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Achieving Stability in Latin American Financial Markets in the Presence of Volatile Capital Flows

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I. Introduction

The recent international debt and foreign exchange crisis in Mexico has demonstrated that volatile international capital flows can have severe consequences for domestic financial markets. Because sharp increases in domestic interest rates associated with the crisis have weakened the solvency of short-term borrowers, concerns about the stability of the Mexican financial system have developed. The recent sharp movements in capital flows has had similar, although less dramatic, effects on the financial systems of a number of other Latin American economies, particularly Argentina.

Aware of the importance of strengthening their domestic financial systems, many Latin American countries have undertaken a wide range of initiatives during the late 1980s and early 1990s in the direction of what is characterized as financial liberalization. These have included lower reserve requirements on bank deposits, removal of interest rate controls on bank assets and liabilities, and reduction in asset allocation programs. In short, reforms have encouraged the reliance of market forces to provide efficient allocation of credit rather than on direct controls on banks.

While policymakers have remained committed to liberalization, large and highly volatile capital flows to the region have raised concerns about the effects of such flows on their financial systems. After all, financial reforms have been instituted in financial systems in which the dominant financial instruments are short-term: bank deposits that fund short-term bank loans and short-term government central bank securities. Thus, when official interest rates are increased either to defend an exchange rate parity and/or to fight inflationary pressures, the entire system is affected.

This raises the question of whether the Latin American economic environment is too volatile to rely on market forces and policies that provide indirect control over financial markets. Advocates of reform believe that the harmful effects of relieving banks of regulatory burdens can substantially be ameliorated

by strengthening supervisory controls on banks, such as capital requirements and improved procedures for recognizing non-performing loans. These controls, based on OECD standards, are designed to prevent excessive growth in credit to risky borrowers.

Skeptical observers counter that reliance on market forces and supervision, while appropriate in the industrialized OECD countries, are not strong enough constraints in the more volatile financial markets of Latin America. For example, while supporters of financial liberalization have advocated reductions in reserve requirements and elimination of interest rate controls on banks to promote efficient allocation of bank credit, skeptics argue that high reserve requirements are necessary to control the growth of bank credit in Latin America. Thus, those who argue for non-market constraints on banks emphasize the importance of controlling growth of liquidity while those supporting liberalization stress the need to control risk in the financial institutions that issue liquid liabilities.

The underlying argument about the ability of liberalized financial markets to cope with the vagaries of Latin American economies extends to other areas as well. These include whether it is prudent to encourage the expansion of capital market alternatives to banks as suppliers of credit to governments and corporations. They also include questions about the role of the central bank's balance sheet as a stabilizing force in the financial market. For example, should the central bank accumulate large stores of international reserves relative to liquid assets, and, if so, how should these reserves be financed? Should the central bank and other bank supervisors have authority to provide credit to the banking system? Should the central bank permit the banking system to offer US dollar deposits in competition with local currency deposits?

The stresses evident in financial markets across Latin America since the Mexican financial crisis provide an opportunity to evaluate whether financial liberalization has provided sufficient protection against volatile capital flows. Since financial liberalization has been implemented in varying degrees across the markets of Latin America, the effectiveness of policies in isolating markets from financial difficulties can be evaluated. For example, has the application of OECD supervisory standards provided sufficient stability to the financial markets of Latin America, which are much more volatile than those in industrial countries? If not, should the response be to place more direct controls on Latin

American financial markets, or should indirect controls, such as supervisory monitoring of bank loan quality, be modified to function better in the more volatile markets of Latin America?

In addition to evaluating how financial markets have performed, policymakers must evaluate their procedures for handling severe banking problems that may arise as a result of the crisis. Clear policies establishing that bank stockholders will lose their investment if a bank fails can act as a deterrent to risk taking; rigorous enforcement of such policies in a banking crisis is imperative to maintain credibility.

The rest of the paper is organized as follows. Section II considers whether reserve requirements have been effective in controlling excessive liquidity growth. It also discusses the adequacy of bank supervisory standards, such as capital to risk-weighted asset standards, in controlling expansion of risky bank credit that often accompanies excessive liquidity expansion. This section also discusses the role dollarization plays in protecting the domestic financial system in the event of an exchange rate crisis. Section III analyses whether the development of domestic capital markets has improved or hindered the ability of policymakers to isolate their markets from volatile capital flows. Section IV reviews the experiences of the United States and Chile in resolving recent banking crises to derive lessons on how cleanups can be managed to reduce long-term risk in the financial system. Each of the above sections is followed by questions for discussion. Section V concludes the paper.

II. Achieving Stability in Latin American Banking Systems

Coupled with comprehensive stabilization programs aimed at correcting macroeconomic imbalances, since the late 1980s and the beginning of the 1990s, many Latin American countries embarked on major structural reforms designed to improve the capacity of markets to price and allocate resources efficiently. The restructuring of financial markets has been a crucial component of these structural reforms.

This section considers the recent experiences of Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela in liberalizing their banking systems.

Major efforts in this direction have included the reduction of reserve requirements on deposits and the elimination of interest rate controls on deposits and loans. Compared to the late 1980s and, in some cases the early 1990s, reserve requirements on domestic currency deposits are much lower in many Latin American countries. For example, Mexico has completely eliminated reserve requirements on bank deposits. In Peru and Venezuela reserve requirements have been reduced significantly, and they have been reduced somewhat in Argentina and Colombia. In sharp contrast to the general trend, reserve requirements in Brazil have increased significantly in recent times. Today at least some bank deposit and loan interest rates are market determined in all seven countries.[2]

However, as noted in the introduction, a number of analysts question whether market forces can solely be relied on to promote stability in financial environments as volatile as those in Latin America. The debate is whether supervision alone creates sufficient stability or whether stronger policy tools, such as high reserve requirements, are necessary to control excessive volatility in liquidity resulting from capital flows.

Based on the various experiences of the seven sample countries, this section deals with three issues. First, it examines whether countries with relatively high reserve requirements on bank deposits have better controlled liquidity growth than those countries with relatively low reserve requirements. Second, it considers whether supervisory standards have been effective in reducing the growth of high-risk credit, which often accompanies rapid liquidity growth. This subsection also discusses how regulators can use a variety of market and accounting signals to assess the quality of banks. Third, this section discusses how dollarization affects the banking system in a currency crisis such as the one that recently occurred in Mexico.

1. Deregulation and the Expansion of Liquidity: Are High Reserve Requirements a Good Idea?

Deregulation of the banking system covers a wide range of issues. For example, it has meant a decrease in the use of asset allocation programs and a

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[2] For a summary of the process of financial reform in Latin America, see Westley (1993).

liberalization of interest rate controls on bank assets and liabilities. However, as noted above, policymakers have remained concerned about the impact of volatile capital flows on their economies. Consequently, they continue to debate the desirability of high reserve requirements.

A sudden reversal of capital flows can lead to doubts about the viability of the exchange rate regime and/or the soundness of the domestic financial system. Resulting foreign exchange reserve losses may be exacerbated if a large part of an economy's financial assets are held in liquid form such as bank deposits, which can be exchanged easily for international reserves. The concept behind high reserve requirements is that they facilitate the control of liquid instruments. By reducing the interest rate on bank deposits and increasing the interest rate paid on loans, high reserve requirements make both loans and deposits less attractive than in their absence.

In addition, reserve requirements placed on banks are a funding source for the central bank -- that is, they are a liability on the central bank's balance sheet. High reserve requirements increase the size of the central bank's balance sheet relative to bank balance sheets; hence, by reducing the stock of domestic money, high reserve requirements can be used to increase the stock of international reserves relative to bank deposits.[3] Supporters of high reserve requirements argue that a high ratio of international reserves to bank deposits provides protection in an attack on the exchange rate because, if investors holding local currency liquid assets should demand US dollars from the central bank, their demands can be satisfied without disrupting local credit markets. Because the central bank has large dollar reserves it does not have to resort to high domestic interest rates to defend its exchange rate.

Thus, proponents of high reserve requirements, while recognizing that reserve requirements are an inefficient tax on the banking system, contend that they serve a prudential function by controlling liquidity growth. Opponents of high reserve requirements on banks respond to these arguments by claiming that the

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[3] If a central bank operates as a currency board, bank reserves can only be created if the central bank acquires foreign currency for the bank reserves it creates. If the central bank follows a floating exchange rate policy, it can freely determine the nominal quantity of bank reserves, but it can follow a policy of buying foreign currency at the market price for the bank reserves it creates.

issue is not the relationship of banks deposits to international reserves but the relationship of all liquid assets relative to international reserves, and high reserve requirements encourage the substitute of other forms of liquidity for bank deposits.

This subsection examines whether high reserve requirements are a useful instrument in controlling liquidity by forcing a tight relationship between the quantity of liquid assets and the monetary base. If reserve requirements are effective in controlling liquidity, countries with high reserve requirements would display a low ratio of liquidity to monetary base, and the growth of liquidity would be tightly constrained by growth in bank reserves.

Figures 1a and 1b plot the ratio of domestic currency liquid assets to monetary base against marginal reserve requirements on demand (sight) deposits and time deposits respectively. Liquidity for each country is defined broadly to include currency held by the public and both bank deposits and non-bank liquid assets held by the non-bank public.[4] The major non-bank assets included in the definition of liquidity are short-term government securities and liquid liabilities issued by the central bank. The data are restricted to domestic currency liquid assets and domestic currency monetary base. If high reserve requirements lead to a low ratio of liquidity to monetary base, the relationships depicted in these two charts should be roughly downward sloping.

As is evident from Figures 1a and 1b, in 1994 there was no clear relationship between liquidity to base money and reserve requirements on either demand deposits or time deposits. For example, Chile has very similar reserve requirements on domestic currency demand deposits to Peru and Venezuela, yet it has a substantially higher liquidity to base money ratio than the other two countries. Also, Colombia has reserve requirements on demand deposits and time deposits that are similar to those in Argentina, yet Colombia has almost three times the ratio of liquidity to monetary base as Argentina.

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[4] For a detailed definition of liquidity for each country see the Appendix.

Figure 1a

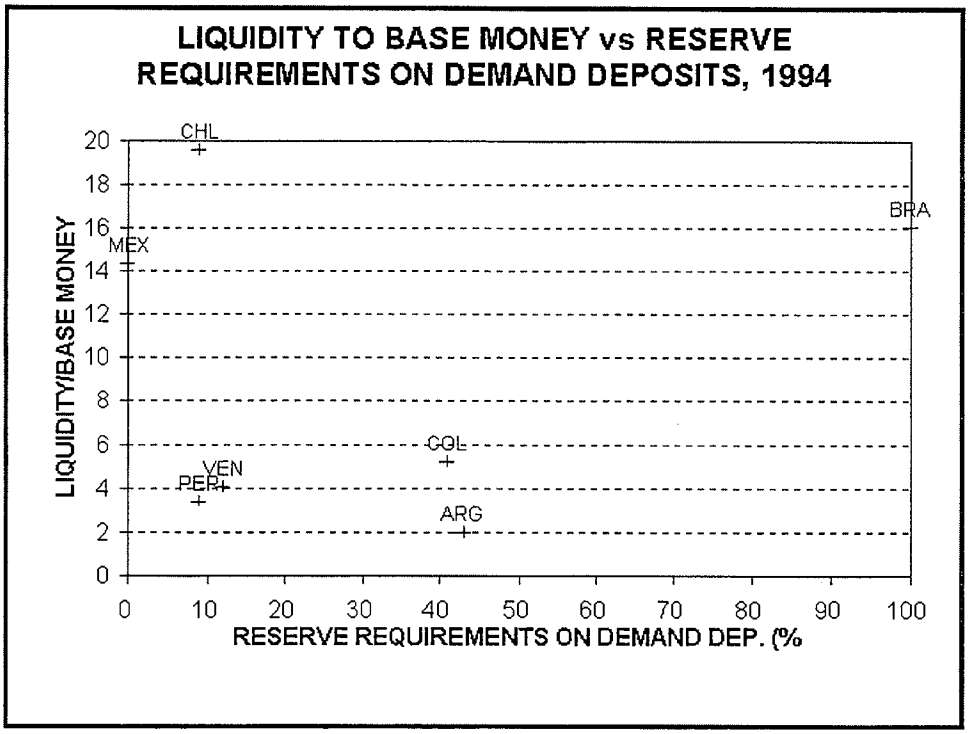
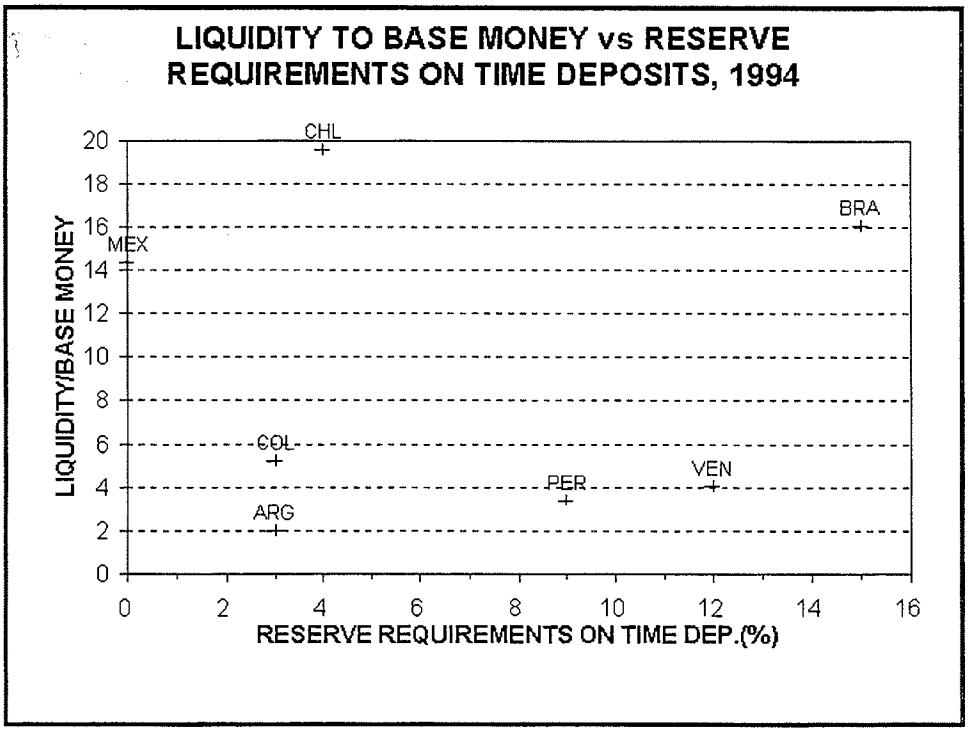
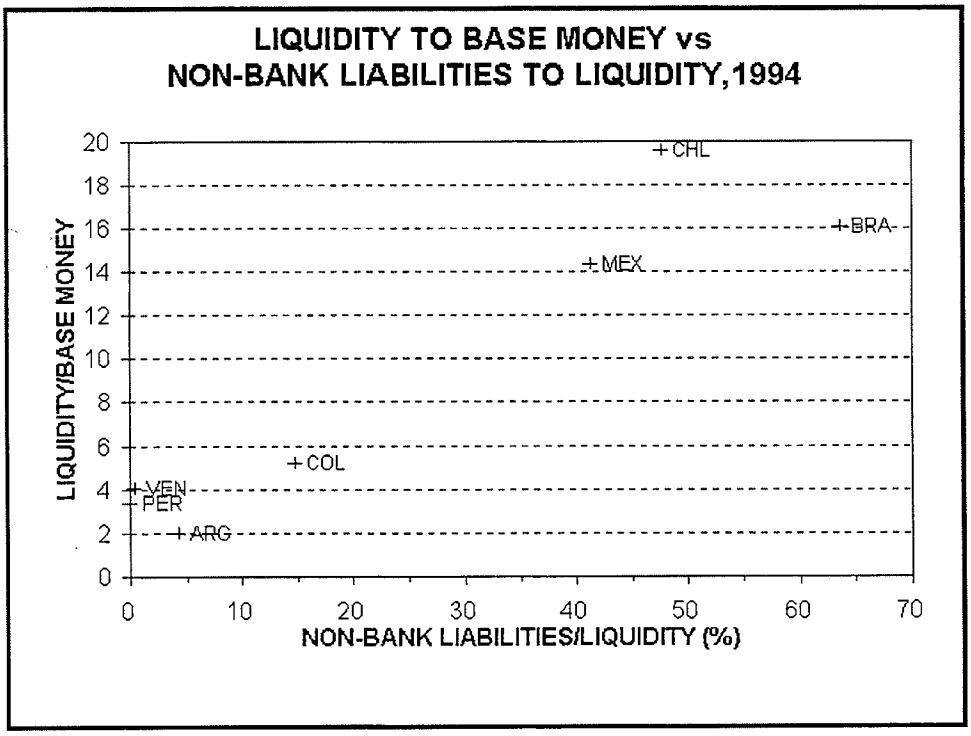


Figure 1b



The reason for the lack of a definite relationship between reserve requirements and the ratio of liquidity to monetary base is evident in Figure 2, which depicts the relationship between the ratio of non-bank liabilities in domestic liquidity and the ratio of liquidity to monetary base. The ratio of non-bank liabilities to liquidity is highest in Brazil[5] and lowest in Peru. Clearly, the importance of non-bank money market securities is a more important determinant of the ratio of liquidity to base than are reserve requirements. Government and central bank short-term securities are important components of liquidity in Brazil, Chile, and Mexico. These three countries also have the highest ratio of liquidity to base, even though they follow very different reserve requirement policies.

Figure 2



[5] The ratio for Brazil has been declining as the banking system has been expanding relative to the short-term government bond market. The data in Figure 2 corresponds to August 1994.

Anecdotal evidence suggests that, even in the absence of open market paper, when reserve requirements are high, informal market arrangements evolve to undermine their effectiveness. For example, "mesa de dinero" markets, in which corporations buy and sell corporate receivables, were large when high nominal interest rates and high reserve requirements made it expensive to hold demand deposits. In Brazil, many transactions occur with post-dated checks, which reduces the need to hold demand deposits subject to 100 percent reserve requirements for transactions purposes. These informal markets rarely show up in the data on liquidity aggregates.[6]

Figures 3a and 3b demonstrate that, on average, over 1993 and the first six months of 1994 there was no negative relationship between the real annualized growth in domestic currency liquidity, defined as nominal growth adjusted for exchange rate changes, and reserve requirements on either demand deposits or time deposits.[7] Even though reserve requirements are a tool to control nominal liquidity growth, we measure growth in dollar terms because of the disparity in inflation rates across countries, which distorts the data significantly. An interesting observation is that, Mexico, with no reserve requirements, experienced decidedly moderate liquidity growth over the period.

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[6] At major Brazilian banks demand (sight) deposits represented about 13 percent of deposits as of December 31, 1994, compared to a ratio of 20 percent or more in most Latin American countries. These data imply that Brazilians use substitutes for demand deposits for transactions purposes, as suggested by the anecdotal evidence.

[7] Brazil data are for the first five months of 1994, annualized. The negative liquidity growth in dollar terms observed for Venezuela is due to the exchange rate devaluation of early 1994.

Figure 3a

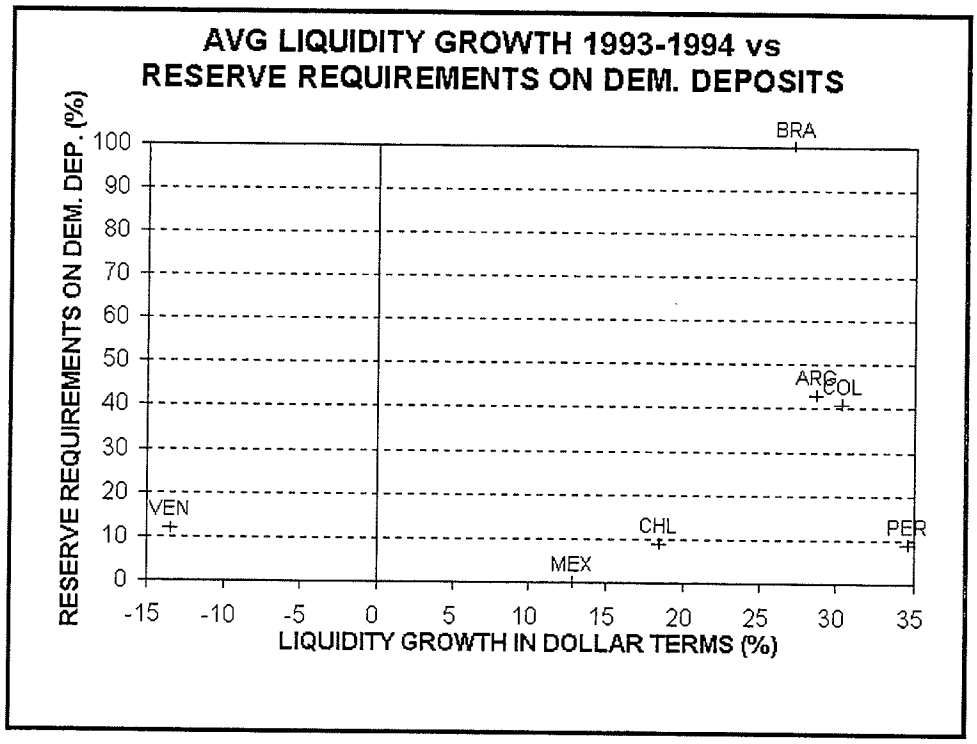
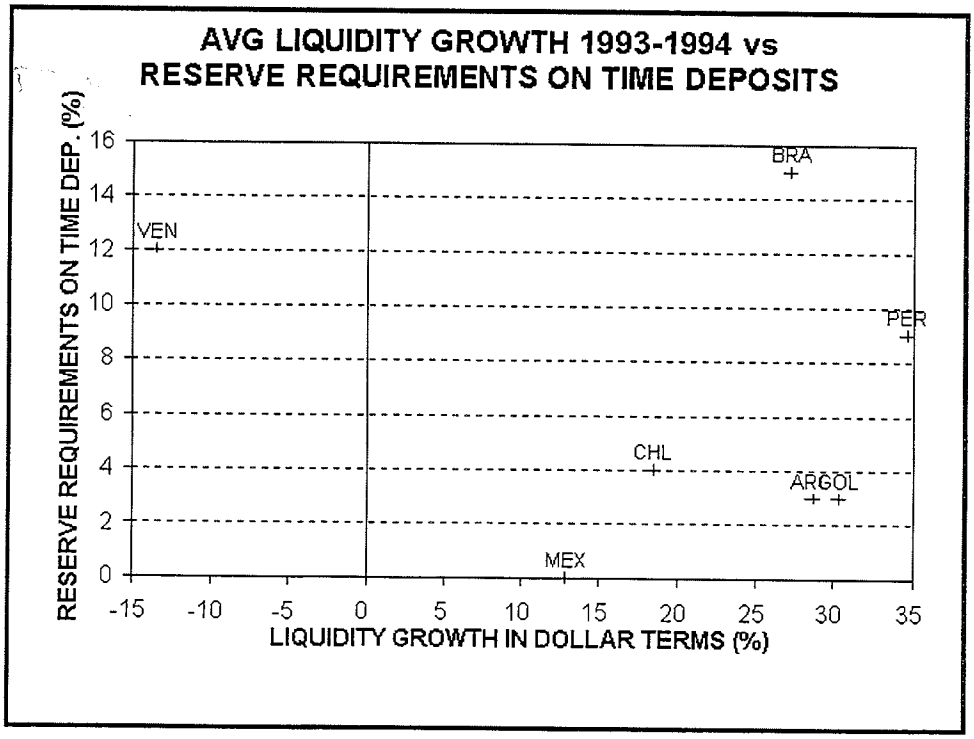


Figure 3b



The final issue to consider concerning the efficacy of high reserve requirements is whether they lead to a low ratio of liquidity to international reserves. There are several reasons why no relationship need exist. First, as evident in Figure 2, not all liquid assets are liabilities of banks. Second, a central bank can use reserve requirements to fund domestic credit expansion. In fact, in the late 1970s and early 1980s, reserve requirements were used to finance domestic credit expansion in many Latin American countries. As the well-documented experience of the debt crisis illustrates, this kind of credit expansion often leads to large losses in international reserves. Third, reserve requirements are only one liability on a central bank's balance sheet. Central banks can, and do in several countries, issue open market paper. They can also fund themselves with government deposits or long term foreign liabilities.

The lack of a negative relationship between high reserve requirements and a low liquidity to international reserve ratio is confirmed in Figures 4a and 4b, using 1994 data. Neither the level of reserve requirements on demand nor time deposits has any discernable effect on the ratio of liquidity to international reserves. Mexico, with zero reserve requirements, had an exceptionally high ratio of liquidity to international reserves, but the evidence from the rest of the countries does not suggest that lack of reserve requirements is the cause of this relationship.

Figure 4a

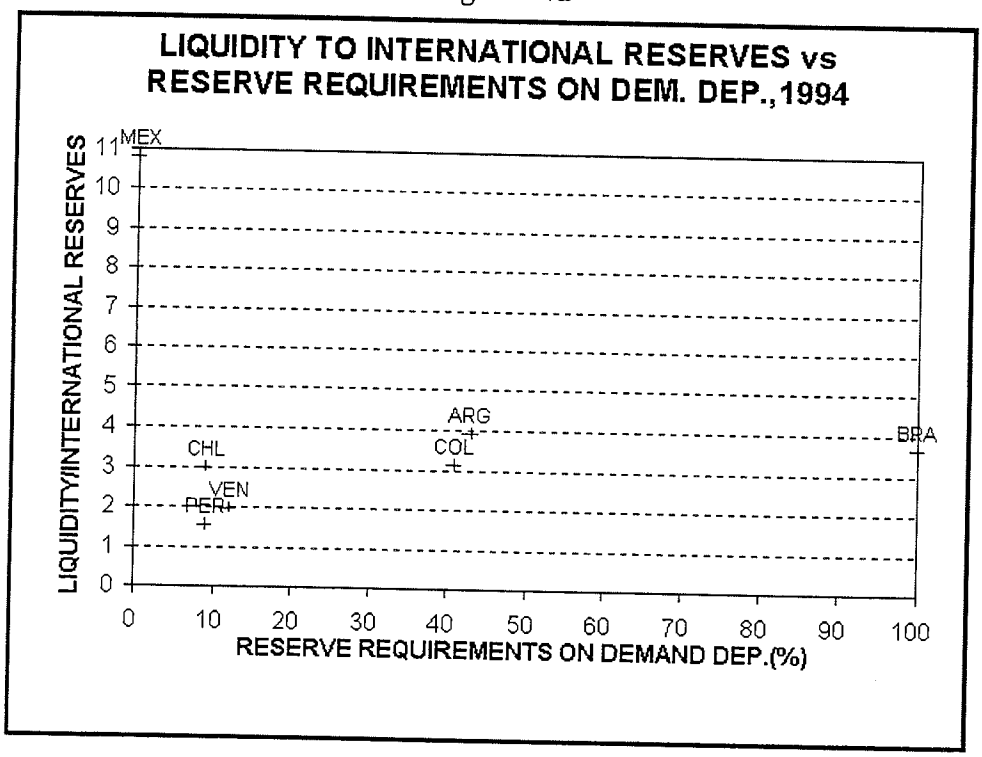
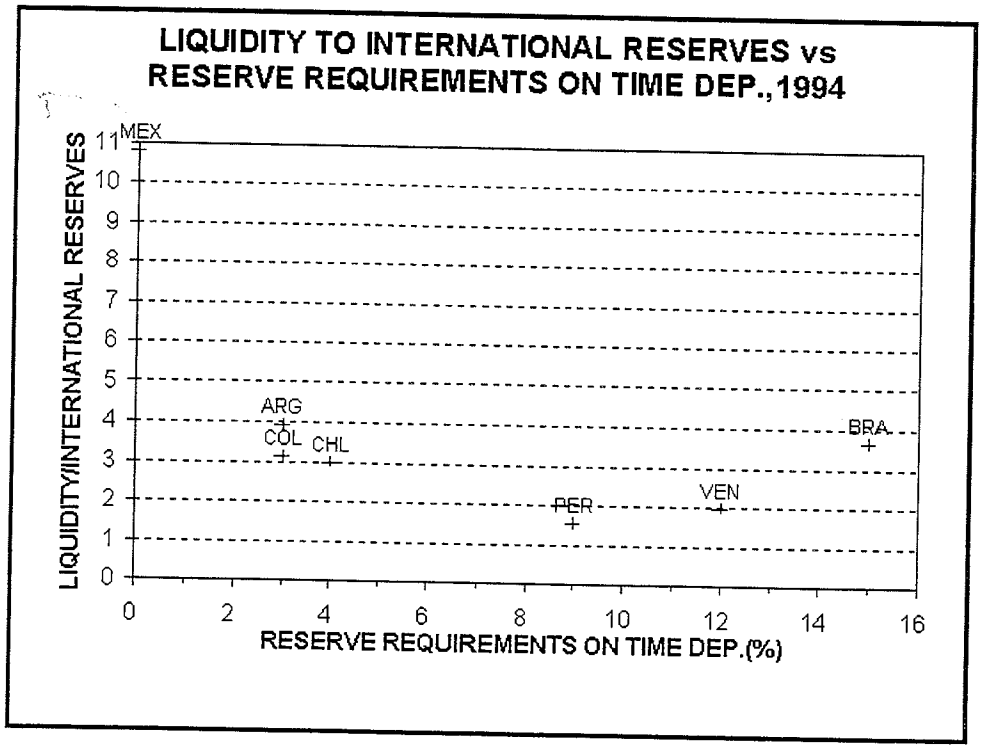


Figure 4b



2. Bank Supervision as a Tool for Financial Stability

Supporters of financial liberalization have argued that improved bank supervisory techniques could replace direct controls on the banking system, such as high reserve requirements, to maintain policymaker control over reckless increases in bank credit. Unlike reserve requirements which operate only on liquidity control, bank supervision ideally affects both the quantity and quality of credit expansion.

A major supervisory tool that has been designed and implemented over the last decade is an international standard for the ratio of capital to risk weighted assets.[8] This standard was instituted to ensure that banks internalize the cost of holding high risk assets. The internationally accepted minimum standard is a ratio of eight percent capital to risk-weighted assets, of which half must be equity capital.

In a number of industrial countries, investors' perceptions about the availability of public support for banks in a crisis prevents interest rates on bank liabilities, especially deposit liabilities, from fully reflecting the risk of bank asset portfolios. Capital represents a more expensive source of funds for banks in much of the industrial world because the public commitment to bail out bank shareholders is not as strong as the commitment to bail out liability holders. Hence, by requiring banks to hold more capital against risk assets, supervisors raise the cost of funding risk assets, which should lead banks to hold safer portfolios.

The imposition of capital standards on banks can also reduce the growth rate of bank balance sheets. Imposing capital standards on banks serves the function of constraining asset growth. High capital ratios must be supported by high net income relative to assets. Thus, if banks are to grow without increasing leverage, they must not bid aggressively for deposits nor bid for loan volume by reducing loan rates.

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[8] This ratio is calculated by classifying assets by risk and assigning risky assets a higher weight than less risky ones. For example, typically, loans are given a 100 percent weight whereas interbank deposits held with major banks in industrial countries are given a zero weight. Capital is defined as equity capital, including paid in capital and the retained earnings account, which is designated primary capital, and certain preferred equity and subordinated debt issues, which is designated secondary or tier 2 capital.

The risk-weighted capital standards have had a profound effect on banking behavior in industrial economies such as the US and Japan. US regulatory authorities use them as a basis for determining whether a banking organization should be permitted to engage in new activities, and banks with deficient capital are not permitted to expand their assets. US investors have also adopted the risk weighted measure to evaluate the soundness of individual banks. The stocks of banks with low capital ratios trade at lower price than other banks.[9] Moreover, over the last few years in Japan, supervisory standards have led some major banks to restrict asset growth to comply with minimum capital to risk asset ratios, which were severely impacted by the asset deflation of early 1990.

At least five of the seven countries discussed in this section have adopted BIS capital standards. This leads to the issue of effectiveness of these standards in Latin America.

A rough measure of the effectiveness of capital standards across countries is whether banking systems with higher capital to loan ratios, which we use as a proxy for the capital to risk weighted asset ratio,[10] have experienced lower real growth in loans and therefore lower real growth in liquid liabilities of the financial system than countries with lower ratios.[11] Like reserve requirements, bank capital ratios directly affect the growth of bank deposits; however, they also indirectly impact liquidity growth because banks are an important funding source for money market instruments in Latin America. Our interest is in measuring the effectiveness of both reserve requirements and capital ratios in controlling liquidity growth because investors can sell any liquid instrument at its face value for international reserves.

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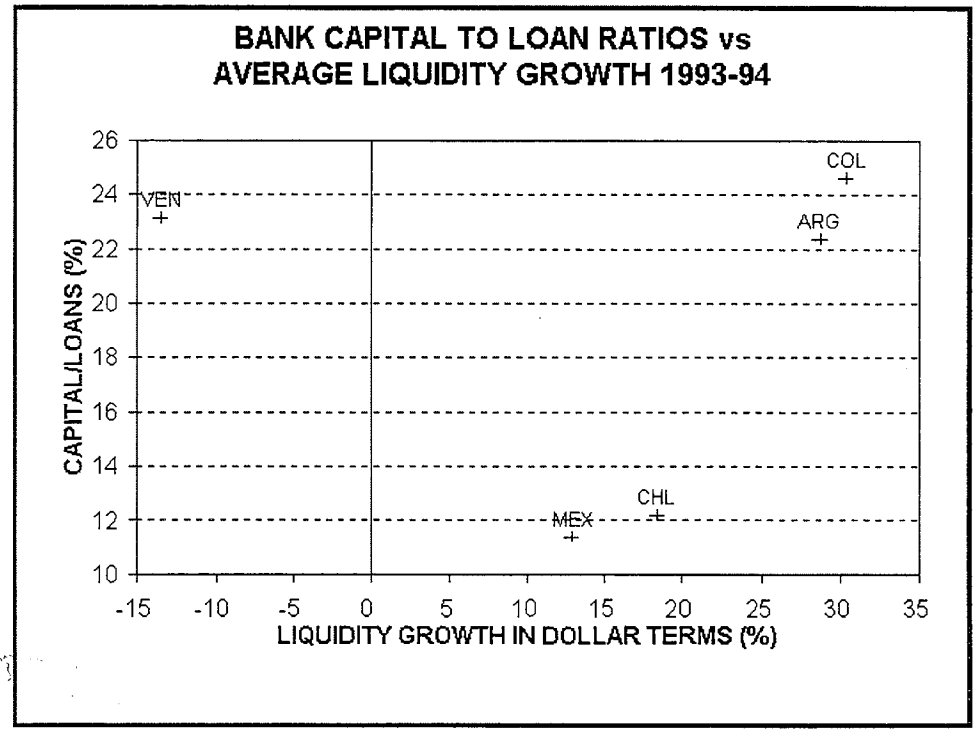
[9] Part of the reason for this is that if a bank must issue new equity to comply with the guidelines, it will likely lead to a dilution of earnings per share, at least in the short run.

[10] There are several justifications for this simplification. The first is that the market for subordinated debt and preferred shares is small in most Latin American countries, and credit risk is likely to be the major risk facing the banks. For example, the capital to loan ratio of 11.7 percent as of September 1994 is a fairly close approximation of the 10 percent ratio calculated by the Bank of Mexico.

[11] By BIS capital standards, as applied in the US, loans receive a 100 percent risk weighing.

Figure 5 depicts the relationship between capital to loan ratios and real liquidity growth, again, defined as growth in local currency liquidity adjusted for exchange rate changes, averaged over 1993 and the first half of 1994. Clearly, the figure shows that higher capital to loans ratios have not been associated with a lower growth in liquidity in dollar terms.

Figure 5



Bank supervision, including evaluation of the adequacy of bank capital, however, requires a detailed analysis beyond aggregate data; it is imperative to understand the condition of individual banks. Thus, for a given country, it is difficult to determine from aggregate ratios whether capital standards restrain the growth of risky assets or whether some banks are improperly reporting their capital to loan ratios. In accounting terms, bank capital is merely the difference in the value of bank assets and its liabilities. If assets are improperly valued, bank capital does not give an accurate picture of the quality of bank balance sheets. A major determinant of the value of bank assets in Latin America is the percentage of its loan portfolio accounted for by non-performing loans. Hence, to evaluate the quality of bank capital to asset ratios, we need to have reliable evaluations of the quality of bank assets.

One might begin by using additional accounting ratios provided by banks to their supervisors, for example, the ratio of loan loss reserves, also referred to as provisions, to non-performing loans.[12] In the United States in 1991, at the height of the last recession, the ratio of non-performing loans to loans at the ten largest commercial banks was 8.21 percent. The ratio of loan loss reserves to non-performing loans for these banks was about 45 percent. In Japan, the reported ratio of non-performing loans to loans is about 4 percent at city banks as of September 1994 and the ratio of loan loss reserves to non-performing loans is about 37 percent.

Among Latin American countries, in Mexico, as of September 1994, the ratio of non-performing loans to loans was 10.5 percent, and the loan loss reserve coverage was 41 percent for the banking system as a whole. In Chile, for the banking system as a whole, as of November 1994, the ratio of non-performing loans to loans was 1.4 percent, and the loan loss reserve coverage was 157 percent. For Colombia, as of September 1994, non-performing loans to loans was 5.2 percent and the reserve coverage ratio was 26 percent for large banks.

Thus, it appears that the Mexican ratios as of September were similar to the US ratios in 1991. In contrast, the Chilean and Colombian non-performing ratios are very low, even when compared to US banks in prosperous years. The reserve coverage ratio in Chile is exceedingly high, while in Colombia it is below the coverage ratio aimed at by US banks.

Aggregates, however, mask the behavior of individual banks. Some banks may hesitate to declare loans non-performing because this entails an implied commitment to increase loan loss reserves, which must be financed at the expense of net income. Since lower net income means fewer retained earnings, which become part of the capital account, an increase in non-performing loans indirectly reduces bank capital. Hence, if banks have incorrectly reported

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[12] In the United States the income item for provisioning against non-performing loans is called loan loss provisions whereas the balance sheet item is called loan loss reserves. Also, in the United States loan loss reserves appear as a contra item on the asset side of the balance sheet. These accounting conventions vary across countries.

non-performing loans, they are probably overstating their capital to loan ratios.[13]

Thus, to obtain an accurate view of the quality of bank portfolios, one must often look beyond both reported capital to asset ratios and beyond reported loan loss reserve to non-performing loan coverage ratios[14]. In addition, to assess the accuracy of the above ratios, policymakers must often consider market signals. For example, if one group of banks is bidding more aggressively for funds than another, the aggressive group may be taking on more asset risk to cover its higher deposit costs. In 1985, US money center banks[15] paid 70 basis points more than all banks on interest-bearing deposits. This spread increased year-by-year, and by 1990, money centers were paying 168 basis points more for deposits.[16] In 1990, money center bank non-performing loans reached 6.85 percent of their loan portfolio, compared with 4.19 percent for all banks.[17]

As discussed above, an assessment of individual bank behavior is at the heart of bank supervision. To facilitate this analysis, supervisors often classify banks into groups by type of customer they serve; this is known as "peer group analysis." For example, a commonly used segmentation is wholesale--banks with large business customers--vs. retail--banks with consumer and small business customers. Supervisors have some expectation of how each peer group is expected

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[13] For example, the Japanese definition of non-performing loans is not as stringent as in the US. The Japanese definition is loans with past due interest of 60 days and loans to bankrupt firms. The US definition includes loans with past due interest of 30 days.

[14] For a discussion of the difficulty in using capital to asset ratios of Latin American banks as a measure of soundness in the 1980s, see Rojas-Suarez and Weisbrod (1994).

[15] These are large banks located in New York, Chicago, and San Francisco.

[16] The decrease in spreads was not due to differences in the level of market interest rates, which were similar in 1985 and 1990. In addition, interest rates fell between 1990 and 1991, and the spread remained substantially above the 1985 level.

[17] The financial problems of money center banks in the early 1990s are illustrated by the fact that Citicorp required a large infusion of capital from a private investor to maintain its capital to risk asset ratio at the regulatory minimum.

to behave. If accounting ratios of individual banks deviate significantly from their peers, this can be an early warning signal of trouble.

A commonly used segmentation is to divide banks into wholesale and retail groupings. In Latin America the two classes of banks might be distinguished by the ratio of demand (sight) deposits to assets, with wholesale banks having a higher ratio than retail banks.[18] Wholesale banks usually have lower interest income relative to assets than retail banks for two reasons: the default rate on retail loans is often higher than on wholesale loans and the non-interest expenses per loan are usually higher for retail loans.[19] In developing countries, wholesale bank interest expenses are often lower than at retail banks as well because a large portion of wholesale bank funding is through demand deposits, which have no or very low interest expenses.[20] Retail banks should have higher net interest margins (NIM), the difference between interest income and interest expense, relative to assets because the risk is greater and non-interest expenses are higher.

Mexican banking data provide an illustration of the value of peer group analysis in spotting problems in a banking system. Table 1 compares several averages of balance sheet and income ratios for selected wholesale and selected retail banks in Mexico, as well as for the banking system as a whole. The ratio of demand deposits to total deposits at wholesale banks is 37 percent whereas at selected retail banks it is 16 percent. Both interest income to assets and interest expense to assets are substantially lower at wholesale banks, as is typical for banks in most Latin American markets. However, in contrast to the expected difference between accounting ratios of wholesale and retail banks, the

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[18] In contrast, in the United States where large corporations hold repurchase agreements, which are purchases of government securities with agreement to resell the next day, for liquidity rather than demand deposits, wholesale banks often have a lower ratio of demand deposits to deposits than other banks.

[19] Acquisition, servicing, and distribution costs per dollar of asset generated are higher in retail banking than in wholesale banking.

[20] The data across several countries strongly suggests that demand deposits are a substantially cheaper source of funds for banks than other liabilities. In the US, interest expenses at wholesale banks are higher than at retail banks because wholesale banks have a relatively low ratio of demand deposits to total liabilities and other wholesale deposits pay market interest rates.

ratio of net interest margin to assets for selected retail banks is below that of selected wholesale banks. This suggests that the retail banks are not being adequately compensated for the risk in their loan portfolios. In addition, the selected retail banks' capital to loan ratio is lower than for the industry as a whole, implying that these banks are riskier than average. These data indicate that wholesale banks in Mexico are less vulnerable than selected retail banks, which is consistent with press reports on the types of Mexican banks reportedly facing financial difficulties since the emergence of the current crisis.

TABLE 1
Selected Banks' Balance Sheet and Income Ratios
as of September 1994 (in percent)

	Banking System	Wholesale Banks	Retail Banks
Asset Mix			
Cash/Assets	2.1	1.9	1.5
Repos/Assets	9.1	7.0	28.3
Loans/Assets	55.1	56.1	41.5
Securities/Assets	20.2	20.7	16.5
Deposit Mix			
Demand Deposits/Total Deposits	26.1	36.7	16.4
Provisions/Non-Performing	40.7	41.9	55.2
Non-Performing Loans/Loans	10.5	10.7	11.3
Capital/Loans	11.4	13.2	9.1
Interest Income/Assets	11.6	10.6	13.8
Interest Expenditure/Assets	8.1	6.6	11.2
Net Interest Margin/Assets	3.5	4.0	2.7

Source: Comisión Nacional Bancaria, "Boletín Estadístico de la Banca Múltiple," Sept 1994.
Note: Income items are accumulated through September 1994 and not annualized.

While individual bank analysis is a powerful tool for effective bank supervision, it must be noted that supervisors, even when well informed about banking difficulties, face a major dilemma. Although prompt action against weak banks is recognized as desirable, announcements of problem banks may generate fears that raise questions about the soundness of the entire banking system. These concerns can often be reduced by thorough and continuous disclosure of the

condition of individual banks to help the public distinguish between solid and weak institutions.

Moreover, in spite of best efforts to monitor bank risks, supervisors face an additional obstacle: supervision can be evaded, just as can high reserve requirements. Banks can set up highly leveraged subsidiaries holding risky assets in offshore banking centers. They can also increase "off balance sheet" commitments, such as standby letters of credit,[21] in the domestic market. Hence, if supervision is to be truly effective, it must be done on a consolidated basis and cover all bank commitments whether on or off the balance sheet.

3. Financial Stability and Dollarization

A number of Latin American countries permit banks to offer dollar-denominated deposits and loans as part of a set of policies governing the structure of their financial systems. In an exchange rate crisis, these policies can also serve the purpose of relieving pressure on domestic financial systems by allowing redenomination into dollars to avoid an attack on international reserves.

To provide a safety valve, however, several conditions must obtain. First, reserve requirements on dollar deposits must not be greater than those on domestic currency deposits. Otherwise, an attempt to redenominate deposits and loans will result in a shortage of reserves and a run up in short-term interest rates.[22]

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[21] Standby letters of credit commit a bank to pay off a credit obligation if a borrower loses access to non-bank sources of credit. Under BIS standards, standby letters of credit are included as an item in risk weighted assets even though they are an off balance sheet commitment.

[22] If reserve requirements on dollar deposits is greater than reserve requirements on domestic currency requirements, the shift to dollar deposits requires banks to deposit more funds with the central bank. The banks must present dollar assets to the central bank to obtain the needed reserves. If the central bank will only accept US Treasury bills or dollar deposits in US banks for discount, banks must reduce their loan to deposit ratio to obtain the required liquid assets, which would raise the interest rate on both dollar and domestic currency loans. If the central bank were willing to discount dollar-denominated local assets, the interest rate on dollar deposits would rise as investors would perceive an increase in risk that dollar deposits in local banks could not be converted into dollar deposits in New York banks. The latter point assumes that the shift toward dollar

Second, investors must be willing to hold their dollar denominated deposits in the domestic banking system. If, for example, investors decided to place their dollar deposits in US banks -- that is, if investors run the local banking system, dollarization is likely to have the same consequence as a run on international reserves without dollarization. As investors leave the local banking system, they will demand international reserve assets to deliver as payment for deposits in New York. Among the sample countries permitting dollar deposits (Argentina, Chile, Colombia, Mexico, and Peru), only Argentina places the same reserve requirements on foreign currency deposits as on domestic deposits. The other four place higher reserve requirements on foreign currency than domestic currency deposits.

The shift from local currency to dollar deposits is most likely to be accompanied by a shift out of the local market when investors not only have doubts about the value of the local currency but also have doubts about the soundness of the local banking system. In other words, if a country has a weak banking system, it is unlikely to avoid the strains of a currency crisis by adopting a policy of dollarization with the same reserve requirements on dollar and domestic currency deposits.[23]

While dollarization provide an effective tool for fighting a currency attack in a sound banking system, its benefits come at a cost. Most importantly, the central bank loses seignorage profits. In cases of extreme dollarization, the central bank's ability to provide lender of last resort protection to its banks is also diminished since banks would mostly need foreign currency to deal with short-term liquidity problems.

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deposits results in a change in the mix of central bank assets held against banks' reserve accounts.

[23] See Rojas-Suarez and Weisbrod (1994).

III. Do Capital Markets in Latin America Contribute to Stability?

In the 1970s and early 1980s, much of the capital flowing into Latin America took the form of loans from foreign banks. In contrast, in the 1990s, the two major sources of capital inflows were: (a) the return of capital flight by residents and (b) the purchase of bonds and equities by foreigners, most notably US mutual funds. This leads to the question of whether foreign interest in capital markets instruments issued by borrowers in developing countries has stimulated the growth and deepening of domestic capital markets, especially in long-term bonds and equities, which are considered stable sources of international capital. This section concludes that, in most countries, long-term capital markets remain thin. In addition, this section considers the extent to which the development of short-term securities markets, mostly for government and central bank liabilities, has affected the ability of policymakers to cope with variable international capital flows.

1. The Development of Long-Term Capital Markets

This subsection compares the mix of securities trades and the volume of new issues among major countries to assess progress in developing long-term markets. Table 2 presents long-term Eurobond issuances relative to new domestic credit at financial institutions for selected countries calculated as a weighted average over the first half of 1993 and the first half of 1994.[24] The data indicate that domestic credit is by far a more important source of funds than are Eurobond issues. Even in Argentina and Mexico, where Eurobond issuance was relatively high, access to the market was limited to government institutions and a few large firms. It is noteworthy that Chile, with a financial system that is more diversified than other Latin American countries, issued no Eurobonds in the two periods cited.

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[24] The weighted averages were constructed by summing new bond issues in the two periods for the numerator and summing new credit created in the two periods for the denominator. This is superior to a simple average because it gives the observation with the largest issuance or credit expansion a greater weight in the average.

TABLE 2
SELECTED LATIN AMERICAN COUNTRIES: NEW EUROBOND ISSUES
Average for 1993-1994 (in percent)

	Weighted Average
Argentina	34.2
Chile	0.0
Colombia	16.7
Mexico	31.6
Peru	2.1
Venezuela	2.9

Source: IFR: Global Finanacing Directory, June 1993 and June 1994, IMF International Financial Statistics , February 1995 and Banco Central de Reserva del Perú, Nota Semanal, February 1995.

Table 3 summarizes the ratio of new equity issues relative to new credits extended by the banking sector to private borrowers from the beginning of 1993 to the latest available date. The data indicate that Argentina, where new equity issues equalled 46 percent of the increase in financial institution credit to the private sector, is the most active new issue market in the recent past relative to growth in domestic credit to the private sector. It should be noted, however, that new equity issues in Argentina were the result of privatizations, representing once and for all placement of equity. In addition, only three firms on the stock market account for over 50 percent of market capitalization. New issues were also a significant share of financial institution credit in Chile, at 27 percent.[25]

[25] The denominator in the Chilean figures excludes pension fund investments in private bonds.

TABLE 3
SELECTED LATIN AMERICAN COUNTRIES: RATIO OF NEW EQUITY ISSUES TO GROWTH IN PRIVATE DOMESTIC CREDIT AT BANKING INSTITUTIONS, 1993-1994

Argentina	46.2
Brazil	0.8
Chile	27.0
Colombia	0.2
Mexico	12.0
Peru	4.8
Venezuela	0.6

Source: Central Bank Bulletins (see References)
Note: Final date in 1994 varies depending on data availability

Table 4 presents a breakdown of the volume of trading by instrument on securities exchanges by country at the end of 1994. These data indicate that Chile is the only market with active trading in a long-term bond, namely a central bank security with indexed principal. In contrast, exchange trading in Colombia and Mexico are dominated by money market instruments.[26] In Brazil, short-term securities are not included in the exchange data. Brazil does, however, have short term securities markets: short-term government and municipal government securities are a large part of liquidity in that country. Equity trading dominates the securities exchange activity in Brazil and Peru. However, as Table 3 indicates, equity markets are a very limited source of finance in these two markets as new issue volume is quite small relative to private credit supplied by banking institutions.

[26] There is also an active money market in Brazilian government securities, but this trading is not included on the Sao Paulo stock exchange.

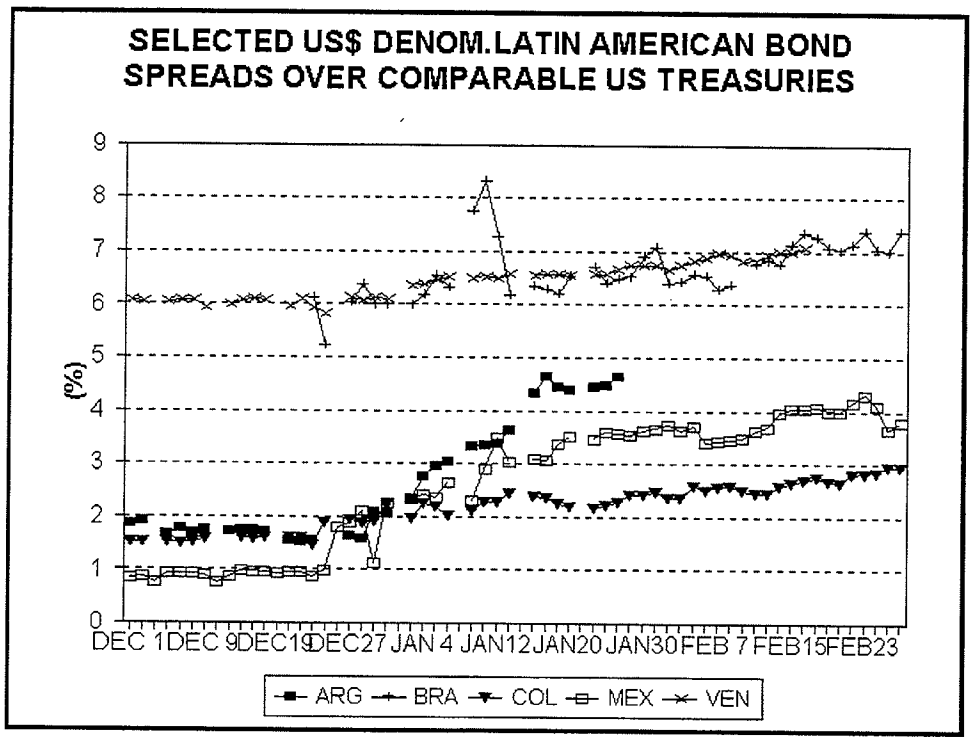
TABLE 4
STOCK EXCHANGES IN SELECTED LATIN AMERICAN COUNTRIES, DECEMBER 1994
Composition of Financial Instruments Traded
(in percent)

	BRAZIL	CHILE	COLOMBIA	MEXICO	PERU
Stocks	53.3	6.1	8.1	4.1	76.6
Money Market		40.6	74.2	64.2	23.4
Fixed Income		53.2	17.1	31.7	
Futures & Options	46.2	0.0			
Other	0.4	0.1	0.5		
Total	100.0	100.0	100.0	100.0	100.0

Source: Stock Exchanges publications (see References)
Note: Data for Brazil and Mexico correspond to November 1994

The evidence presented above indicate that most domestic financial credit needs are met through short-term bank loans and short-term government and central bank securities. A reason for the lack of a significant development of long-term markets can be found by analyzing spreads between some dollar-denominated Latin American issues relative to US Treasuries of similar maturities. For example, these spreads in Mexico and Argentina are some 400 basis points over an equivalent Treasury. For Brazil, it has been some 700 basis points (Figure 6). These data appear to indicate that investors perceive Latin American instruments as riskier than the corresponding US instruments.

Figure 6



It is important to note, however, that the Chilean central bank issues long term debt in the domestic markets that is actively traded on the Santiago Bolsa. The principal is indexed to inflation, and the bonds are currently yielding about 6.25 percent per annum in real terms.

It is sometimes argued that adoption of principal indexing, in which the nominal value of the borrower's debt increases with inflation, encourages the development of long-term capital markets. A contrasting form of indexing, floating rate long-term debt, forces the borrower to pay increasing nominal interest while real principal declines. Private lenders would only prefer principal indexing if they believe that borrowers' ability to repay is unaffected by the inflation rate. This is because in a highly inflationary environment, lenders cannot be certain that borrowers' income streams are indexed to the same extent as their debt contracts.

An additional issue in indexation is that it may serve a useful purpose in lengthening the maturity of government bonds when lack of full credibility about announced policies leads to high ex-ante interest rates. If, however, the government commitment to low inflation is not met, increases in principal

payments that must occur under indexation will exert pressure on the fiscal accounts, raising further inflationary pressures. Hence, indexation in a highly inflationary environment cannot serve the purpose of increasing the maturity of public or private assets.

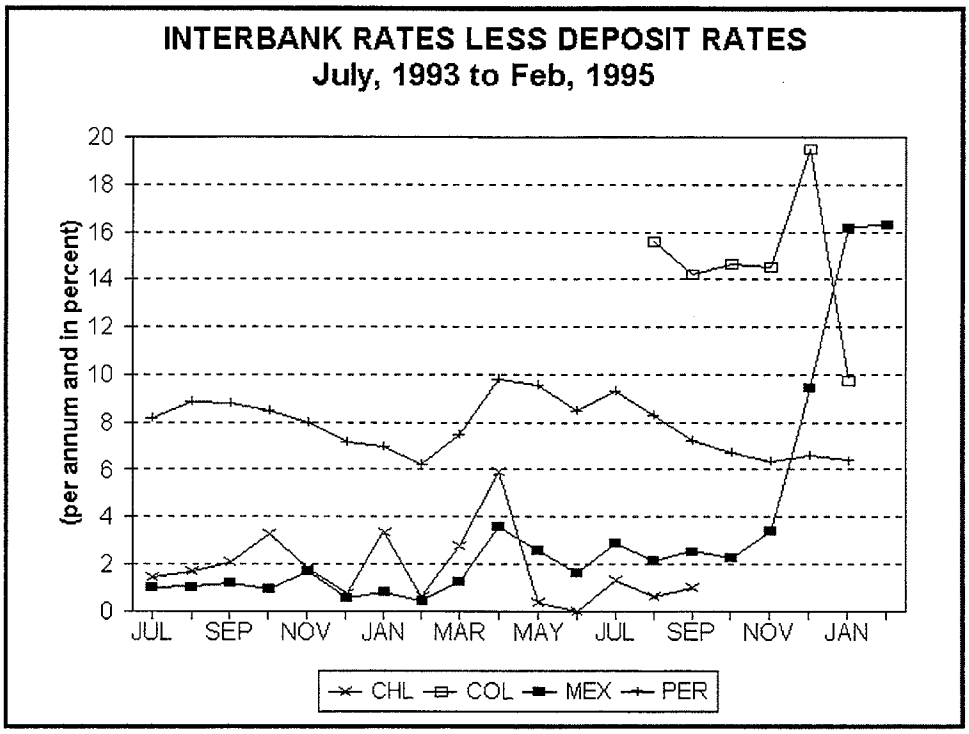
2. The Consequences of Short-Term Securities Markets

As indicated above, the evidence suggests that most of Latin American capital market formation has been concentrated on the short end, especially government and central bank securities. In developed markets, especially the United States and the Euromarkets based in London, the growth of short-term securities markets, including government and private paper, has provided competition to banks that has reduced bank interest rate margins and increased incentives for risk taking in the banking system.

In New York and London, bank interest rate margins have been reduced by money market competition because depositors have viewed non-bank short-term paper as close substitutes for bank deposits. Hence, for example, in the United States, the spreads between term fed funds (the interbank rate), commercial paper, and bank certificates of deposits (CDs) are, at most, a few basis points. As indicated in Figure 7, which plots bank deposit rates against interbank and other open market rates for four countries in the sample, this arbitrage does not occur in Latin American countries as interbank interest rates are significantly above deposit interest rates.

A common explanation for the lack of arbitrage is that bank deposits are subject to reserve requirements, which would depress deposit interest rates, whereas interbank loans are not. However, this arbitrage took place in the United States between term fed fund rates and CD rates prior to 1991 when there were reserve requirements on CDs. In the examples presented in Figure 7, Mexico has no reserve requirements on bank deposits; yet the spread remains positive. Chile actually places higher reserve requirements on interbank funds than on deposits and again, the spread is positive.

Figure 7



This lack of arbitrage has several consequences, some favorable and some unfavorable. Depositors receive low interest rates on their savings, and borrowers pay high interest rates. However, the high spread, if well managed, could permit banks to accumulate capital and other reserve funds to protect themselves in a crisis. Even if banks' high net interest margins support high non-interest expense rather than capital buildup, in a crisis, they can reduce non-interest expenses to help cover defaulting loans.[27]

In addition, as is evident from the spread between deposit and interbank rates in Mexico, during a crisis, the spread between the interbank rate and deposit rates increases. As long as banks can keep deposit rates below the interbank rate without losing too many deposits, banks may also be able to keep rates on loans low to keep borrowers solvent.

Thus, while banking systems isolated from capital markets have their disadvantages in normal times, they can also help stabilize financial markets during a crisis. In contrast to some industrial countries where arbitrage

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[27] For example, it has been reported that Banamex, the largest Mexican Bank, has cut employment by one third during the current crisis.

between banks and non-bank money market instruments prevails, the structure of financial systems in Latin America provides central banks with some freedom to raise interest rates on open market paper to defend the currency without exposing bank borrowers to the full force of those interest rates.

IV. Dealing with Banking Crises: Lessons from the United States and Chilean Experience

Despite the best efforts of policymakers to institute policies promoting strength in the financial system, authorities must always be prepared to deal with financial crises. Crises of relatively large magnitude, requiring government assistance to private banking institutions, have occurred in both industrial countries and developing countries over the last ten to fifteen years.

Regulators often must devise support systems to maintain the solvency of individual banks, even in the absence of a major banking crisis. However, if banking problems accelerate into a crisis, regulators need to be prepared with policies that protect the public, efficiently allocate financial losses, and strengthen the financial system.

This section reviews selected bank bailout experiences to determine how programs might be designed to strengthen incentives for sound banking. In particular, the cases of the United States and Chile are examined to derive lessons for dealing with severe banking difficulties. The experiences of these two countries demonstrate that bailout programs are most successful under two major conditions. First, public credit to distressed institutions must be made conditional on a realistic appraisal of the loan portfolio. Under such programs, only borrowers with a reasonable possibility of returning to solvency are eligible for additional credit -- that is, unpaid interest payments on truly insolvent loans cannot be accrued by issuing new loans. Second, equity holders and large liability holders are forced to absorb the costs associated with the bailout to the fullest extent of their investment. These investors must realize that bank shareholders cannot enjoy high returns from taking risk while benefitting from government protection against losses.

Extricating a banking system from a crisis, however, is a delicate balancing act. Selected liability holders in failed banks -- usually small depositors --

must be fully or partially paid off. The presumption is that small depositors are unable to evaluate the riskiness of financial institutions and hence are not responsible for their failure. The public interest reason for bailing out small depositors is that small depositors in solvent banks, lacking information about their banks' condition, will attack their banks when they observe other small depositors losing their money.

Nevertheless, the behavior of small depositors can make bank rescue efforts more costly. For example, failing institutions will often offer very high interest rates to attract insured depositors. These funds are then used to roll over unpaid interest on non-performing loans as well as fund high risk loans.[28] The most efficient means of preventing risky institutions from attracting insured deposits by paying high interest rates is to close institutions as soon as they become insolvent and pay off the insured depositors in a crisis. Carrying out such a policy requires an up front commitment of public funds because the assets of insolvent institutions and the deposit insurance system are usually not sufficient to pay off insured depositors. In practice, it has been the unwillingness of the authorities to provide immediate public funding to close down institutions that leads to bad policy.

Among a number of countries with severe banking difficulties, the resolution of banking crises has had two distinct phases. As the discussion below illustrates for the United States and Chile, the first phase, which often ends in aggravating the crisis, involves attempting to provide bail out funds for institutions that have, in fact, failed. In the second phase, representing a reaction to the mistakes of the first phase, policymakers institute programs to close failed institutions to prevent them from taking further risks. This phase also includes procedures to strengthen remaining institutions, such as enhanced supervision, improvement in loan workout programs, and more strictly enforced capital requirements.

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[28] When a bank is failing, stockholders and bank employees often have nothing to lose by betting the bank since their equity has already disappeared. A recent example of this is the Barings case. Traders doubled their bets in the hope of extricating themselves from positions that were already in the red.

1. Dealing with the United States Thrift Institution Crisis and the Chilean Banking Crisis: Phase I

In the United States in the late 1970s and early 1980s, the net worth of thrift institutions[29] was impaired by an increase in interest rates on short-term deposits, which were used to fund long-term home mortgages originated at substantially lower long-term rates. Regulators attempted to deal with the problem by providing aid to institutions with impaired capital, under the assumption that with enough time the institutions would be able to solve their problems.[30] This strategy was adopted because public officials did not want to

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[29] Thrift institutions are depository institutions, such as savings and loans and savings banks, that have traditionally taken deposits from consumers to fund residential mortgage portfolios. Their roles and powers have broadened in recent years, but there traditional role has remained the mainstay of their business.

[30] Until the early 1980s, these institutions issued short-term deposits at regulated interest rates that were insured by a government-sponsored agency, the Federal Savings Insurance Corporation (FSLIC) and held long-term fixed rate mortgages as assets. In the 1970s, with the onset of inflation that was extremely high by historical standards, money market mutual funds developed that provided savings and loan depositors with an alternative savings instrument, paying market interest rates. Depositors withdrew their funds, and regulators tried to protect thrifts from this outflow with emergency liquidity assistance. The outflow from thrifts, however, was too severe to manage, and as a result, a period of gradual deposit deregulation began. While deregulation stabilized the flow of funds into the industry, it also placed tremendous pressure on the net interest margins of individual institutions. Many held long-term mortgages made at low interest rates prevailing before the 1974 oil crisis, and they could not afford to fund them at the high interest rates of 1979 and 1980. As a result, the net worth of many institutions became impaired.

The first attempts to deal with the crisis were made through the system for providing liquidity to thrifts, the Federal Home Loan Bank System. Federal Home Loan Banks issued net worth certificates to institutions with impaired capital. These certificates, which appeared as assets on the balance sheets of savings and loans, effectively permitted savings and loans to transfer the risk of underperforming real estate loans to the Federal Home Loan Bank System. Because the net worth certificates raised the value of savings and loan assets relative to liabilities, the net worth of troubled institutions increased, which permitted them to continue to operate. Insolvent institutions now had sufficient capital from the regulatory point of view to continue to operate. In effect, regulators permitted these institutions to expand their activities in the hope that time would permit these institutions

provide the funds necessary to close down failed institutions and pay off insured depositors.

Rather than buying time, however, the policy encouraged institutions with no market net worth to take additional risk. Finally, it became clear that attempting to keep failed institutions in business was only adding to the eventual cost of resolving the crisis.

The nature of the Chilean banking crisis in the early 1980s was different. Its banks had borrowed heavily from foreign banks and made foreign currency loans to domestic borrowers. When these borrowers could not repay the loans, the banks were in danger of defaulting on their foreign currency liabilities.

The rescue effort got off to a somewhat unpromising start. The central bank made extensive credit available to the banking system and to defaulted borrowers, without establishing programs to restructure defaulted loans. Net lending by the central bank to financial institutions increased from 7 percent of GDP in 1982 to over 16 percent of GDP in 1983. In addition, the central bank purchased non-performing loans outright from the banks.

In rescheduling non-performing foreign currency loans, the central bank offered borrowers favorable exchange rates, which created severe losses for the central bank: borrowers presented pesos which were exchanged for dollars to repay loans at a lower ratio of pesos to dollars than available in the market. The losses absorbed by the central bank were not sustainable, forcing it to abandon phase I policies in early 1984.

2. Implementing Sound Restructuring Programs: Phase II

Phase II in the United States was signalled by a shift in philosophy: rather than make it easy for thrifts with no market net worth to operate, these institutions would be seized by the government. The Resolution Trust Company

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to solve their problems.

The expanded powers permitted savings and loans with almost no market net worth to bid aggressively for insured deposits and take large risks on the asset side of the balance sheet. The owners of these institutions had little to lose by taking large risks. The problem was compounded by the fact that the mortgage market was becoming securitized, which reduced the spread between mortgage rates and other long-term securities.

(RTC) was established with authority to issue bonds to cover the cost of restructuring the industry.[31] The RTC also received some direct funding from the government. The RTC's job was to close savings and loans that had no market net worth and dispose of their assets through sales. Thus, owners of savings and loans with no market net worth were prevented from expanding. In addition, equity owners of failed savings and loans lost all of their capital, as did uninsured depositors -- that is, depositors holding deposits of greater than US$ 100,000.[32] Assets in savings and loans declined from US$1,350 billion at year end 1988 to US$832 billion at year end 1992.

In addition, several steps were taken to strengthen regulation of thrifts. A new insurance agency was established, under the direction of the more experienced supervisors of the bank insurance fund. Capital requirements were strengthened, and the regulators were given authority to restrict the growth of any institution that did not maintain adequate capital. Restrictions were also placed on savings and loans' right to make leveraged loans on non-residential real estate.

The savings and loan program established under the RTC had several advantages over the previous program. Most importantly, it had adequate funds to force risky savings and loans into bankruptcy, which established the principle that owners of savings and loans faced the financial consequences of failure. By providing an injection of government money, it reduced the burden of sound savings and loans to bail out the risky ones. Financial institution insurance funds typically are financed by charging insurance fees to member institutions. If the insurance fund bears the entire burden of a bailout, fees must increase.[33]

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[31] An additional agency, the Reconstruction Finance Corporation, was established to issue bonds and provide additional funds to the RTC.

[32] Very few depositors lost money because by the late 1980s, savings and loans had very few large deposits.

[33] Even with an injection of government funds, the debt of the savings and loan insurance fund is substantial. Recently, a controversy has arisen as to whether surviving savings and loans should bear the cost of this debt. These institutions argue that the higher fees will place them at a competitive disadvantage to banks.

Phase II started in Chile in 1984, when the central bank assumed both the non-performing foreign currency assets and the corresponding foreign currency liabilities of the banks. Under the original agreement, the banks were forced to buy back their bad loan portfolios sold to the central bank over a ten year period at the original face value of the loan plus accumulated unpaid interest, rather than at a value determined by how the loan was performing. The accumulated interest was, however, at a subsidized rate.[34]

As an important component of the original agreement, the banks were placed in charge of administering the loan portfolios they had sold to the central bank, which meant that they had responsibility for collecting loan payments and encouraging borrowers to remain current on their payments. Thus, the central bank avoided becoming involved directly in managing loans to the private sector.

The loan portfolios of some banks had deteriorated so badly that they could not be rescued. The government took over these banks, writing down the value of equity by marking the assets to market. Thus, shareholders suffered large losses. The central bank then offered the distressed banks for sale to the private sector. The central bank was able to find buyers, but it also had to contribute capital. The sales agreements were written so that the central bank had first claim on the earnings of the bank for dividend purposes. This policy had two beneficial effects: it demonstrated to an identified group of shareholders that if banks fail, equity holders lose money; it also put new management in place with capital to lose if they took the same risks as their predecessors.

It must be noted that the plan was not a complete success. Some banks were unable to maintain their scheduled repayments to the central bank. In 1989, the ten year payback period was extended indefinitely. Under this plan, banks can only pay dividends to preferred private shareholders[35] until their debt obligations are fulfilled. By the end of 1993, the banking system's obligation to the central bank was estimated to have reached $4 billion, or 10 percent of GDP. Despite the above problems, the Chilean banking system appears to have been

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[34] The central bank had few domestic resources to fund the bailout program so it was financed substantially with foreign funds.

[35] These are the new shareholders, the "capitalistas populares," who bought shares when banks were recapitalized in the mid 1980s.

strengthened by the experience. It has maintained a disciplined growth rate, without relying on high reserve requirements on domestic currency deposits.

The experiences of Chile and the United States have been repeated in numerous countries. For example, in the recent banking crisis in Venezuela, regulators began by providing credit to weak institutions rather than closing them down. Every case demonstrates that implementing phase I policies only makes solving the problem with phase II policies more expensive. The obvious solution is to avoid phase I policies all together. The opposition to spending the required funds to implement phase II may not, however, disappear until it is apparent to all that phase I policies are unworkable.

V. Concluding Remarks

A major challenge facing policymakers in Latin America is the choice of policy instruments to maintain the stability of their financial systems in the presence of highly volatile capital flows. The current debate over how to devise effective tools centers around the question of controlling liquidity aggregates as well as risk to the financial system. As noted in the paper, the dominant financial assets in Latin American systems are liquid paper--issued by banks, central banks, and governments--that investors can readily sell if concerns about the exchange rate and/or the financial system develop. Faced with this financial structure, some analysts have recommended the adoption of policies aimed at controlling liquidity growth through reserve requirements as a way to protect Latin American financial systems from volatile capital flows. Opponents of regulation, however, have argued that the emphasis on control of liquidity growth neglects the importance of managing risk to maintain a stable financial system.

The evidence presented in this paper is that policy tools applied at the aggregate level--whether reserve requirements on bank deposits or capital standards on banks--show no consistent relationship with control of liquidity aggregates across countries. A major reason for the lack of the desired relationship is that there are too many formal and informal avenues for investors to evade the policies.

Hence, this paper suggests that the fundamental challenge to policymakers is to devise supervisory tools that can be enforced at the individual institution level to control financial risk. These tools include imposing balance sheet and

income reporting requirements on banks, comparing reported accounting ratios across banks, and checking accounting data against market signals of financial institution risk. By checking individual bank behavior against comparable institutions and market benchmarks, supervisory standards can be made credible. Strong financial institutions, monitored by professional supervisors, will increase their balance sheets prudently. As a result, liquidity aggregates will grow at a sustainable pace. Finally, after a crisis, resolution procedures must be designed to place the cost of excessive risk on those parties most responsible for taking it.

APPENDIX

DEFINITIONS OF MONETARY AGGREGATES

Argentina:

Liquidity = Total Monetary Resources in domestic currency + Total Deposits in foreign currency

Bank Deposits = All deposits in domestic and foreign currency less Document Acceptances

Brazil:

Liquidity = M4 (Central Bank Definition)

Bank Deposits = Demand Deposits + Savings Deposits

Chile:

Liquidity = M7 (Central Bank Definition)

Bank Deposits = M3 less Currency in Circulation

Colombia:

Liquidity = Total Credit-Generating Liabilities of the Financial System plus Non-Monetary liabilities of the Central Bank held by the public.

Bank Deposits = Total Credit-Generating Liabilities of the Financial System less Currency in Circulation, Bonds of the Financial Corporations, Cédulas BCH and Commercial Financing Firms

Mexico:

Liquidity = M4 (Central Bank Definition)

Bank Deposits = M2 less Currency in Circulation and Bank Acceptances

Peru:

Liquidity = Money plus Quasimoney (of the Banking and Non-Banking Systems, in domestic and foreign currency)

Bank Deposits = Liquidity less Currency and Demand Deposits

Venezuela:

Liquidity = M3 (Central Bank definition)

Bank Deposits = M2 less Currency in Circulation

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