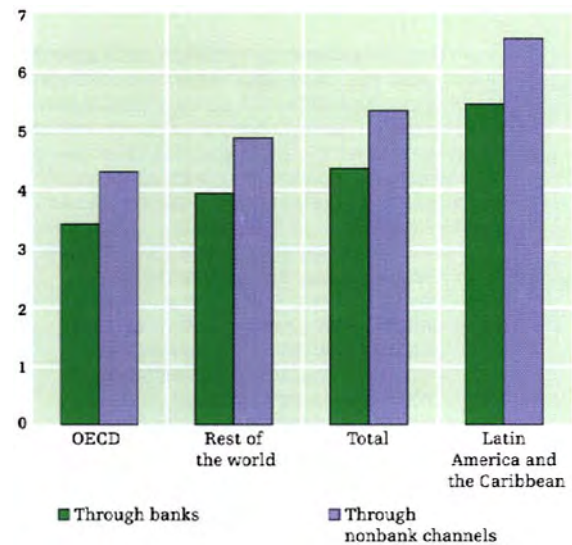
HOW BAD IS THE PROBLEM IN LATIN AMERICA?

If the problem of money laundering were greater in emerging markets than in industrial ones, then the relative position of Latin America and the Caribbean would be unfavorable compared with more economically advanced regions (Lambert 2001). Figure 17.1 provides a comparison of the pervasiveness of money laundering through bank and nonbank channels in Latin America and the Caribbean and other regions.⁵ The data show that money laundering is especially pervasive in Latin America. Although it is not as high as in Asia and Africa, it is considerably higher than in developed countries. On a scale from 0 to 10, Latin America scores 5.46 for bank channels and 6.57 for nonbank channels. Countries in the Organisation for Economic Co-operation and Development have the lowest degree of money laundering pervasiveness, as expected, with 3.41 for bank and 4.31 for nonbank channels.

It is particularly worrisome that among the top 10 countries with the greatest pervasiveness of money laundering via bank channels, six are in Latin America: Argentina (6.86), Colombia (6.57), Haiti (6.43), Paraguay (6.43), Nicaragua (6.29), and Bolivia (6).⁶ The best-rated country in the Latin American region is Chile (3.00), which ranks 67th of 80 countries, and is tied with the Netherlands (World Economic Forum 2003). As shown in Figure 17.2, Chile's score is not only much lower than the regional average, but it is also low compared with the second-best-placed Latin American countries in the sample: Uruguay and El Salvador, both of which score 4.29 and consequently rank 40th in the sample.⁷

A similar pattern emerges in the case of money

FIGURE 17.1 Pervasiveness of Money Laundering (Index, 0–10)



Source: World Economic Forum (2003).

laundering through nonbank channels, although the extent of money laundering through nonbank channels is worse. Of the top 10 countries in this category, seven are in Latin America: Colombia (8.0), Haiti (7.86), Argentina (7.29), Paraguay (7.29), Nicaragua (7.14), Guatemala (7.14), and Bolivia (7.0).⁸ Chile again performs best, with a score of 4.0, followed by Uruguay, with 5.14. Figure 17.3 presents the Latin American countries in the sample.

Although conventional wisdom says the prevalence of money laundering in Latin America may be linked to

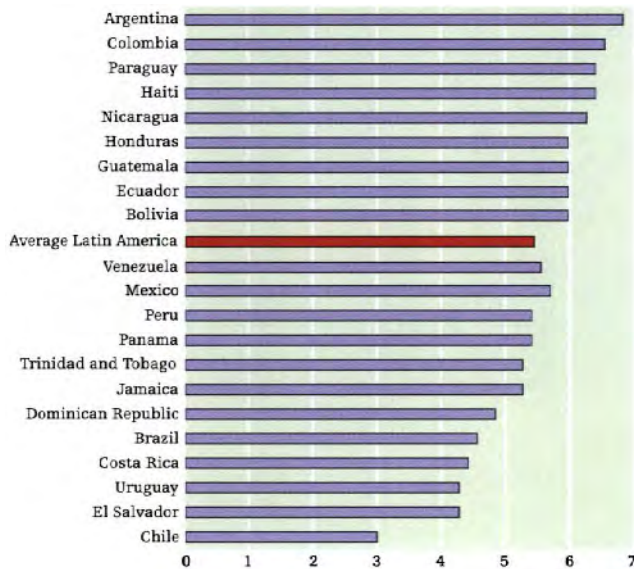
⁵ The World Economic Forum (2003) collected the money laundering data used in this chapter during 2002. It is based on a simple questionnaire that asked a large number of experts around the world to rate the money laundering conditions in their respective countries from 1 to 7, with 1 being the lowest possible score (extremely rare) and 7 the highest (pervasive). For the sake of clarity, the data have been rescaled from 0 to 10. Because the data are subjective, they may contain weaknesses and inaccuracies. However, on average, they should help depict a good picture of this issue in the region.

⁶ Furthermore, Ecuador, Guatemala, and Honduras (each with a score of 6.0) take the next three spots. According to these data, Argentina and Ukraine are tied with the greatest amount of money laundering in the sample.

⁷ The data do not capture recent advances in some countries. For example, El Salvador has made great strides, in particular in training judges.

⁸ Mexico (7.0) and Jamaica (7.0) are tied with Bolivia and thus are also among the top 10.

FIGURE 17.2 Pervasiveness of Money Laundering through Banks
(Index, 0–10)



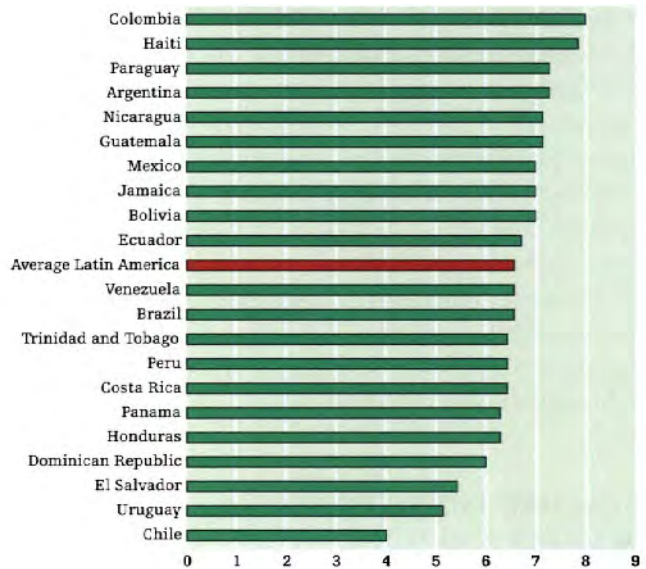
Source: World Economic Forum (2003).

trafficking drugs and financing terrorism (see Box 17.1), those are outcome variables that may reflect structural weaknesses in the region (Ehlers 1998; Ruehsen 2003; Camdessus 1998). In fact, proximity to the United States may be a crucial factor for extensive money laundering in some countries, most notably Mexico. However, the fact that Canada shares an even larger border with the United States brings some additional thoughts to the location argument. In addition, Canada is the most important commercial partner of the United States and shares its Anglo Saxon culture and language.⁹ In short, in order to better understand why money laundering appears to thrive in Latin America, the analysis needs to zero in on its most likely determinants.¹⁰

WHAT ARE THE DETERMINANTS OF MONEY LAUNDERING?

There is relatively little theoretical or empirical academic research on money laundering. What is available tends to focus on specific issues of money laundering processes and tends to provide little systematic analysis of its determinants. Yet, some available research sheds light on the possible determinants. Analysts have studied the relationships between money laundering and financial development and financial soundness. Some studies show interrelationships among money launder-

FIGURE 17.3 Pervasiveness of Money Laundering through Nonbank Channels
(Index, 0–10)



Source: World Economic Forum (2003).

ing, tax evasion, and offshore financial centers. Such studies seek to identify those aspects of anti-money laundering and anti-tax evasion policies that could be coordinated across various international regulatory bodies. For example, Alworth and Masciandaro (2004) consider the forms of enforcement in a framework of imperfect information characterized by a multiplicity of jurisdictions.

With respect to the importance of the underground economy, some studies provide a framework for analyzing the relationships among the underground sector, money laundering, and the legal economy, considering both the financial and real sides (Masciandaro 2000; Tanzi 1999; Levine 2003; Howlett 2001). By separating legal and underground sectors, these studies show the conditions under which a possible synergy can exist between general anti-crime policies and anti-money laundering regulations. These policies and regulations may have an expansive effect on legal income, depending on

⁹ The score for money laundering through banks is 2.71 in both the United States and Canada, and the score for money laundering through nonbank channels is 3.29 in both countries (World Economic Forum 2003).

¹⁰ An important caveat is that although money laundering may be more prevalent in developing countries than in developed countries, most of the laundered money ends up in the latter, not the former. In other words, the integration step takes place mostly in developed countries.

BOX 17.1 | MONEY LAUNDERING AND TERRORISM FINANCE

Interest in developing appropriate mechanisms to reduce the impact of money laundering on financial systems has been a major preoccupation of international financial market entities. The September 11, 2001, terrorist attack on the United States revealed a new dimension to the problem—money laundering to finance terrorism. The response has been an expansion of the efforts to put in place internationally accepted standards to counteract money laundering and hinder terrorism finance. The United Nations has identified links between terrorism, transnational organized crime, the international drug trade, and money laundering and called on governments to become parties to relevant international conventions, including the 1999 International Convention for the Suppression of the Financing of Terrorism (United Nations Office for Drug Control and Crime Prevention). The United Nations Security Council adopted Resolution 1373 (2001), through which it established the Counter-Terrorism Committee, which is mandated to monitor the implementation of the resolution urging governments to prevent and suppress the financing of terrorist acts. The Security Council also adopted Resolution 1377 (2001).

Meanwhile, the Financial Action Task Force (FATF), set up by the Group of Seven in 1989 in recognition of the vital importance of this issue, has agreed on eight recommendations, which, when combined with FATF's 40 Recommendations on Money Laundering, set out the basic framework for detecting, preventing, and suppressing the financing of terrorism and terrorist acts. The eight recommendations are the following:

- (i) To ratify and implement the UN instruments
- (ii) To criminalize the financing of terrorism and associated money laundering
- (iii) To freeze and confiscate terrorist assets
- (iv) To report suspicious transactions related to terrorism
- (v) To promote international cooperation
- (vi) To provide alternative channels for remittances
- (vii) To increase client identification measures in national and international transfers

- (viii) To ensure against the use of corporations—particularly nonprofit organizations—to finance terrorism.

Because of its location, emerging financial systems, and increasing opening up of markets, among other reasons, Latin America plays a crucial role in the international arena in combating money laundering, drug trafficking, and terrorism finance. Therefore, in its Plenary Meeting in Chile in 2001, the South American Financial Action Group (GAFISUD) agreed to join the efforts of the international community in the struggle against terrorism, its accomplices, and the financing of terrorist activities.¹ GAFISUD highlights the importance of the ratification and application of the United Nations instruments against terrorism and its financing, and the adoption of the resolutions of the Organization of American States for strengthening hemispheric cooperation in preventing, combating, and eradicating terrorism.

In order to promote the joint efforts of its members to combat the financing of terrorism, GAFISUD has adopted the Action Plan against the Financing of Terrorism, with the following aims:

- (i) To adopt and apply the Eight Special Recommendations of the International Financial Action Task Force against money laundering to finance terrorism
- (ii) To conduct an evaluation of countries to provide support in applying the new measures in international systems
- (iii) To disseminate guidelines and information for the financial sector on techniques and procedures used for terrorist financing
- (iv) To exchange experiences and knowledge among national experts and with other organizations involved in the struggle against money laundering in order to combine efforts.

¹ GAFISUD is the regional body equivalent to the Financial Action Task Force.

Source: United Nations (1999, 2003a); FATF (1999, 2001, 2002, 2003a, 2003b, 2003c, 2003d, 2003e); GAFISUD (2002); CFATF (1996, 1997, 1998); World Economic Forum (2003).

the effectiveness of the anti-money laundering regulations. Furthermore, distinguishing between the legal and criminal economy in the basic analytical framework introduces a trade-off between increasing quantitative national wealth and safeguarding the law. In short, such analyses emphasize the illegal or informal economy as a possible determinant of money laundering (Masciandaro 2000, 2002).

Some economic analyses of anti-money laundering regulations introduce a positive and normative analysis by placing particular emphasis on government regulations and institutional quality issues (Masciandaro 1999). For example, work on the link between income tax evasion and money laundering opportunities focuses on the extent to which a criminal can determine not only the amount of actual income to declare, but also the amount of undeclared income to launder. Such studies analyze the effects of laundering incentives on evasion and derive guidelines for the optimal design of a joint evasion/laundrying deterrence policy (Yaniv 1999).

In short, the available studies identify at least five crucial factors that help money laundering flourish. These are a weak banking system, an underdeveloped financial system, a large underground economy, poor quality of government institutions, and low corporate governance.¹¹

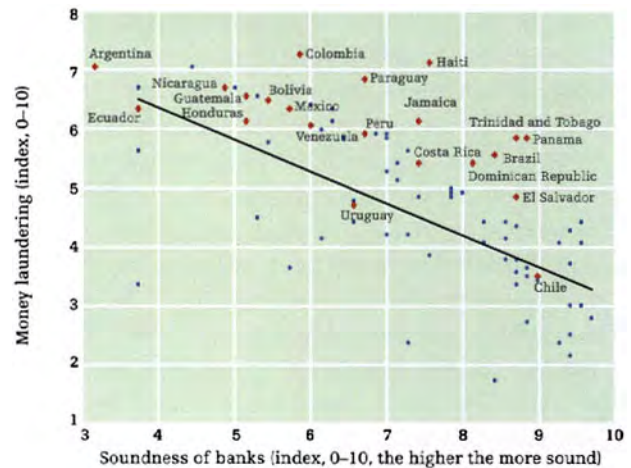
Soundness of the Banking System

Unsound banking systems are clearly exposed to money laundering activities. When the banking sector is not transparent, regulations are not well established, and government monitoring is lax, the opportunities to launder money flourish (Alworth and Masciandaro 2004). Figure 17.4 illustrates the powerful link between soundness of the financial system and money laundering. The figure plots the simple correlation between the two variables, controlling for the size of the economy.¹²

Development of Capital Markets

Typical instruments of money laundering are closely related to more developed capital and financial markets. This is the case of financial leasing, money transmission services, administered means of payment, guarantees, trading for own account or customer accounts in money market instruments, foreign exchange, financial futures and options, exchange and interest rate instruments, transferable securities, derivatives, money brokering, portfolio management, and several other instruments

FIGURE 17.4 Money Laundering and Soundness of Banks



Source: World Economic Forum (2003).

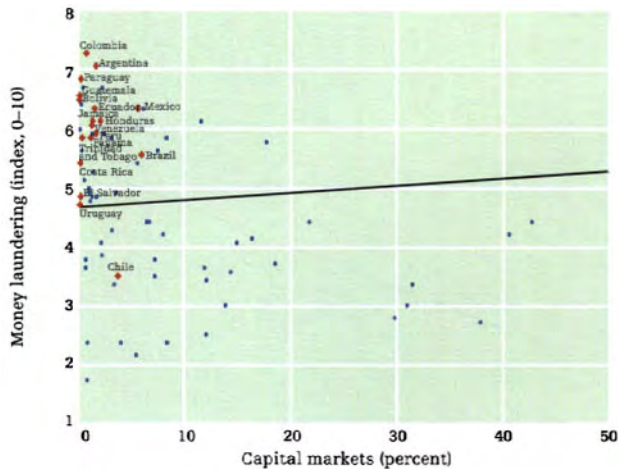
(Council of Europe 1990). At the institutional level, most institutions involved in money laundering tend to be commercial banks, trust companies, savings and loan associations, building and loan associations, savings banks, industrial banks, credit unions, other thrift institutions, establishments authorized to do business under domestic bank loans, brokers or dealers in securities, currency dealers or exchanges, and other institutions subject to supervision by the government, banks, or other financial institution authorities (OAS 1991).

In principle, it is not obvious whether the development of financial and capital markets would help or hinder money laundering. On the one hand, greater facility for using checks, credit cards, and other noncash instruments for effecting illegal financial transactions makes it more difficult to detect money laundering. Similarly, a greater degree of financial deregulation for legitimate transactions makes it more difficult to trace and neutralize criminal money. Progress toward the financial services supermarket in which all manner of financial services can be met in one integrated, multi-divisional institution makes it more difficult to detect money laundering.

¹¹ The United Nations (2003b) has produced a paper that documents the “Ten Fundamental Laws of Money Laundering.” The five determinants identified here summarize the United Nations’ 10 measures.

¹² The variable used to control for the size of the economy is the log of average GDP in the 1990s. Soundness of banks is measured from 0 to 10, with a higher score indicating a more sound banking system.

FIGURE 17.5 Money Laundering and Capital Markets



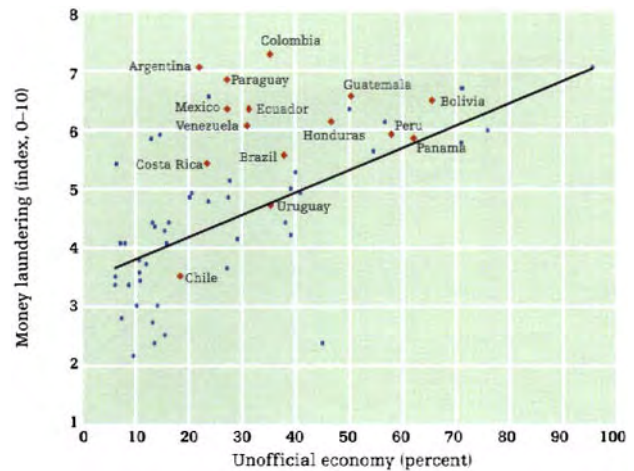
Source: World Economic Forum (2003); Levine (2003).

On the other hand, more developed capital and financial markets will also have better mechanisms of checks and balances that can help detect money laundering processes. Figure 17.5 resolves this ambivalence.¹³ In fact, there appears to be a slightly positive correlation between the development of capital markets and the pervasiveness of money laundering. Furthermore, the actual correlation appears to be positive and statistically significant, as shown in Appendix 17.1. Taking other factors into consideration, money laundering is more pervasive in more developed financial systems. These findings stress the importance of other issues that are typically linked to financial development—such as regulatory and monitoring measures—in the policy-making process. Thus, the challenge is how to develop a financial system that will benefit the economy without also encouraging money laundering processes.

Size of the Underground Economy

It is especially difficult to detect money laundering when illegal activities are deeply embedded in the legal economy with little institutional and functional separation. Similarly, it is difficult to separate legal from illegal transactions when small and independent firms or self-employed individuals dominate the business structure of production and distribution of nonfinancial goods and services. As Masciandaro (2000) implies, money laundering is potentially more likely to thrive in the context of an already diffuse sector that is difficult to pinpoint (Figure 17.6).

FIGURE 17.6 Money Laundering and Unofficial Economy



Source: World Economic Forum (2003); Friedman and others (2000).

Quality of Government Institutions

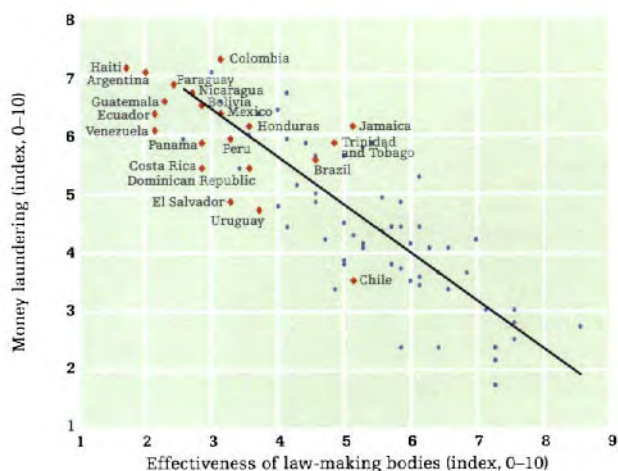
The quality of institutions in a country is fundamental for achieving sustained long-run growth rates. Efficient law-making bodies, good bureaucracies, transparent institutions, and low government corruption are all conducive to a better distribution of resources. The quality of institutions is intimately linked with the quality of the financial sector and, as such, is a particularly important channel by which policymakers may attempt to minimize money laundering. In general, money laundering can be more easily conducted in an environment with weak institutions. By contrast, it is likely that policymakers can better stall money laundering when they have not only a nominal effect, but also an actual effect on how institutions work (Figure 17.7).¹⁴

Quality of Corporate Governance

Recent scandals in several industrial countries and extensive privatization processes in many developing countries have helped policymakers to become much more aware of the importance of corporate governance. In the case of emerging markets, Chong and López-de-Silanes (2004) show that the absence of a good corpo-

¹³ The data on stock market total value traded to GDP are from Levine (2003). Other financial development variables tested show a similar pattern.

¹⁴ The variable “effectiveness of law-making bodies” is rated from 0 to 10, with a higher score denoting a more effective law-making body (World Economic Forum 2003).

FIGURE 17.7 Money Laundering and Effectiveness of Law-Making Bodies

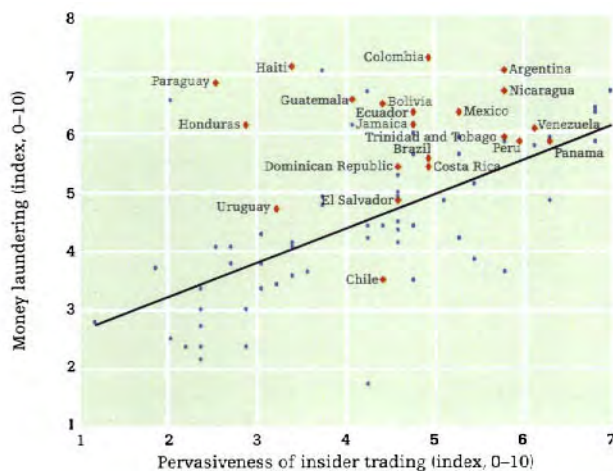
Source: World Economic Forum (2003).

rate governance framework increases the cost of capital, which prevents privatized firms from undertaking the investments needed to operate in a more competitive environment. Before privatization, corporations typically used government banks as a source of financing. Yet most privatization programs turn the banking sector over to private hands. If financing for privatized firms is expected to come from privatized banks, or from any other private credit institution, there is an urgent need to make sure that corporate governance issues are strengthened and streamlined (Chong and López-de-Silanes 2004).

Privatization without a commitment to improve shareholder rights in corporate and securities laws would probably lead to widespread abuse and appropriation of benefits, which would make money laundering much easier.¹⁵ Good corporate governance is essential for preventing expropriation by controlling investors and overall abuse. In fact, Figure 17.8 illustrates a negative relationship between money laundering and the quality of corporate governance, using the pervasiveness of insider trading as the corporate governance variable of interest.¹⁶ The figure shows the positive association between pervasive insider trading and pervasive money laundering.¹⁷

Summary

At least five critical factors are closely related to money laundering: soundness of the banking system, development of the financial sector, size of the informal sector, quality of institutions, and quality of corporate gover-

FIGURE 17.8 Money Laundering and Pervasiveness of Insider Trading

Source: World Economic Forum (2003).

nance. Some of these factors are clearly connected to others. For instance, it is difficult to have a sound banking system in an underdeveloped financial system. Similarly, the quality of government institutions is probably linked with the quality of corporate governance in a country because both depend on legislation. Furthermore, the underground economy may also be connected to the quality of institutions.

All in all, the findings appear to be quite suggestive. Thus, a systematic investigation of the possible determinants of money laundering processes would help in providing a unified framework for analysis. This could serve as a road map not only on what has been done, but also on what should be done in the fight against money laundering (U.S. Department of State 2001).¹⁸

¹⁵ In fact, the failure to institute appropriate securities laws and effective enforcement may be responsible for many of the scandals that are now blamed on privatization in several countries, particularly in some countries in Eastern Europe, where, according to data from World Economic Forum (2003), money laundering appears to be problematic.

¹⁶ Several other corporate governance indicators yield similar results (La Porta, López-de-Silanes, and Shleifer 2000).

¹⁷ The variable “pervasiveness of insider trading” is rated from 0 to 10, with a higher score denoting more pervasive insider trading (World Economic Forum 2003).

¹⁸ Although the variables may be related to each other, the formal econometric exercise presented in Appendix 17.1 shows that it is likely that each variable has an exclusive effect. Most of the variables yield statistically significant relationships with respect to money laundering processes. However, an unsolved issue has to do with endogeneity because the direction of causality is not clear. In addition, omitted variables may be a problem in that another uncovered determinant may be driving the observed results.

WHAT ARE THE EFFORTS AGAINST MONEY LAUNDERING?

The main body in the fight against money laundering is the Financial Action Task Force (FATF), which the Group of Seven set up at the 1989 Economic Summit in Paris. FATF helped establish the minimum standards in the 40 Recommendations on Money Laundering, which were drawn up in 1990 and revised in 1996 and 2003. The following points summarize the recommendations:

- Money laundering should be criminalized on the basis of the United Nations Convention on Transnational Organized Crime (The Palermo Convention), which requests countries to adopt measures similar to those suggested in these conventions.

- Financial institutions should apply these recommendations by recording the identity of their clients. They should not keep anonymous accounts. They should keep relevant records for at least five years in order to assist possible criminal investigations. This may also be applied in the case of casinos, real estate agents, dealers in precious metals and precious stones, lawyers, notaries, and other independent legal professionals.

- Financial institutions should pay special attention to unusual or suspicious transactions that rise above designated thresholds or involve high-profile individuals. Similarly, institutions should report suspicious transactions to authorities in the case of proceeds related to criminal activity or terrorism finance and develop compliance programs as necessary. In this context, special vigilance should be taken with respect to countries that do not adopt the FATF recommendations in full or in part.

- The authorities should ensure that institutions have adequate money laundering prevention programs, as well as international cooperation that can help provide mutual legal assistance. They should pay attention to measures to detect or monitor cross-border transportation of cash and bearer-negotiable instruments, taking into account the proper use of information and the freedom of movement of capital.

FATF has encouraged countries to create regional organizations based on adopting the 40 Recommendations on Money Laundering. In Latin America and the Caribbean, two groups of this kind have been established—the Caribbean Financial Action Group and the South American Financial Action Group (GAFISUD). Although FATF is the main international body and the 40 Recommendations are the most significant stan-

dards, FATF works with these and other international and regional initiatives that share the same objectives. The key logic behind these efforts is that the only way to combat money laundering is by means of global regulations, applying minimum standards in all jurisdictions. In general, international organizations involved in efforts to counter money laundering are concerned with financial and supervisory matters, legal enforcement, and criminal enforcement. Table 17.1 summarizes some key international efforts.

The International Monetary Fund (IMF), the World Bank, and the Inter-American Development Bank (IDB) have been helping countries in Latin America strengthen their financial supervision and regulation and thus are contributing to the prevention of financial sector crime and money laundering. In particular, there has been increasing work on strengthening financial supervision through the application of financial standards, including the preparation of the Report on the Observance of Standards and Codes, which overlaps with the financial and supervisory aspects of FATF's 40 Recommendations. In the region and elsewhere, multilateral organizations have contributed in the fight against financial sector abuse and money laundering in the following ways:

- Publicizing the need to put in place the necessary economic, financial, and legal systems to protect against money laundering

- Recognizing FATF's 40 Recommendations as a standard for anti-money laundering for the operational work of multilateral agencies

- Intensifying the focus on anti-money laundering elements in the assessment of supervisory standards and producing a detailed assessment that could be published with FATF

- Working closely with major international anti-money laundering groups

- Increasing the provision of technical assistance in this area.

In particular, anti-money laundering issues related to financial supervision and regulations are important to the IMF's core responsibilities because of its purpose to promote macroeconomic stability and growth. The World Bank, and to some extent the IDB, have helped countries identify and address structural and institutional weaknesses that may contribute to the lack of market integrity and the potential for financial abuse. There are three main areas in the fight against financial abuse: anti-corruption, governance, and public financial management; strengthening financial systems; and

TABLE 17.1 | INTERNATIONAL ANTI-MONEY LAUNDERING EFFORTS

Organization	Operational standard	Legally binding	Membership	Focus	Implementation
FATF ^a	FATF 40	No	Mostly developed countries	Prevention and enforcement	Mutual evaluation
	25 criteria	No	Mostly developed countries	Prevention and enforcement	One-way evaluation
Regional anti-money laundering task forces ^b	FATF 40 Kingston 19	No	Open/regional	Prevention and enforcement	Mutual evaluation
UN Global Program ^c	Treaties	Yes	Most countries	Enforcement	UN General Assembly
	Model laws, other sources	No		Prevention and enforcement	Surveillance and technical assistance
Council of Europe C.E. Committee	Treaty	Yes	Largely council membership	Enforcement	Council of Europe
	Various sources	No		Prevention and enforcement	Technical assistance
EU	Directive	Yes	EU	Mostly prevention	EU Commission
OAS CICAD	Model regulations and country treaties	Yes	OAS members	Prevention and enforcement	Technical assistance
Commonwealth	Model law	No	Commonwealth members	Prevention	Technical assistance
Egmont Group	Financial units	No	Diverse membership	Enforcement	Technical assistance and mutual assistance in investigations
INTERPOL FOPAC	Various sources	No	Most countries	Enforcement	Mutual assistance in investigations
IMF, World Bank, Inter-American Development Bank		No	Most countries	Prevention	Technical assistance

^a The 40 Recommendations on Money Laundering, Monitoring Member's Progress; Reporting Money Laundering Trends and Techniques; the NCCT List; Special Recommendations on Terrorism Financing; Methodology for AML / CFT Assessments.

^b Asia / Pacific Groups on money laundering; Caribbean Financial Action Task Force; Council on Europe - MONEYVAL; Eastern and Southern Africa Anti-Money Laundering Group; Financial Action Task Force on Money Laundering in South America.

^c The Vienna Convention; The Palermo Convention; International Convention for the Suppression of the Financing of Terrorism; Security Council Resolution 1373; Global Programme against Money Laundering; The Counter Terrorism Committee.

market infrastructure and integrity. The World Bank has recently focused its efforts on small developing economies in Latin America and elsewhere that may be especially susceptible to potential financial abuse (IMF and World Bank 2001b).

Two tools have shown dramatic potential in the efforts against money laundering. The first is the Financial Sector Assessment Program, which aims at

identifying financial vulnerabilities and development needs. In fact, it reduces the opportunities for financial crime through improved financial supervision and pre-conditions for effective regulation and supervision. The second tool is the Report on Observance of Standards and Codes. It represents a collaborative effort between the World Bank and the IMF in assessing progress in implementing selected international standards and thus

has helped to publicize the advances of countries acting to protect against financial abuse and money laundering. Both institutions as well as the IDB have begun close work with major international organizations and anti-money laundering groups through technical cooperation and further information diffusion.¹⁹

WHAT ARE SOME ADVANCES IN THE REGION?

Thanks to the joint efforts of governments, multilateral organizations, and other donors, several countries in Latin America have been able to proceed with some efforts in terms of financial legislation and regulation. In fact, many countries in the region have already set up comprehensive anti-money laundering systems that meet most, if not all, of FATF's 40 Recommendations. Examples are Argentina, Brazil, Bolivia, Chile, Colombia, Ecuador, Peru, Uruguay, and others. Countries have introduced money laundering offenses in their legislation to explicitly include the fight against illegal economic profits related not only to financial activity, but also to the commercial and service sectors. Several countries now typify money laundering crimes as autonomous, which means that there is no need to prove any preceding crime. Furthermore, in many countries in the region, money laundering constitutes a criminal offense, with a list of related preceding or underlying crimes that includes felonies. A notable feature is that money laundering is punishable even when the preceding underlying offense may have been perpetrated in a foreign country.

The money laundering prevention system is based on the participation of all ministries and public agencies that have responsibilities over this issue.²⁰ The system's instruments include confiscation or seizure, with the possibility of expropriating, attaching, or garnishing any products or instruments used or intended for use in activities related to money laundering. Currently, policymakers are considering additional policies, such as timeliness in adding fraud to the list of offenses preceding money laundering, legal changes required to guarantee that obligated subjects will be released of liability where they report suspicious transactions, issuance of suspicious activity guides to be distributed among subjects involved in the preventive system, and additional training.

In some countries in the region, the banking sector has been one of the areas most affected by money laundering. Policymakers have been considering some additional tools in their fight against this problem,

which has taken place mainly in offshore financial centers. For instance, some countries have or are seriously considering laws to guarantee an efficient anti-money laundering system that is consistent with international standards. The standards apply to all financial institutions, including money exchange offices and value markets. The system requires financial institutions and intermediaries to declare all cash transactions in domestic and foreign currency that are over a certain threshold, and provides for monitoring and detecting cross-border transport of currencies.

Similarly, many countries have set up financial investigation units in order to collect information and issue warnings from the prevention system. Their specialized, high-tech expertise has led to the development of useful tools for the prevention and control of money laundering. In some countries, authorities have been considering the use of a formula to allow definition of preceding offenses in relation to a category encompassing all serious crimes, the development of plans to strengthen trust and cooperation across sectors, improvement in the information mechanisms of the anti-money laundering system, consolidation of relevant operating bodies, and close monitoring of factors that increase the level of circulating cash. In many instances, these are regulatory units that have unlimited access to information from financial entities. In addition, they may share information with international organizations and may actively participate with other relevant institutions, such as the Egmont Group (see Table 17.1). Overall, these units are responsible for defining the policies against money laundering, together with the superintendents of banks.

Finally, many countries have adopted the 1988 Vienna Convention, the United Nations Convention for the Suppression of the Financing of Terrorism (United Nations 1999), and the Organization of American States convention on the same subject. Countries have also signed significant regional agreements with the United States, European countries, and countries in the region.

¹⁹ For instance, the IDB is working with the Organization of American States through the Comisión Interamericana para el Control del Abuso de Drogas, CICAD (Table 17.1).

²⁰ For example, Uruguay's agency includes the Deputy Secretary to the President of the Republic, who chairs the National Drug Board; the Money Laundering Training Center; the Ministry of Economy and Finance and the Uruguayan Central Bank, which controls the superintendent's offices that supervise all sectors; the Financial Analysis and Information Unit; the police under authority of the Ministry of Home Affairs; and the Coast Guard Service under the authority of the Ministry of Defense.

WHAT ARE THE CHALLENGES FOR LATIN AMERICA?

In the context of increased drug trafficking and terrorism finance, the concern about money laundering in the region is high. This concern is not unfounded because money laundering appears to be pervasive in the region, at roughly between 2.5 and 6.3 percent of regional GDP. Furthermore, since money laundering has increasingly become a significant global problem, with serious economic and social repercussions, international cooperation has become a critical necessity in the fight against it. National systems must be flexible enough to detect and stop the process, and to cooperate with other countries in implementing countermeasures.

The region has embarked on international cooperation as well as new or updated legislation to deal directly with the money laundering problem. Many countries in the region are complying with most if not all of FATF's 40 Recommendations; others are following the necessary steps to comply with them. However, despite the legislative advances in several Latin American countries, money laundering is an important threat, especially because some countries are only partially dealing with factors that are potentially linked to the problem. Structural weaknesses in the region contribute to thriving money laundering activities, and as long

as countries do not overcome such weaknesses, purely legislative measures may not suffice.

This chapter has proposed a straightforward but challenging road map. Countries in the region should consider working to achieve progress in five main areas in the fight against money laundering: a sound banking system, greater development of the financial system, improvement in the quality of institutions, good corporate governance, and reduction in the size of the underground economy.

Although specific legislative measures may aim to improve the soundness of the banking system or increase the development of the financial sector, they should also deal with the issue that law-giving is not equal to law-abiding. Monitoring and enforcement are crucial, and training judges and improving the judicial system in general appear extremely important. Rules can potentially make the banking system stronger, but underdeveloped institutions limit the potential for positive results. Similarly, some rules can develop the financial system in a way that increases the risk of atomizing firms and forcing entrepreneurs to move to the unofficial economy, with negative consequences for anti-money laundering efforts. Success in the fight against money laundering in the region and elsewhere requires a comprehensive view of the full picture and an understanding of the pervasiveness of the problem.

APPENDIX 17.1. ECONOMETRIC EVIDENCE OF THE DETERMINANTS OF MONEY LAUNDERING

Appendix Table 17.1 defines the terms used in the analysis. Appendix Table 17.2 presents the results from regressing average money laundering, which includes laundering through banks and nonbank channels, on soundness of banks, effectiveness of law-making bodies (a proxy for government institutions), pervasiveness of insider trading (a proxy for quality of corporate governance), stock market total value traded to GDP (a proxy for development of the financial system), and a measure of the underground economy. The explanatory variables also include the log of per capita GDP and the rate of growth of the economy.

The initial results for the determinants of money laundering in Appendix Table 17.2 are from ordinary least squares estimation. The results show that a sound banking system and effective government institutions

are negatively linked to the pervasiveness of money laundering. The relation is strongly significant for the effectiveness of law-making bodies, but insignificant for the soundness of banks. Money laundering is positively and significantly related to pervasiveness of insider trading and stock market total value traded to GDP. The size of the unofficial economy is positively linked, although it is statistically insignificant (this variable was included in a separate specification because the number of observations drops dramatically due to lack of data). The models were reestimated for the same specifications using an ordered probit method, taking into account the ordered response of the dependent variable. The main result is that countries with highly effective law-making bodies have a lower probability of money laundering. However, for countries with an elevated level of stock market total value traded to GDP, the probability of money laundering increases. For the sake of completeness, the models were also estimated using a Tobit method, which yielded similar results.

APPENDIX TABLE 17.1 | SOURCES AND DEFINITIONS

Variable	Definition	Source
Average money laundering	Simple average of pervasiveness of money laundering through banks and nonbank channels	World Economic Forum (2003)
Effectiveness of law-making bodies	Scale: 1 = very ineffective, 10 = very effective	World Economic Forum (2003)
GDP (ln)	Gross domestic product per capita in constant 1995 U.S. dollars in natural logarithm; average for 1975–91; data not available for Taiwan (China)	World Development Indicators (World Bank)
GDP growth	Annual percentage growth rate of GDP at market prices in constant local currency; average for 1975–91	World Development Indicators (World Bank)
Pervasiveness of insider trading	Scale: 1 = extremely rare, 10 = pervasive	World Economic Forum (2003)
Pervasiveness of money laundering through banks	Money laundering through the banking system; Scale: 1 = extremely rare, 10 = pervasive	World Economic Forum (2003)
Pervasiveness of money laundering through nonbank channels	Scale: 1 = extremely rare, 10 = pervasive	World Economic Forum (2003)
Soundness of banks	Scale: 1 = banks are insolvent and may require government bailout, 10 = banks are generally healthy with sound balance sheets	World Economic Forum (2003)
Stock market total value traded to GDP	Average for 1975–96; data not available for Dominican Republic, Estonia, Haiti, or Nicaragua	http://www.csom.umn.edu/WWWPages/FACULTY/RLevine/Index.html
Unofficial economy		Friedman and others (2000)

APPENDIX TABLE 17.2 DETERMINANTS OF MONEY LAUNDERING THROUGH BANKS AND NONBANK CHANNELS

Independent variable	Ordinary least squares ^a		Ordered probit ^a		Tobit ^b			
	1	2	3	4	5	6		
GDP (log)	-0.244 (0.09)***	-0.249 (0.13)*	-0.383 (0.14)***	-0.459 (0.24)*	-0.250 (0.08)***	-0.260 (0.11)**		
Soundness of banks	-0.094 (0.09)	-0.078 (0.11)	-0.162 (0.15)	-0.135 (0.20)	-0.092 (0.06)	-0.078 (0.07)		
Effectiveness of law-making bodies	-0.555 (0.08)***	-0.518 (0.09)***	-0.876 (0.13)***	-0.923 (0.15)***	-0.564 (0.07)***	-0.525 (0.08)***		
Pervasiveness of insider trading	0.175 (0.08)**	0.182 (0.08)**	0.193 (0.13)	0.277 (0.15)*	0.170 (0.08)**	0.185 (0.08)**		
Stock market total value traded to GDP	1.219 (0.47)**	1.101 (0.42)**	1.899 (0.75)**	1.914 (0.74)***	1.267 (0.64)*	1.161 (0.60)*		
Unofficial economy		0.003 (0.01)		0.005 (0.01)		0.003 (0.01)		
GDP growth (percent)	-0.001 (0.01)	-0.007 (0.02)	0.003 (0.02)	-0.005 (0.03)	-0.001 (0.02)	-0.006 (0.02)		
Constant	9.344 (0.98)***	9.038 (1.36)***			9.444 (0.92)***	9.155 (1.18)***		
Observations	73	58	Observations	73	58	Observations	73	58
R ²	0.79	0.83	Pseudo R ²	0.20	0.22	Pseudo R ²	0.44	0.50
F	89.05	79.38	Wald X ²	133.58	91.11	LR X ²	111.81	100.36
Prob > F	0	0	Prob > X ²	0	0	Prob > X ²	0	0
			Log pseudo-likelihood	-213.96	-163.33	Log pseudo-likelihood	-72.20	-50.94

* Significant at 10 percent.
 ** Significant at 5 percent.
 *** Significant at 1 percent.
^a Robust standard errors are in parentheses.
^b Standard errors are in parentheses.

Note: The dependent variable is average money laundering (see Appendix Table 17.1).
 Source: IDB calculations.

Appendix Tables 17.3 and 17.4 present the results from reestimating the same empirical specifications separately for the effects of money laundering through banks (Appendix Table 17.3) and money laundering through nonbank channels (Appendix Table 17.4). The most important difference is related to the soundness

of banks; as expected, in most of the regressions, this variable appears to be statistically significant for money laundering through banks, but insignificant for money laundering through nonbank channels. This may explain why in Appendix Table 17.2, which uses the average of both, this variable is not statistically significant.

APPENDIX TABLE 17.3 DETERMINANTS OF MONEY LAUNDERING THROUGH BANKS

Independent variable	Ordinary least squares ^a		Ordered probit ^a		Tobit ^b			
	1	2	3	4	5	6		
GDP (log)	-0.191 (0.08)**	-0.183 (0.13)	-0.293 (0.14)**	-0.341 (0.25)	-0.191 (0.08)**	-0.184 (0.11)*		
Soundness of banks	-0.165 (0.09)*	-0.142 (0.11)	-0.275 (0.15)*	-0.258 (0.19)	-0.171 (0.06)***	-0.155 (0.07)**		
Effectiveness of law-making bodies	-0.508 (0.07)***	-0.473 (0.09)***	-0.847 (0.13)***	-0.844 (0.16)***	-0.524 (0.07)***	-0.478 (0.08)***		
Pervasiveness of insider trading	0.139 (0.08)*	0.137 (0.09)	0.237 (0.13)*	0.314 (0.14)**	0.140 (0.08)*	0.145 (0.08)*		
Stock market total value traded to GDP	1.391 (0.50)***	1.320 (0.50)**	2.361 (0.83)***	2.365 (0.87)***	1.499 (0.63)**	1.368 (0.61)**		
Unofficial economy		0.006 (0.01)		0.008 (0.01)		0.005 (0.01)		
GDP growth (percent)	0.017 (0.02)	0.005 (0.02)	0.032 (0.02)	0.016 (0.03)	0.017 (0.02)	0.007 (0.02)		
Constant	8.805 (0.91)***	8.327 (1.37)***			8.915 (0.91)***	8.423 (1.19)***		
Observations	73	58	Observations	73	58	Observations	73	58
R ²	0.78	0.81	Pseudo R ²	0.22	0.25	Pseudo R ²	0.44	0.48
F	64.37	56.33	Wald X ²	116.3	84.04	LR X ²	109.98	96.01
Prob > F	0	0	Prob > X ²	0	0	Prob > X ²	0	0
			Log pseudo-likelihood	-189.29	-139.86	Log pseudo-likelihood	-70.38	-51.32

* Significant at 10 percent.
** Significant at 5 percent.
*** Significant at 1 percent.
^a Robust standard errors are in parentheses.
^b Standard errors are in parentheses.

Note: The dependent variable is average money laundering (see Appendix Table 17.1).
Source: IDB calculations.

APPENDIX TABLE 17.4 DETERMINANTS OF MONEY LAUNDERING THROUGH NONBANK CHANNELS

Independent variable	Ordinary least squares ^a		Ordered probit ^a		Tobit ^b			
	1	2	3	4	5	6		
GDP (log)	-0.297 (0.10)***	-0.3149 (0.13)**	-0.398 (0.14)***	-0.480 (0.21)**	-0.303 (0.09)***	-0.339 (0.13)***		
Soundness of banks	-0.024 (0.09)	-0.0138 (0.11)	-0.069 (0.13)	-0.085 (0.19)	-0.022 (0.07)	-0.009 (0.08)		
Effectiveness of law-making bodies	-0.601 (0.10)***	-0.5624 (0.10)***	-0.830 (0.13)***	-0.879 (0.15)***	-0.610 (0.08)***	-0.592 (0.10)***		
Pervasiveness of insider trading	0.210 (0.09)**	0.2265 (0.10)**	0.201 (0.14)	0.275 (0.15)*	0.205 (0.09)**	0.245 (0.10)**		
Stock market total value traded to GDP	1.047 (0.53)*	0.8831 (0.44)**	1.510 (0.64)**	1.552 (0.66)**	1.098 (0.73)	1.113 (0.71)		
Unofficial economy		0.0006 (0.01)		-0.001 (0.01)		-0.001 (0.01)		
GDP growth (percent)	-0.021 (0.01)	-0.0217 (0.02)	-0.020 (0.02)	-0.024 (0.02)	-0.020 (0.02)	-0.019 (0.02)		
Constant	9.8830 (1.13)***	9.7483 (1.50)***			9.989 (1.05)***	9.973 (1.39)***		
Observations	73	58	Observations	73	58	Observations	73	58
R ²	0.76	0.81	Pseudo R ²	0.20	0.22	Pseudo R ²	0.38	0.42
F	83.85	66.95	Wald X ²	144.53	99.13	LR X ²	103.64	90.55
Prob > F	0	0	Prob > X ²	00		Prob > X ²	0	0
			Log pseudo-likelihood	-193.48	-146.89	Log pseudo-likelihood	-81.73	-60.39

* Significant at 10 percent.
** Significant at 5 percent.
*** Significant at 1 percent.
^a Robust standard errors are in parentheses.
^b Standard errors are in parentheses.

Note: The dependent variable is average money laundering (see Appendix Table 17.1).
Source: IDB calculations.

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ECONOMIC DEVELOPMENT

This is a valuable work on a subject of great interest to Latin America: development of the financial system. A strong, secure financial system not only prevents costly crises, but also plays a central role in promoting sustained growth. This book focuses on the causes of banking crises in the region and proposes ways to solve them. It also examines banking performance in the 1990s, changes in the banking structure, and the challenges of developing safe, competitive banking systems. Anyone interested in the development of more crisis-resistant financial systems that can contribute to growth has a lot to learn from this important book. It is a remarkable contribution by the IDB.

Vittorio Corbo
President, Central Bank of Chile

This report constitutes a remarkable achievement. It provides a lucid and timely discussion of key issues in banking credit in Latin America by appropriately placing regional developments in the international context. Relevant questions are addressed through state-of-the-art empirical and theoretical analysis, and presented in a most accessible and readable way. The discussion is as rigorous as it is balanced, always well grounded on a wealth of evidence, and policy recommendations are sound and practical. Issues in banking system stability are revisited with fresh eyes, particularly with respect to the links between sudden stops in capital inflows, financial dollarization, and real exchange rate fluctuations. But the analysis goes well beyond that, providing substantial new evidence of key issues in banking structure and credit access for small and medium enterprises. This type of publication is long overdue.

Augusto de la Torre
*Senior Regional Financial Sector Advisor,
World Bank*

This important study by the IDB focuses on exactly the right issue: why financial systems in the Latin American region are so volatile and unable to allocate credit to its most productive uses. Getting the financial and banking system to work well is a key to development in the region, and this study provides a highly useful framework for thinking about how this can be done.

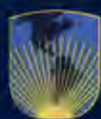
Frederic Mishkin
*Alfred Lerner Professor of Banking and Financial
Institutions, Columbia University*

An excellent study of the banking sector in Latin America, *Unlocking Credit* offers important lessons for policymakers interested in reform. Although the report takes a comprehensive look at all the issues, it is far more than a survey. It is written in accessible language, has new and interesting facts, and manages to bring the diverse elements of the analysis together into a broad, compelling message. This book is a must read for anyone interested in financial sector reform or Latin America.

Raghuram Rajan
*Economic Counselor and Director of the Research
Department, International Monetary Fund*

I commend the economics research team at the Inter-American Development Bank for addressing such an important topic for economic development. Open, competitive and well-supervised banking systems are essential to sustained economic growth. Many countries have experienced banking crises over the years, involving substantial economic cost and disruption. Pursuit of soundness in the banking sector involves the good will and expertise of many players in the private and public sectors, and it requires full analytical support as provided in this book.

John B. Taylor
*Under Secretary for International Affairs
U.S. Department of the Treasury*



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