

BANKING, FINANCIAL INTEGRATION, AND INTERNATIONAL CRISES: AN OVERVIEW

Leonardo Hernández

International Monetary Fund

Klaus Schmidt-Hebbel

Central Bank of Chile

The devaluation of the Thai baht in July 1997 triggered a major international financial crisis in East Asia, similar in many ways to the Latin American debt crisis of the early 1980s. The baht's devaluation led to a series of sharp devaluations in several other Asian countries, in particular Indonesia, Korea, Malaysia, and the Philippines. The Russian debt moratorium and the Long Term Capital Management crisis in 1998, and the devaluation of the Brazilian real in early 1999, sent additional shock waves throughout the world's emerging markets. In each of these episodes, strong market pressures were observed in currency and debt markets. Although most emerging market economies faced contagion effects, the weakest countries—those with fragile domestic banks, large fiscal deficits and external debts, severe currency and maturity mismatches, poor macroeconomic policies, and more rigid foreign exchange regimes—were most affected by the loss of investor confidence. These countries suffered some combination of lack of access to international liquidity, currency devaluation, asset price collapse, bank failures, recession, and large-scale bankruptcies and unemployment.

After the storm, however, relative calm returned to international financial markets in 1999, and East Asia started to recover vigorously. During 2000-01, major new crises were avoided in Ecuador,

At the time of writing, Leonardo Hernández was affiliated with the Central Bank of Chile.

The interpretations and conclusions expressed in this chapter are entirely those of the authors and do not necessarily represent the views of the International Monetary Fund or the Central Bank of Chile.

Banking, Financial Integration, and International Crises, edited by Leonardo Hernández and Klaus Schmidt-Hebbel, Santiago, Chile. ©2002 Central Bank of Chile.

Argentina, and Turkey only by last-minute massive provision of emergency liquidity by the multilateral financial institutions.

The Asian crisis, together with its aftershocks, has changed our understanding of how international financial markets operate. It has shed some light on the policies that countries should adopt to better face adverse shocks and contagion effects, and on the measures that should be promoted to reshape the international financial architecture so as to reduce contagion. Much new theoretical, empirical, and policy research has had the recent international financial turmoil as its focus. Among the major research issues are the market and incentive structures of banks and their supervision and regulation; the interplay of banks, foreign creditors, nonfinancial firms, and the government when moral hazard is widespread; the interrelationships among institutions, financial development, and growth; the macroeconomic aspects of overlending and overborrowing, and of high volatility in asset prices and exchange rates; the optimal degree and pace of financial integration into world capital markets when contagion is a threat; and new policies to reduce the likelihood of losses of confidence in domestic and international financial markets.

This book seeks to contribute to the literature by publishing new and relevant research on banking, financial integration, and international crises, providing answers to old and new questions in the light of the recent experience of international financial turmoil. Most of the papers published in this volume are substantially revised versions of papers presented at the Second Annual Conference of the Central Bank of Chile on "Financial Integration, Banking Systems, and Macroeconomic Stability," held in Santiago in September 1998.

This overview reviews the issues addressed in the various papers. The first section analyzes new research on the relationships among institutions, financial development, growth, and the likelihood of banking crises. Section 2 reviews issues in the banking sector, and in particular some new findings regarding bank regulation and supervision and the behavior of bank market participants. The interface between macroeconomic and financial variables during booms and busts is taken up in section 3, with a focus on credit booms, asset price bubbles and busts, and the behavior of exchange rates after financial crises. New findings on banking internationalization, overall financial integration, the elements of international financial crises, capital controls to stem inflows, and components of an international safety net are reviewed in section 4. The overview concludes and identifies some lessons for policy in section 5.

1. INSTITUTIONS, FINANCIAL DEVELOPMENT, GROWTH, AND BANKING CRISES

Legal and political institutions are crucial for financial development, and financial development in turn is important for rapid economic growth. Political conditions also affect the likelihood of banking crises. New research adds significantly to the stock of knowledge on these relationships.

1.1 Determinants of Financial Development and Growth

The legal systems of emerging market countries are of differing national origins, and these tend to result in different types of laws, regulations, and legal enforcement mechanisms. Recent research shows that the development and efficiency of a country's financial market depend ultimately on what kind of institutional and legal framework prevails in the country (Laporta and others, 1998). Financial markets develop best where there is protection of creditor rights, compliance with the law, an effective and efficient judiciary system, stringent disclosure requirements on firms, compliance with international accounting standards, a multiplicity of entities involved in the political process, and relatively little government corruption.

It has also been observed for years that financial development and economic growth are highly correlated. However, it was not until recently that causality could be established between these two forces. King and Levine (1993) and Levine and Zervos (1998), among others, show that the degree of financial development helps explain long-run growth (for a survey see Levine, 1997). A more developed financial sector intermediates funds more efficiently, promotes technological innovation, diversifies risks, and exerts corporate governance more effectively, ultimately leading to more capital accumulation in more profitable and less risky investment projects.

The paper in this volume by Ross Levine, Norman Loayza, and Thorsten Beck is an important complement to these findings. The authors show that countries whose laws give a high priority to secured creditors, whose legal systems rigorously enforce contracts, and whose accounting standards produce high-quality financial statements tend to have better financial intermediaries. They also review the earlier findings of King and Levine. Using a larger sample of

countries and more advanced econometric techniques, they find that a more developed and efficient financial system allows countries to achieve faster growth. And they conclude that this effect is large. According to their estimates, an economy with a level of financial intermediation reflected by a private credit ratio to GDP of 18 percent on average during 1960-95 would have experienced annual growth of GDP that was 1 percentage point faster than an economy with a level of private credit of only 12 percent of GDP.

1.2 Political Institutions and Banking Crises

A large number of financial crises—most of them banking crises—have hit both developing and industrial countries during the last quarter century, from Argentina and Mexico to Korea and Thailand, and from India and Russia to Japan and the United States. These crises have spawned much research attempting to document their characteristics and explain their causes and consequences.¹ A number of factors—foreign overborrowing by banks, excessive private sector credit growth, adverse terms-of-trade shocks, inflation, large fiscal deficits, high interest rates, low income levels and growth rates—have been found to be significantly associated with, or to contribute to, the likelihood of banking crises. Weak institutions and ineffective regulations are typically found to be the factors underpinning such developments as excessive credit growth and skyrocketing interest rates. Inadequate banking regulation and supervision, rapid financial liberalization in the absence of sound regulation and supervision, explicit but underfunded deposit insurance, implicit government bailout guarantees to bank depositors and owners, the presence of large state banks, and a lack of bank competition contribute to inefficient management and moral hazard in banking, and have indeed been associated with subsequent financial crises.

Philip Keefer's paper in this volume extends previous research on this topic by focusing on political conditions that contribute to the likelihood of systemic bank failure. His cross-country findings show that the extent of government checks and balances—measured by the extent to which the executive branch of government is constrained by party fractionalization—affects the probability with which banking

1. See Caprio (1998), Caprio and Klingebiel (1997), Demirgüç-Kunt and Detragiache (1997, 1998), Goldstein and Turner (1996), and Radelet and Sachs (1998), among others.

crises occur in two ways. First, high fractionalization may directly influence the magnitude and probability of a crisis through its effect on intragovernmental negotiation costs, which in turn slow the response to an incipient crisis. The second effect is indirect, by changing the influence of other banking crisis determinants. In a country where checks and balances are few or absent, the probability that, say, an unfavorable terms-of-trade shock will cause a banking crisis is higher than in a country with extensive checks and balances. The same is true of other banking crisis determinants, such as low cash reserves, a large volume of outstanding credit to the private sector, and extensive deposit insurance. All these can trigger crises in countries where checks and balances are weak, as governments can more easily shift the costs of financial crises onto unrepresented sectors of society.

2. REGULATION AND SUPERVISION OF BANKS AND DEPOSITOR BEHAVIOR

Many countries can significantly improve upon their existing financial systems. There is wide consensus that inappropriate regulations and supervisory standards not only retard economic growth but also increase the probability of a financial crisis that could spread beyond the country's own borders. In response to a rising incidence of banking crises, the multilateral financial institutions are vigorously urging countries to implement appropriate regulations and supervisory practices for their financial sectors.

In 1988 the Basle Committee on Banking Supervision introduced international guidelines for the determination of bank capital requirements. The Basle guidelines required a minimum risk-weighted capital-asset ratio of 8 percent but considered only credit risk in the calculation of risk. Although these guidelines were meant for internationally active banks, they have increasingly been adopted by banks in developing countries. Recently, the Basle Committee issued new guidelines considering market and operational as well as credit risks, and allowing for a more flexible approach in determining bank minimum capital requirements.² The new guidelines, expected to be

2. For the new guidelines see www.bis.org/publ/bcbsa.htm.

fully implemented by 2004, depart from the 1988 version by relying more on market assessment and handling of risks.

New empirical research explores three questions relating to bank regulation, supervision, and risk. First, how do political institutions, banking regulation, banking performance, and crises interact? Second, how might market-based mechanisms complement rule-based banking supervision? Finally, do market participants (both bank depositors and interbank lenders) take banks' underlying risks into account in their transactions?

2.1 Prudential Regulation and Bank Performance

Despite widespread agreement on the need for financial reform, there is little empirical evidence to support any concrete advice regarding either specific or comprehensive regulatory or supervisory norms and regulations. The reason is that detailed cross-country comparisons of financial systems for developing countries have until recently been unavailable. James Barth, Gerard Caprio, Jr., and Ross Levine, in this volume, make use of a new data set covering about fifty countries to examine empirically the relationships among regulatory, government, and financial variables.

The authors report three main empirical results. First, countries whose governments are more bureaucratic, corrupt, and prone to breach traditions of law and order tend to impose harsher regulatory restrictions on nontraditional bank activities. Second, countries with more restrictions do not necessarily have less poorly functioning banking systems. Third, and most surprising, in countries with more restrictions, the likelihood of a banking crisis is not lower but higher; this suggests that restricting the ability of banks to diversify increases their fragility. This finding contradicts the notion that imposing stricter restrictions on banks' nontraditional activities reduces excessive risk taking. Two forces may be at work here. First, the more-diversified banking activities and portfolios that a less restrictive regulatory regime allows may reduce bank risk and thus the likelihood of bank failure. Second, lower restrictions may raise the franchise value of banks, leading to better bank management and governance, although it complicates bank supervision. Hence this study suggests that the gains from allowing broader banking activities more than offset the potential risks and supervisory complications.

2.2 Rule-Based and Market-Based Banking Supervision

A standard way of reducing the likelihood of financial crises in the past has been to put in place one or more of the following: rules and norms that limit the actions of financial intermediaries;³ supervisory agencies that monitor compliance with such rules and assess bank solvency; and institutional arrangements (a financial safety net) that guarantee the continuity of the payments system and avoid liquidity and confidence crises.⁴ But experience has shown that these three elements require careful design and implementation to avoid creating new problems and distortions that can lead to the very outcome they seek to avoid. Such problems arise when restrictions on financial firms contribute to the emergence of less efficient and usually less regulated (sometimes informal) financial intermediaries, when regulatory agencies are unable to keep pace with market developments and become obsolete (as usually happens), and when the safety net intensifies moral hazard problems, leading to unsound banking practices. Striking a balance between the costs and the benefits of banking regulation and supervision has proved difficult, especially in recent years, as the explosive development of communications and technology has spurred rapid change in the financial services industry.

In confronting these difficulties and trade-offs, countries may wish to complement (or even replace) their rule-based bank supervision with properly designed, market-friendly mechanisms aimed at enhancing market discipline. These have the advantage of encouraging sound banking practices while allowing the industry to follow market developments and trends more closely. For instance, countries could replace their state-run deposit insurance agencies with a requirement that banks contract for deposit insurance directly with private providers. At the same time, countries could make greater use of interbank interest rates to assess individual bank solvency and liquidity problems. Also, instead of restricting bank activities, countries could require banks to subject themselves to periodic risk assessment by independent rating agencies; the ratings would then be made public so that depositors become fully

3. These regulations include minimum liquidity and capitalization requirements, portfolio restrictions, and disclosure requirements, among others.

4. Safety net arrangements comprise lender-of-last-resort and deposit insurance schemes.

aware of banks' underlying risks. Requirements of the latter type have been adopted with great success in recent years by New Zealand and, to a lesser extent, by Chile. Market-based mechanisms along these lines raise the effectiveness of the regulatory and supervisory framework and hence foster market discipline and efficiency.

2.3 Bank Risk and Depositor Behavior

A necessary condition for the success of market-friendly bank regulation is that market participants be responsive to information on banks' underlying risks and overall health. What does the evidence about bank depositors and interbank lenders suggest on this score?

The paper by María Soledad Martínez-Peria and Sergio Schmukler, in this volume, analyzes two issues related to bank market discipline as reflected in the behavior of depositors in Argentina, Chile, and Mexico during the past two decades. First, they examine depositor behavior and the relationship between market discipline and deposit insurance. It is shown that depositors both small and large punish banks for risky behavior, both by withdrawing deposits and by requiring higher interest rates. Insured and uninsured depositors alike respond to bank risk taking. This result suggests that none of the deposit insurance schemes in the three countries considered is fully credible, and it raises doubts about similar schemes in similar countries.

Next the authors analyze the link between market discipline and banking crises, showing that large systemic effects take place during crises, affecting deposits and interest rates across banks regardless of their fundamentals. Following bank interventions and failures, depositors become more aware of the risk of losing their deposits, and therefore they exercise stricter market discipline than before. In sum, banking crises are a wake-up call for depositors, exerting a greater impact on their behavior than the introduction of deposit insurance systems of dubious credibility.

In a related study in this volume, Antonio Ahumada and Carlos Budnevich investigate bank riskiness and the behavior of interbank lenders in Chile. They provide empirical evidence on nonperforming loans and interbank interest spreads, using monthly bank-level data for the 1990s. The ratio of nonperforming bank loans to total loans—a good measure of overall bank fragility—is shown to decline, after a lag, as bank capital and liquidity ratios rise, and

to increase with bank lending growth. The ratio also rises with the tightness of monetary policy. The results for interbank interest spreads show that more illiquid banks also pay higher interbank interest rates. Other financial variables (including nonperforming loan ratios) do not contribute separately and significantly to interbank spreads.

These two studies thus support the view that interest rates are responsive to banks' fundamentals, and suggest that bank deposit rates or interbank lending rates could be used to determine the premiums charged to banks participating in deposit insurance schemes. In fact, Argentina adopted just such a mechanism in response to contagion from the 1994 Mexican crisis, as a tool for regulating bank provisioning against bad loans. In particular, the nonperforming loan provision that banks were required to make for each loan was made dependent on the loan's interest rate. Since it is in the interest of each bank to charge a rate proportional to the loan's risk, the new provision allows Argentinean bank supervisors to rely on each bank's internal risk assessment instead of having to evaluate each loan directly.

Hence the recent evidence summarized here suggests important benefits from complementing conventional, rule-based regulatory systems with market-based mechanisms designed to enhance market discipline and self-regulation. By doing so, supervisors may avoid some of the dismal consequences of the rapid obsolescence of rule-based regulatory frameworks that stems from the superior ability of private agents to keep pace with market developments.

3. LENDING BOOMS, ASSET PRICES, AND EXCHANGE RATES

We now shift the focus away from banking to consider macroeconomic and macrofinancial issues, and in particular the phenomenon of lending booms and the behavior of asset prices and exchange rates during boom-and-bust cycles.

3.1 Lending Booms

Recent evidence suggests that credit booms are partly financed by large capital inflows and often lead to financial crises (World Bank, 1997, 2001). However, capital inflows may not be the cause but rather

the consequence of credit booms. In fact, credit booms can be caused either by domestic changes (such as a financial liberalization) or by an exogenous shock (such as lower foreign interest rates).

Gourinchas, Valdés, and Landerretche (2001) present empirical cross-country evidence for 1960-96, showing that financial crises are more likely after a credit boom has taken place. They also provide evidence that the dominant forces behind a surge in capital inflows are domestic (pull) factors, not external (push) factors.

Leonardo Hernández and Oscar Landerretche, in this volume, also undertake an empirical study of capital flows, lending booms, and financial crises, focussing more on the role played by the domestic banking system during such cycles. Using a sixty-country sample over a shorter period (1970-95), they conclude that periods of financial distress are indeed more likely after a lending boom, but also that these booms are associated with capital inflows only in the case of developing countries (which in general have weaker banks). Furthermore, capital inflows are smaller (as a percentage of the recipient country's GDP) in countries where the lending boom ends in financial distress. Hence it appears that international investors put proportionately more of their capital into countries with financial systems that are less prone to experience financial crises after lending booms.

3.2 Asset Prices and Exchange Rates

Overvaluation of assets and an overvalued currency are frequently the counterparts of domestic and external lending booms. How much do asset prices and exchange rates diverge from what their fundamentals would indicate during boom episodes? How quickly are overvaluations corrected after a crisis? And what role do policies play during booms and crashes?

A burgeoning literature has focused on the many factors affecting asset price bubbles.⁵ In their study of asset prices in Chile during 1978-98, in this volume, Raphael Bergoeing, Felipe Morandé, and Raimundo Soto analyze whether the behavior of equity, land, and real estate prices in that country has been consistent with market fundamentals (including policy variables) or with bubbles. Using

5. See Flood and Garber (1980), Obstfeld and Rogoff (1986), Shleifer and Summers (1990), Kiyotaki and Moore (1997), Stein (1995), Allen and Gale (1998), Krugman (1998), and Edison, Pongsack, and Miller (1998).

long-term cointegration relations for asset prices, the authors find evidence for temporary bubbles and busts. However, the estimates from their short-term error correction models show no significant deviations from fundamentals-driven equilibrium values. They report that policy variables exert a significant influence on asset prices. Counterfactual simulations for alternative paths of fiscal policy (public expenditure), monetary policy (interest rates), and pension fund policy (allowing pension funds to invest in equities) show substantial effects on asset prices in Chile. Surprisingly, no positive and significant effects of foreign capital inflows on domestic asset prices are found by these authors.

The literature on exchange rates has evolved from models of real and financial determinants of equilibrium rates (see Taylor, 1995, for a survey) to the study of episodes of substantial disequilibrium (for example, Goldfajn and Valdés, 1998). Most traditional research has overwhelmingly rejected the uncovered interest parity condition proposed to relate exchange rate and interest rate differentials (see Obstfeld and Rogoff, 1996, for a review). Rejection of this parity condition or its related forward-market efficiency condition is termed the exchange rate premium puzzle. However, recent research on industrial-country exchange rates, based on more flexible specifications and/or cointegration estimation techniques, provide evidence for a close long-run relation between exchange rates and interest rates, in support of the uncovered interest parity condition (Edison and Melick, 1999; MacDonald and Nagayasu, 2000).

Ilan Goldfajn and Poonam Gupta, in this volume, shed new light on these issues by analyzing a large sample of episodes during 1980-98 in which sizable real depreciations occurred in the aftermath of currency crises. They document that the real exchange rate overshoots on the down side during a currency crisis and must be brought back to equilibrium after the crisis subsides. Defining a successful real appreciation as one that takes place through nominal appreciation (not domestic inflation), the authors show that, for large real undervaluations, the probability of success increases significantly when tight monetary policy (a higher real interest rate) is implemented and the banking system is strong. In contrast, tight monetary policy actually lowers the likelihood of successful real appreciation when the country is experiencing a “twin” crisis, that is, a currency crisis and a banking crisis simultaneously. Hence banking crises may dampen the effect of interest rates on exchange rates.

This result provides new evidence on a variant of the exchange rate-interest rate parity condition, suggesting that part of the exchange rate premium puzzle mentioned above may be due to severe banking problems that hamper the efficient pricing of financial and monetary assets.

4. BANK INTERNATIONALIZATION, INTERNATIONAL FINANCIAL CRISES, CAPITAL CONTROLS, AND AN INTERNATIONAL SAFETY NET

Opening up domestic banks to foreign competitors is a potentially important component of international financial integration. Liberalization of the capital account to foreign inflows offers potentially large efficiency and growth gains but has also frequently led to over-borrowing and hence to crises. East Asia suffered from a deep crisis in the late 1990s while Latin America remained largely unscathed. Careful scrutiny of these and related issues is important before policies aimed at future crisis prevention are implemented. Possible policy responses include capital controls (to stem “excessive” capital inflows), contingent credit lines (to face international liquidity problems), and elements of a future international safety net.

4.1 Internationalization of Banking

A recent trend toward internationalization of banking can be observed in some emerging market economies: their domestic financial markets are becoming increasingly open to entrance by well-established international banks (Claessens, Demirgüç-Kunt, and Huizinga, 1998; Clarke and others, 1999; Denizler, 2000). This is partly prompted by the growing consensus that internationalization of banking is the most effective way for developing countries to acquire capital, technology, and managerial skills in banking, all of which many developing countries now lack. It is argued that internationalization of banking would allow the introduction of frontier technology and best practices in project evaluation, risk assessment, and hedging; would permit better risk diversification; and would increase competition. All these would lead to more and cheaper financial products. In addition, because international banks are usually subject to more stringent regulation than domestic banks, internationalization of

banking should lead to an upgrade in accounting, disclosure, and transparency standards, improving the regulatory framework in most developing countries (Claessens and Glaessner, 1998; Dobson, 1998).

A more extreme position argues that internationalization of banking is desirable because it permits delegating bank supervision and regulation to the agencies charged with that task in the foreign banks' home countries. Thus opening local markets to foreign banks means substituting imported bank supervision and regulation for its domestically produced counterpart (Hausmann and Gavin, 1996). This is the case, for example, in New Zealand, where most banks are foreign owned.

Because of its close relation to overall financial integration, internationalization of banking may also bring benefits in the form of greater macroeconomic stability. Easing the entrance of foreign banks into developing countries facilitates those countries' access to world capital markets. This allows better smoothing of cyclical income fluctuations and reduces the likelihood of a cutoff of foreign financing due to financial contagion or other international market imperfections. Finally, internationalization of banking could reduce the cost of funds, especially to small and medium-size enterprises that cannot tap international capital markets by issuing equity or bonds abroad.

However, internationalization of banking and financial integration more broadly are also a source of concern to policymakers, mainly for three reasons. First, credit markets may become segmented as foreign banks tend to concentrate their business on the largest and most creditworthy domestic companies, leaving the riskier projects and less solvent firms to be financed locally. Second, financial integration can contribute to economic instability, because foreign capital, although relatively cheap, is also highly volatile: credit booms, asset price bubbles, and overborrowing can emerge and lead to a crisis. Third, in a globally integrated economy it becomes even more difficult for local authorities to confront and effectively contain a confidence crisis, whether founded or unfounded, because now foreign creditors are involved, and because even domestically owned funds now have more avenues to flee abroad. Although these concerns are certainly legitimate (and we discuss below how some of them can be dealt with), international experience suggests that the potential benefits of integration nevertheless outweigh the potential costs.

4.2 The Behavior of Foreign Banks

Japanese banks substantially increased their global presence in the late 1980s through cross-border lending and by opening foreign subsidiaries. Although their initial focus was on the United States, in the 1990s their efforts were aggressively redirected to Southeast Asia. Joe Peek and Eric Rosengren, in this volume, examine Japanese banks' response to home- and host-country shocks in Southeast Asia, and show that the pattern of lending and opening of subsidiaries followed trends in Japan more closely than trends in Southeast Asia. This behavior, which contrasts with Japanese bank retrenchment with respect to the United States, Hong Kong, and Singapore, exerted a stabilizing influence on the economies affected by the Asian crisis and is attributed to the banks' aim to maintain a dominant presence in countries with high long-run profit potential.⁶ This result is consistent with Hernández and Landerretche's finding that countries suffering from financial distress continue to receive capital inflows (although smaller than before the crisis). In other words, financial crises cannot in general be attributed to capital outflows.⁷

In sum, from the evidence presented in this volume, it is hard to argue that foreign banks, or foreign lending more generally, are the cause of financial distress and instability. Capital flight and crises tend to occur when domestic investors start fleeing their own countries, leaving governments liable and imposing losses on foreign creditors.

4.3 Overborrowing

A valid concern of policymakers in emerging market economies that liberalize their capital accounts is how to reduce the likelihood that financial integration will lead to excessive external borrowing, making the whole economy more vulnerable to shocks.

6. This finding does not necessarily mean, however, that these countries enjoyed access to additional funding during the crisis. Peek and Rosengren's analysis does not distinguish between new capital inflows and the capitalization of past-due interest. However, the data show that Japanese banks at least did not require repayment of their outstanding loans.

7. It is worth noting that in several crises in the past, such as the Latin American crisis of the 1980s and the Mexican crisis in 1994, well-established foreign banks had been willing to grant new loans to the crisis countries as late as a few weeks or even days before the crisis started.

Should policymakers postpone financial integration until certain conditions are met? And if so, what conditions?

What matters in addressing these questions is making a correct diagnosis of the ultimate causes of overborrowing and overlending—not an easy task, as the competing explanations of the Mexican and Asian crises and their aftermaths make clear. Appropriate policy design with respect to foreign borrowing requires the precise identification of the underlying market failure (Fernández-Arias and Montiel, 1996). One important market imperfection is moral hazard, which can arise on either side of the international financial transaction, due to explicit or implicit guarantees by domestic governments or multilateral financial institutions (McKinnon and Pill, 1997; Dooley, 1997; Krugman, 1998; Corsetti, Pesenti, and Roubini, 1998). Here the first-best solution is to remove those guarantees or make borrowers pay for them at their market or shadow values. If that is not possible, moral hazard may be controlled by adequate regulation and supervision of banks, capital markets at large, and (as one of the lessons of the Asian crisis) the corporate sector. If even that strategy fails or cannot be implemented adequately, a third-best solution could lie in the adoption of barriers to financial integration.

Eduardo Fernández-Arias and Davide Lombardo, in this volume, extend the earlier literature on sovereign debt and risk,⁸ as well as the more recent work on multiple equilibria, as an explanation of the Asian crisis.⁹ They develop two models of market imperfections in international capital flows that could lead to multiple equilibria through the existence of country risk. In the first model, private sector overborrowing occurs when borrowing approaches or exceeds an effective country credit ceiling, which in turn arises because there are no credible mechanisms to enforce international debt contracts against the will of a sovereign debtor country. However, overborrowing (and any accompanying overconsumption) can be ameliorated by adequate fiscal and trade policies. In the second model, financial fragility is based on investors' self-validating loss of confidence in the debtor country's prospects. If a massive withdrawal of foreign credit adversely affects repayment by domestic debtors (for example, because of a real devaluation that makes debt repayment by firms in the nontradable goods sector too expensive), then the market allocation biases the composition of debt away from long-term and

8. See Harberger (1980), Eaton and Gersovitz (1981, 1989), and Bulow and Rogoff (1989), among others.

9. See Calvo (1998), Sachs and Radelet (1998), among others.

toward short-term debt. This case could justify the adoption of controls or taxes on short-term capital inflows, such as the selective reserve requirement on gross capital inflows adopted by Chile during 1991-98. Alternatively, debtor countries could contract with a foreign entity to provide a line of credit to be drawn upon in the event of a liquidity crisis; Argentina entered into such an arrangement after the 1994 Mexican crisis. Hence, although overborrowing is a valid concern, policymakers need to clearly identify its underlying causes and the optimal policy response before imposing restrictions on financial integration.

4.4 Controls on Capital Inflows

Some emerging market countries (including Brazil, Chile, Colombia, and Malaysia) resorted to temporary controls on capital inflows during the long spell of large inflows in the 1990s, and Malaysia imposed temporary controls on outflows after the 1997 Asian crisis. Among these experiences, Chile's selective controls on capital inflows during 1991-98 provide a unique experiment for testing the effectiveness and assessing the costs and benefits of limiting financial integration.¹⁰ The reasons why Chile's case is illuminating are partly institutional (the tax-equivalent design of the controls and the relatively high degree of compliance) and partly empirical (the relatively high quality, frequency, and variability of the data on controls and related economic variables). Francisco Gallego, Leonardo Hernández, and Klaus Schmidt-Hebbel, in this volume, extend the previous empirical literature on the Chilean experience,¹¹ by testing for the determinants and effects of capital controls in Chile, using monthly data for 1989-2000.

The results show that capital controls had some effect by increasing the wedge between domestic and foreign interest rates,

10. In September 1998 the Central Bank of Chile suspended application of its one-year unremunerated reserve requirement on selective (mostly financial and short-term) capital inflows by lowering the rate to zero. In May 2000 it abolished the one-year permanence requirement on foreign investment. Final full abolition of the unremunerated reserve requirement on inflows, as well as of all other remaining administrative controls on both inflows and outflows, took place in April 2001.

11. See Soto and Valdés-Prieto (1996), Soto (1997), Eyzaguirre and Schmidt-Hebbel (1997), Le Fort and Sanhueza (1997), Laurens and Cardoso (1998), Nadal De-Simone and Sorsa (1999), Valdés-Prieto and Soto (1998), De Gregorio, Edwards, and Valdés (1999), Herrera and Valdés (2001), and Larraín (2000).

marginally reducing aggregate net capital inflows, and changing the composition of external debt toward longer maturities, without significantly altering the real exchange rate. Part of this effect is temporary, however, as the effectiveness of controls is eroded over time. Controls may have been important in contributing to Chile's relatively low level of outstanding short-term foreign liabilities at the time of the 1997-98 international financial turmoil. On the other hand, the temporary macroeconomic benefits of capital controls could be more than offset by reduced growth and more limited international portfolio diversification, raising concern about their efficiency.

4.5 International Financial Crises

Four years after the outbreak of the East Asian crisis, experts still disagree about its roots. A region that had been considered a paradigm of successful development suddenly found itself mired in financial collapse and deep recession in 1997-98. By contrast, most of Latin America managed to avoid crisis in 1997-2000, in spite of relatively poor macroeconomic management.

Roberto Chang and Andrés Velasco, in this volume, dispute the relevance of *ad hoc* institutional and political explanations for the Asian crisis, arguing instead that all the elements of a conventional international financial crisis were present in Asia, just as they had been in the Latin American debt crisis of 1982-85 and the Mexican crisis of 1994-95.¹² They claim that the main trigger of a crisis is international illiquidity, that is, loss of access to additional foreign borrowing by a country subject to significant currency and maturity mismatches of its assets and liabilities. Such mismatches are often the consequence of earlier domestic and external financial liberalization that has allowed the accumulation of short-term foreign currency liabilities by domestic residents, whose income is largely denominated in national currency. Illiquidity hits when capital inflows turn to outflows in response to an adverse domestic or external shock; the results are a banking crisis, a currency (or balance of payments) crisis, a recession, or some mix of the three.

12. Previous work on financial crises includes Díaz-Alejandro (1985), Velasco (1987), Calvo (1996, 1998), Goldfajn and Valdés (1997), Frankel and Rose (1996), Kaminsky and Reinhart (1996), Sachs, Tornell, and Velasco (1996a,b), Sachs (1997), Corsetti, Pesenti, and Roubini (1998), and Chang and Velasco (2000), among others.

Moreover, the punishment meted out by the market is typically disproportionate to the country's sins, leading to severe international illiquidity, a collapse of domestic asset prices and the real exchange rate as a result of fire sales, and deep recession. The authors provide evidence that these factors were present in East Asia in 1997, but much less prevalent in Latin America in the late 1990s, which could explain why that region largely escaped the crisis.¹³

4.6 Contagion and an International Safety Net

A serious concern for policymakers in emerging market economies is financial contagion, that is, the possibility of liquidity problems—and a currency crisis—spreading from one country to another despite strong fundamentals in the latter. This situation arises when shocks in one or a few countries cause world capital markets to overreact by restricting access to, and withdrawing funds from, emerging market economies as a group.

It is important to stress the difference between real and pure contagion. When contagion is real, meaning that the external shock is indeed related to a deterioration in fundamentals,¹⁴ the only possible response is to adjust fiscal, monetary, and exchange rate policies accordingly—and the sooner the better. Furthermore, the best way to reduce exposure to these shocks is by achieving wide diversification of both income and funding sources. Hence, in order to reduce the likelihood of real contagion, countries should accelerate their economic and financial integration, not slow it down.

Much as domestic financial systems are subject to bank runs and panics, pure contagion across countries can occur because of asymmetric information, “animal spirits,” and multiple equilibria. Also like bank runs and panics, episodes of pure contagion can impose heavy deadweight costs on the affected countries. To avoid bank runs, many countries have developed safety nets as discussed above. In world capital markets, however, such mechanisms are missing, and until they are put in place, countries are understandably reluctant to proceed to full financial integration. All parties could potentially gain

13. The obvious exceptions are the Brazilian crisis of 1998-99 and the near crises in Argentina and Ecuador in 2000-01, which were avoided by the massive provision of liquidity by multilateral financial institutions.

14. For instance, when a devaluation in one country translates into a loss of international competitiveness by its trading partners and competitors.

from creating an international safety net or similar mechanisms to reduce the chances of pure contagion. This would foster financial integration, allowing developing countries to benefit from lower funding costs and greater access to new financial instruments, and providing industrial countries higher returns on their capital as well as worldwide portfolio diversification.

Creating an international safety net is a complex undertaking. Like safety nets in individual countries, an effective international safety net needs to strike a balance among regulation, market forces, and incentives. Because the operation of such a safety net will require sizable resources, most likely it will need the concurrence of industrial-country governments, multilateral financial institutions, and the private sector. The discussion regarding a "new international financial architecture," which started after the 1994 Mexican crisis and continues today, and the difficulties encountered by the Contingent Credit Line (CCL) facility of the International Monetary Fund (IMF), demonstrate the complexities of the task at hand.¹⁵

As in individual countries, an effective international safety net would have to rely on market-friendly instruments to guarantee that it keeps pace with a quickly changing market environment. In recent years a few countries have put in place mechanisms aimed at addressing contagion, all of which are based on market signals as a means to enhance market discipline. As mentioned above, Argentina has contracted a credit line with a consortium of fourteen international banks. The banks provide insurance against liquidity crises in exchange for a fee, which is determined by the performance of the Argentinean economy and especially its banks. As a vehicle for crisis resolution, this private arrangement resembles lending of last resort by an international central bank. However, Gavin and Powell (1998) show that under certain assumptions the private credit line is superior, mainly because it imposes greater *ex ante* market discipline.¹⁶

Another example is that of New Zealand, which has significantly upgraded the disclosure requirements imposed on banks and, as already mentioned, has fully opened its domestic financial markets to

15. The CCL was launched in 2000 but at the time of writing no eligible country have yet subscribed, mostly because of the perception that to do so would signal weak fundamentals in the subscribing country and thus turn market sentiment against it.

16. Although this issue requires further research, this advantage probably explains the relative success of the Argentinean arrangement compared with the CCL.

well-established international banks. This approach has boosted market competition and self-regulation.¹⁷

5. CONCLUSIONS AND POLICY IMPLICATIONS

What have been the consequences of the financial turmoil of 1997-98, and what lessons have we learned? What policy recommendations can be offered, and what best practices proposed, to emerging market economies seeking greater integration into the world economy? In this final section we first discuss the consequences and lessons arising from the recent crisis period, and then address the somewhat risky task of advancing policy recommendations.

5.1 Lessons from the Turmoil

We see four main consequences and corresponding lessons emerging from the recent crisis episode. First, there has been a revision—even a questioning—of the net benefits of financial integration. On the upside, nothing has happened to overturn the conviction that financial integration and internationalization of banking can bring great benefits to emerging market economies. These benefits accrue as a result of deeper, more sophisticated, and more efficient financial systems that foster higher investment and faster growth. Financial integration not only reflects changes in policies and regulations but is also the result of ongoing progress in communications and information technology, which emerging market economies could not avoid even if they wanted to. The only way that policymakers could isolate their economies from exogenous technical progress in financial services would be to resort to increasing restrictions, which would cause large and growing efficiency losses in resource accumulation and allocation. Therefore it is becoming ever more difficult and costly for emerging market economies to oppose international financial integration.

However, financial integration also presents downside risks due to capital market volatility. International markets, like their domestic counterparts, are subject to sudden changes of sentiment and to contagion, which can be particularly intense for developing countries.

17. Cordella and Levy-Yeyati (1998) present a theoretical analysis of how these links work.

Thus policymakers in emerging market economies have to find ways to achieve financial integration while minimizing the downside risks. Here it is important to note that other risks—often and wrongly blamed on the process of financial integration itself, such as credit booms and asset price bubbles—are more likely caused by domestic distortions and policy failures. Similarly, foreign overborrowing and asset-liability mismatches—often observed in countries that open their capital accounts—are usually the result of inadequate domestic policies. These cases call for correcting the distortions and improving policies at home, not reversing the process of financial integration itself, which would only make matters worse in the long run by squandering the opportunity to develop more quickly.

Second, it became clear after the Thai crisis that the international financial system is subject to systemic shocks. The 1997 Thai and 1999 Brazilian devaluations, and particularly the 1998 Russian moratorium, showed that shocks in one country could quickly spread across markets and economies, affecting seemingly unrelated emerging market economies and industrial countries alike. Furthermore, compared with previous crises, the punishment that markets administered to many economies in the late 1990s seemed out of proportion to the countries' sins. Markets worldwide reacted very harshly even toward those countries with sound macroeconomic fundamentals (Calvo, 1997).

Here the lessons to be drawn are twofold. First, maintaining strong macroeconomic fundamentals is a necessary but not a sufficient condition to avoid crises and contagion effects. After all, until 1997 the Asian crisis countries boasted low inflation and sustained fiscal surpluses, relatively small current account deficits (with the exception of Thailand), high saving and investment rates, a large export base, and little overvaluation of their currencies. Second, and more important, contagion is a real threat that may affect emerging market economies and developed countries alike irrespective of their macroeconomic fundamentals.

The third main lesson emerges from the Thai crisis in particular. It is that the East Asian countries, which had been depicted as examples of success because of their sound and prudent macroeconomic policies,¹⁸ remained just as vulnerable to changes in market sentiment as other economies following different development and

18. See World Bank (1993).

growth strategies. It could be argued that the ultimate determinant of the crises in the East Asian countries was neither their large capital inflows nor their export-led growth strategies, but rather their unsound financial systems and inadequate regulatory frameworks and business environments. The crises brought these deficiencies of the financial and the corporate sectors into the open.

Countries need to address structural deficiencies like these either before they undertake financial integration or in tandem with it. However, as the East Asian episode has shown, in many cases these weaknesses do not surface until the domestic financial system is put under strain from increasing financial intermediation and large capital inflows. Thus financial integration should become the trigger of much-needed reform in the financial and corporate sectors in developing countries. The internationalization of banking can help by upgrading banking technology and management and improving corporate governance in both the banking and the corporate sectors. But to argue that the process of financial integration is at the root of all the problems that developing countries have suffered, and to conclude from there that policies should be adopted that hinder this process, is misguided. Putting sand into the gears of financial integration will only produce slower growth and a weaker and more vulnerable economy in the long run.

The final lesson: the Asian crisis showed that the measures taken after the Mexican crisis were inadequate to prevent another episode of international financial turmoil.¹⁹ Since the Thai crisis in 1997, several additional measures have been proposed to reduce the frequency and severity of worldwide financial crises. All of these proposals acknowledge the need to redesign the international financial architecture to reduce contagion, and to build additional buffers to allow countries to accommodate shocks more easily. The proposals range from establishing both an international bankruptcy court and a lender of last resort, to abolishing multilateral financial institutions such as the IMF, to imposing Tobin taxes on the free movement of capital across countries to reduce market volatility (for a summary see Eichengreen, 1999). Considering the complexities, both political and

19. After the Mexican crisis of 1994, the international financial community, led by the IMF, introduced new guidelines for the production and dissemination of macroeconomic and financial data, applicable to all countries participating in international capital markets. These measures were prompted by international investors' complaints that publicly available data for Mexico before and during the 1994-95 tequila crisis had been inadequate and insufficient.

technical, involved in such a process, it is unlikely that a comprehensive new global institutional framework governing international financial transactions will be put in place in the near future. It is more likely that, for the foreseeable future, most remedies to crises and contagion will still be applied at the level of individual countries.

5.2 Policy Recommendations

We have argued that financial crises are due mainly to weak domestic financial institutions, not to the joint occurrence of external shocks and financial integration. This does not imply that foreign shocks and contagion effects can be ignored, for in fact they are more likely to occur in more integrated countries. However, the transmission effect of foreign shocks to the domestic economy depends critically on a country's macroeconomic fundamentals and the strength and resilience of its financial institutions.

Three recent examples illustrate this point. First, the Asian crisis proved to be only a passing storm in Singapore, Taiwan, and Hong Kong; all of these economies have strong fundamentals and sound banks. Second, the Chilean banking system was fully restructured and strengthened after the banking crisis of the early 1980s. As a result, Chile was only mildly affected by the 1997-98 turmoil, although it did suffer large terms-of-trade losses and capital inflow reductions. Third, the Argentinean banking system was also restructured and strengthened following the Mexican crisis of 1994. As a result, that country was much less affected during the turmoil of 1997-98 than during the Mexican crisis.

Hence the most important policy lesson that emerges is that financial liberalization should proceed with caution but should include the upgrade or overhaul of the entire regulatory and supervisory framework for banks and a revision of corporate law. This is important because financial liberalization can easily exacerbate moral hazard and adverse selection in the financial sector and in its interaction with the corporate sector. Ignoring these institutional aspects in a liberalizing economy may, instead of pointing it toward higher investment and growth, only sow the seeds of future financial crises and recessions.

Second, because implementing a successful financial liberalization is a difficult and lengthy process, developing countries could consider the use—as a temporary, second-best instrument—of tools aimed at reducing excess reliance on short-term debt, both domestic

and foreign. However, these policies, like Chile's selective controls on capital inflows, should *only* be considered temporary and must be properly designed and implemented so that a reasonable degree of compliance can be attained. These instruments should be abolished in the medium term (as Chile did) when financial markets have reached a certain level of maturity and depth. By then the economy will have developed adequate instruments to cope with maturity and exchange rate risks as well as the risk of a sudden reversal in capital flows due to international contagion.

Third, provided they have in place a credible nominal anchor for the conduct of monetary policy within a consistent set of macroeconomic policies, countries seeking greater financial integration should consider adopting a flexible exchange rate regime.²⁰ Floating could reduce exposure to short-term debt because market participants would then face greater exchange rate risk. But it will work only if there are no other imperfections in place such as an implicit guarantee on foreign debt that causes overexposure in the first place. At the same time, floating could ease relative price adjustment when short-term nominal price and wage rigidities are pervasive, allowing for rapid nominal and real devaluation.

Fourth, developing countries should focus in the short term on strengthening their banking systems. This includes measures like making banks more resilient by raising capitalization requirements, classifying their loan portfolios according to quality, building up provisions against loan losses, and assessing maturity and exchange rate mismatches. Even if the institutional changes just mentioned take some time to be implemented, there is an urgent need to build up buffers, and nowhere are buffers as important as in the domestic banking system. One way to advance quickly in this regard is by opening the domestic market to well-established foreign banks, complemented by a large buffer stock of international reserves. Countries like Chile and Singapore that fared relatively well during the recent turmoil held large foreign reserves at the outset of the crisis. Such buffers are expensive but may prove worth the cost while financial integration proceeds, and while other institutional issues are being addressed, by avoiding the much higher costs of a crisis.

20. An increasingly popular nominal anchor on which to base a monetary regime is inflation targeting, pursued in combination with floating exchange rates. See Loayza and Soto (2001), and the papers therein, for a review of a decade of experience with inflation targeting in the world.

Fifth, even countries that are fully integrated into the world economy can be affected by domestic and external shocks and suffer a sudden (if temporary) loss of market confidence and large reversals in capital flows. However, this does not mean that countries should seek to protect themselves from these shocks by closing their economies. On the contrary, developing and industrial countries alike need to implement policies aimed at achieving greater diversification of both exports and funding sources (to the extent that contagion is driven by international trade and financial links). Every emerging market country also needs to initiate and sustain a comprehensive communication strategy aimed at keeping markets fully informed of its economic fundamentals, policies, and most recent developments. To the extent that contagion results from information asymmetries and from herd behavior, such a strategy should be of value in warding it off. Countries should also consider following Argentina's example in arranging for liquidity insurance mechanisms.

Finally, countries should put in place mechanisms that ensure prompt action in resolving a crisis should one occur. Good tools for diagnosing the situation are critically needed at an early stage. In many crisis episodes, both diagnoses and remedial actions prove insufficient, requiring drastic subsequent revision and giving rise to opportunistic behavior on the part of viable borrowers. For example, in many country episodes a large initial devaluation (aimed at restoring export competitiveness) occurred after the crisis hit. The devaluation raised the cost of servicing foreign debt and posed a severe financial problem. In countries that failed to address the financial problem promptly, but instead postponed the difficult task of seizing assets and allocating losses among different stakeholders, the initial difficulties worsened existing moral hazard problems. This further aggravated credit rationing and liquidity squeezes and led to a deeper contraction in output and more serious financial problems.²¹ Also, a rapid recovery was hindered in some countries by tight monetary and fiscal policies early on, aimed at containing inflationary pressures arising from the devaluations.²² A more accurate assessment of the real difficulties would have contributed to a more appropriate choice of emergency measures—and to better results.

21. For an anatomy of financial crises see Mishkin (1997).

22. This is a debatable point on which not all observers agree. See Radelet and Sachs (1998) and Sachs and Radelet (1998).

REFERENCES

- Allen, F., and D. Gale. 1998. "Bubbles and Crises." *Economic Journal* 110(460): 236-55.
- Bulow, J., and K. Rogoff. 1989. "A Constant Recontracting Model of Sovereign Debt." *Journal of Political Economy* 97(1): 155-78.
- Calvo, G. 1996. "Comment [on Sachs, Tornell, and Velasco]." *Brookings Papers on Economic Activity* 1: 199-203.
- . 1997. "Rational Herd Behavior and the Globalization of Securities Markets." Unpublished paper. College Park, Md.: University of Maryland.
- . 1998. "Varieties of Capital-Market Crises." In *The Debt Burden and Its Consequences for Monetary Policy: Proceedings of a Conference Held by the International Economic Association at the Deutsche Bundesbank*, edited by G. Calvo and M. King. New York and London: St. Martin's Press and Macmillan, in association with the International Economic Association.
- Caprio, G. 1998. "Bank Insolvencies: Cross-Country Experience." Research Working Paper 1620. Washington: World Bank (July).
- Caprio, G., and D. Klingebiel. 1997. "Bank Insolvency: Bad Luck, Bad Policy, or Bad Banking?" In *Annual World Bank Conference on Development Economics 1996*, edited by M. Bruno and B. Pleskovic. Washington: World Bank.
- Chang, R., and A. Velasco. 2000. "The Asian Financial Crisis in Perspective." In *Private Capital Flows in the Age of Globalisation: The Aftermath of the Asian Crisis*, edited by U. Dadush, D. Dasgupta, and M. Uzan. New York: E. Elgar Publishers.
- Claessens, S., and T. Glaessner. 1998. "The Internationalization of Financial Services in Asia." Policy Research Working Paper 1911. Washington: World Bank (April).
- Claessens, S., A. Demirgüç-Kunt, and H. Huizinga. 1998. "How Does Foreign Entry Affect The Domestic Banking Market?" Policy Research Working Paper 1918. Washington: World Bank (June).
- Clarke, G., R. Cull, L. D'Amato, and A. Molinari. 1999. "The Effect of Foreign Entry on Argentina's Domestic Banking Sector." Policy Research Working Paper 2158. Washington: World Bank (August).
- Cordella, T., and E. Levy-Yeyati. 1998. "Financial Opening, Deposit Insurance, and Risk in a Model of Banking Competition." Centre for Economic Policy Research Discussion Paper 1939. London: Centre for Economic Policy Research (July).

- Corsetti, G., P. Pesenti, and N. Roubini. 1998. "What Caused the Asian Currency and Financial Crisis? Part I: A Macroeconomic Overview." NBER Working Paper 6833. Cambridge, Mass.: National Bureau of Economic Research (December).
- De Gregorio, J., S. Edwards, and R. Valdés. 1999. "Capital Controls in Chile: An Assessment." Unpublished paper. Santiago: Central Bank of Chile (March).
- Demirgüç-Kunt, A., and E. Detragiache. 1997. "The Determinants of Banking Crises: Evidence from Developing and Developed Countries." IMF Working Paper 106. Washington: International Monetary Fund.
- . 1998. "Financial Liberalization and Financial Fragility." IMF Working Paper 83. Washington: International Monetary Fund (June).
- Denizer, C. 2000. "Foreign Entry in Turkey's Banking Sector, 1980-97." Policy Research Working Paper 2462. Washington: World Bank (October).
- Díaz-Alejandro, C. F. 1985. "Good-bye Financial Repression, Hello Financial Crash." *Journal of Development Economics* 19 (1-2): 1-24.
- Dobson, W. 1998. "Internationalization of Financial Services." Unpublished paper. University of Toronto (September).
- Dooley, M. 1997. "A Model of Crises in Emerging Markets." NBER Working Paper 6300. Cambridge, Mass.: National Bureau of Economic Research (December).
- Eaton, J., and M. Gersovitz. 1981. "Debt with Potential Repudiation: Theoretical and Empirical Analysis." *Review of Economic Studies* 48(2): 289-309.
- . 1989. "Country Risk and the Organization of International Capital Transfer." In *Debt, Stabilization and Development: Essays in Memory of Carlos Díaz-Alejandro*, edited by G. Calvo and others. Oxford and Cambridge, Mass.: Blackwell.
- Edison, H., and W. Melick. 1999. "Alternative Approaches to Real Exchange Rates and Real Interest Rates: Three Up and Three Down." *International Journal of Monetary Economics* 4: 165-87.
- Edison, H., L. Pongsack, and M. Miller. 1998. "Asset Bubbles, Domino Effects and "Lifeboats": Elements of the East Asian Crisis." Centre for Economic Policy Research Discussion Paper 1866. London: Centre for Economic Policy Research (April).
- Eichengreen, B. 1999. *Toward a New International Financial Architecture*. Washington: Institute for International Economics.

- Eyzaguirre, N., and K. Schmidt-Hebbel. 1997. "Encaje a la entrada de capitales y ajuste macroeconómico." Unpublished paper. Santiago: Central Bank of Chile (May).
- Fernández-Arias, E., and P. Montiel. 1996. "The Surge in Capital Inflows to Developing Countries: An Analytical Overview." *World Bank Economic Review* 10(1): 51-80.
- Flood, R., and P. M. Garber. 1980. "Market Fundamentals versus Price Level Bubbles: The First Tests." *Journal of Political Economy* 88: 745-70.
- Frankel, J., and A. K. Rose. 1996. "Currency Crashes in Emerging Markets: An Empirical Treatment." *Journal of International Economics* 41: 351-68.
- Gavin, M., and A. Powell. 1998. "Should International Lender of Last Resort Lending be Privatized?" Unpublished paper. Washington: Inter-American Development Bank (September).
- Goldfajn, I., and R. Valdés. 1997. "Capital Flows and the Twin Crises: The Role of Liquidity." IMF Working Paper 87. Washington: International Monetary Fund (July).
- . 1998. "The Aftermath of Appreciations." *Quarterly Journal of Economics* 114(1): 229-62.
- Goldstein, M., and P. Turner. 1996. "Banking Crises in Emerging Economies: Origins and Policy Options." BIS Economic Paper 46. Basle, Switzerland: Bank for International Settlements (October).
- Gourinchas, P.-O., R. Valdés, and O. Landerretche. 2001. "Lending Booms: Latin America and the World." *Economía*, 1(2): 47-89.
- Harberger, A. 1980. "Vignettes on the World Capital Market." *American Economic Review* 70(2): 331-37.
- Hausmann, R., and M. Gavin. 1996. "The Roots of Banking Crises: The Macroeconomic Context." In *Banking Crises in Latin America*, edited by R. Hausmann and L. Rojas-Suárez. Washington: Inter-American Development Bank.
- Herrera, L. O., and R. Valdés. 2001. "The Effect of Capital Controls on Interest Rate Differentials." *Journal of International Economics* 53(2): 385-98.
- Kaminsky, G., and C. Reinhart. 1996. "The Twin Crises: The Causes of Banking and Balance of Payments Problems." International Finance Discussion Paper 544. Washington: Board of Governors of the Federal Reserve System (March).
- King, R., and R. Levine. 1993. "Finance and Growth: Schumpeter Might Be Right." *Quarterly Journal of Economics* 108(3): 717-38.

- Kiyotaki, N., and J. Moore. 1997. "Credit Cycles." *Journal of Political Economy* 105: 211-48.
- Krugman, P. 1998. "What Happened to Asia?" Unpublished paper. Cambridge, Mass.: Massachusetts Institute of Technology.
- La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. W. Vishny. 1998. "Law and Finance." *Journal of Political Economy* 106(6): 1113-55.
- Larraín, F., ed. 2000. *Capital Flows, Capital Controls, and Currency Crises: Latin America in the 1990s*. University of Michigan Press.
- Laurens, B., and J. Cardoso. 1998. "Managing Capital Flows: Lessons from the Experience of Chile." IMF Working Paper 168. Washington: International Monetary Fund (December).
- Le Fort, G., and G. Sanhueza. 1997. "Flujo de capitales y encaje en la experiencia chilena de los 90." Unpublished paper. Santiago: Central Bank of Chile (May).
- Levine, R. 1997. "Financial Development and Economic Growth: Views and Agenda." *Journal of Economic Literature* 35(2): 688-726.
- Levine, R., and S. Zervos. 1998. "Stock Markets, Banks, and Economic Growth." *American Economic Review* 88(3): 537-58.
- Loayza, N., and R. Soto. 2002. "Inflation Targeting: Design, Performance, Challenges. An Overview." In *Inflation Targeting: Design, Performance, Challenges*, edited by N. Loayza and R. Soto. Santiago: Central Bank of Chile.
- MacDonald, R., and J. Nagayasu. 2000. "The Long Run Relationship between Real Exchange Rates and Real Interest Rate Differentials: A Panel Study." *IMF Staff Papers* 47(1): 116-28.
- McKinnon, R., and H. Pill. 1997. "Credible Economic Liberalizations and Overborrowing." *American Economic Review* 87(2): 189-93.
- Mishkin, F. 1997. "Understanding Financial Crises: A Developing Country Perspective." In *Annual World Bank Conference on Development Economics 1996*, edited by M. Bruno and B. Pleskovic. Washington: World Bank.
- Nadal De-Simone, F., and P. Sorsa. 1999. "A Review of Capital Account Restrictions in Chile in the 1990s." IMF Working Paper 52. Washington: International Monetary Fund (April).
- Obstfeld, M., and K. Rogoff. 1986. "Ruling Diverging Speculative Bubbles." *Journal of Monetary Economics* 17: 346-62.
- . 1996. *Foundations of International Macroeconomics*. Cambridge, Mass.: MIT Press.
- Radelet, S., and J. Sachs. 1998. "The East Asian Financial Crisis: Diagnosis, Remedies, Prospects." *Brookings Papers on Economic Activity* 1: 1-74.

- Sachs, J. 1997. "Alternative Approaches to Financial Crises in Emerging Markets." Development Discussion Paper 568. Harvard Institute for International Development (January).
- Sachs, J., and S. Radelet. 1998. "The Onset of the East Asian Financial Crisis." NBER Working Paper 6680. Cambridge, Massachusetts: National Bureau of Economic Research (August).
- Sachs, J., A. Tornell, and A. Velasco. 1996a. "The Mexican Peso Crisis: Sudden Death or Death Foretold?" *Journal of International Economics* 41(3-4): 265-83.
- . 1996b. "Financial Crises in Emerging Markets: The Lessons from 1995." *Brookings Papers on Economic Activity* 1: 147-98.
- Shleifer, A., and L. Summers. 1990. "The Noise Trader Approach to Finance." *Journal of Economic Perspectives* 4(2): 19-33.
- Soto, C. 1997. "Controles a los movimientos de capital: evaluación empírica del caso chileno." Unpublished paper. Santiago: Central Bank of Chile.
- Soto, M., and S. Valdés-Prieto. 1996. "¿Es el control selectivo de capitales efectivo en Chile? su efecto sobre el tipo de cambio real." *Cuadernos de Economía* 33(98): 77-104.
- Stein, J. 1995. "Prices and Trading Volume in the Housing Market: A Model with Down-Payment Effects." *Quarterly Journal of Economics* 110(2): 379-406.
- Taylor, M. 1995. "The Economics of Exchange Rates." *Journal of Economic Literature* 33: 13-45.
- Valdés-Prieto, S., and M. Soto. 1998. "The Effectiveness of Capital Controls: Theory and Evidence from Chile." *Empírica* 25(2).
- Velasco, A. 1987. "Financial and Balance of Payments Crises." *Journal of Development Economics* 27: 263-83.
- World Bank. 1993. *The East Asian Miracle*. New York: Oxford University Press.
- . 1997. *Private Capital Flows to Developing Countries: The Road to Financial Integration*. New York: Oxford University Press.
- . 2001. *Finance for Growth: Policy Choices in a Volatile World*. New York: Oxford University Press.