Towards an Effective Regulatory and Supervisory Framework for Latin America

by

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I. Introduction

The justification for regulation of the safety and soundness of banks is similar in Latin America to the justification in the industrial world. Banks operate within a safety net of access to central bank funds in an emergency, and they are often covered by publicly provided deposit insurance. Both these facilities permit banks to transfer some of their portfolio risk from shareholders to taxpayers without compensating them for the risk they bear. Hence, the safety net creates incentives for increased risk taking. As a result, banks must be supervised and regulated to restrain their ability to shift risk to the public.

While the need for bank regulation has long been recognized, the tools for regulating banks in industrial countries have been continuously improved. Most notably, supervisors have developed sophisticated measures for evaluating the adequacy of bank capital. Banks with risky commitments, including both balance sheet and off balance sheet items, must hold more capital than banks holding safe assets. In addition, over the last ten years, supervisors have become more aggressive in insisting upon the adequacy of loan loss reserves against non performing loans. Through pressures to maintain appropriate capital levels and adequacy of loan loss reserves, regulators have been able to restrain the growth of risky banking institutions before their condition deteriorates to where public assistance is necessary. Bank regulators have also developed sophisticated tools to measure bank liquidity, which take into account commitments to deliver funds relative to a bank=s ability to be certain of the receipt of funds.

The success of regulators in industrial countries in monitoring and constraining bank risk has led many commentators to advocate the adoption of similar rules for capital adequacy and similar standards of asset evaluation in Latin America as well as in other developing countries. For example, the weaknesses of the Mexican banking system, so evident in the aftermath of the peso devaluation crisis, have been partially blamed on inadequacy of bank supervision, specifically in the under provision of reserves against credit losses that, in turn, led to an overvaluation of bank capital to risk-weighted asset ratios. It is well recognized that before capital adequacy standards can be effectively applied to Latin America, accounting standards must be improved and supervisory personnel must be better trained to determine whether banks are appropriately accounting for non

performing loans.

In this paper, however, we raise more fundamental questions about how banks in Latin America ought to be supervised. We consider whether the structure of wealth ownership prevailing in the region alters both the priorities of bank supervisors and the effectiveness of industrial country supervisory ratios in assessing bank risk in Latin America. In particular, we question the applicability of capital-to-risk-weighted asset standards as a means of shifting the cost of risk from the public back to bank shareholders. We argue that the concentration of wealtholders in Latin America and the resultant illiquidity of equity markets permit investors who control banks to subvert the intent of capital requirements, even when the bank itself is subject to rigorous accounting standards. This is because investors in developing countries having majority interest in a bank can offset their equity position in a bank with a liability position to the same bank or to a bank owned by a related party. In contrast, in industrial countries, where markets are large and wealth is dispersed, it is much more difficult to finance the acquisition of a majority stake in a bank using loans from related parties. Thus, since the quality of capital is low, in many Latin American countries, the public safety net is severely underpriced, creating incentives for bank risk taking greater than those present in industrial countries with better quality of bank capital. The empirical evidence presented in this paper suggests that well-functioning markets for equity are necessary for enforcement of capital standards. In other words, good markets are complementary to good supervision.

Consolidated supervision, which is an effective tool in industrial countries to prevent these kinds of conflicts-of-interest, cannot mitigate these problems in Latin America unless it is extended to the non financial as well as financial interests of bank owners.

The high concentration of wealth and the interconnection of balance sheets of large wealtholders implies that, in the event of a domestic financial crisis, the failure of a major investor weakens the balance sheets of all major investors. This causes a decline in asset values at all banks and a rapid deterioration in their capital position, even for banks with very high capital-to-risk-weighted asset ratios. This means that, in Latin America, the probability that a shock resulting in the failure of a few banks will develop into a systemic banking crisis is greater than in industrial countries. Because supervisors are aware of this problem, they have, in many cases, shifted their attention from capital to asset ratios to liquidity ratios. Many countries have encouraged

banks to hold high levels of liquid assets to total assets by imposing liquidity requirements.

Two problems arise in executing such a policy. First, supervisors must determine whether domestic-currency liquid assets are really liquid when banks need an asset with a stable value. Second, they must consider the incentives for banks to evade liquidity requirements in markets where the cost of holding liquid assets is very high.

Although it is difficult to enforce both capital standards and liquidity standards in Latin America, this does not mean that bank regulators are completely without signals to advise them of the relative riskiness of banks in their markets. While the market for bank stocks is less developed in Latin America than in the industrial countries, the market for other bank liabilities, such as interbank borrowing and deposits, is more attuned to risk differences across institutions than in industrial economies. Hence, regulators can use liability markets to assess the riskiness of banks.

A number of policy implications follow from the analysis. Given the current level of wealth concentration in the region, these policy recommendations can be divided into those that can be successfully implemented in the short run and those that will take more time to have an impact on the operation of the market. The latter policies are meant to mitigate the effects of wealth concentration. In the first group, the paper emphasizes three policy prescriptions. First, Latin American supervisors should focus on improving the markets that already work in Latin America, which currently are markets for bank liabilities. For example, they could encourage public offerings of certificates of deposit to facilitate comparing interest rates across banks. Full disclosure of key market rates should also be encouraged. Second, public safety nets for bank liabilities ought to be severely limited so that risky banks face a high price for raising liabilities. Third, macro economic policies, such as operating procedures for monetary policy, must play a much more important role in restraining bank risk in Latin America than in the industrial countries. In particular, accommodative monetary policies aimed at smoothing interest rate fluctuations should be avoided.

Policies that will take some time to implement fully include achieving accounting standards for banks equivalent to those of industrial countries, instituting consolidated supervision of the balance sheets of all the business activities of major shareholders of banks, and requiring disclosure of these findings to the public. Priorities must be placed on identifying the sources and quality of bank capital before bank capital-to-risk-

weighted asset requirements can be effective. However, no matter how good the rules, it will be difficult to improve the quality of bank equity markets without expanding both the potential investor base and the potential number of equity issuers in the market. This, almost by definition, requires opening the country to unrestricted foreign direct investment, both for financial and non financial firms.

The paper is organized as follows. Section II provides an overview of the major ratios used by supervisors in industrial countries to evaluate banks and assesses the conditions under which these tools are effective. Section III develops an accounting framework to analyze the market for bank capital in an economy where industrial company ownership and financial company ownership are concentrated and held in common by the same group of individuals. The framework suggests that where wealth is concentrated, banks can increase their capital at very low net cost to the group. This section also presents evidence that the behavior of bank capital in Latin America is consistent with the predictions derived from the framework. Section IV describes the differences in the market for liquid assets in industrial countries and in Latin America. It then assesses the ability of bank regulators to control bank liquidity in several Latin American markets. Section V considers the alternatives available to supervisors for extracting information about the quality of banks and restraining the growth of risky banks in Latin America. It is argued that, while bank regulators work on creating the conditions under which the application of supervisory ratios can effectively monitor bank risk, they can use specific market-based measures, namely liability costs, to evaluate bank risk. These measures may even provide better indicators of risk than in industrial countries because bank liability holders in the former region have less confidence in the ability of supervisory systems to protect the value of their investment than investors in the latter countries. Section VI complements the discussion in the previous section by advancing policy recommendations that can enhance the effectiveness of market-based supervisory tools. Section VII concludes the paper.

II. Common Supervisory Tools: Why They Work in Industrial Countries

1. Common Supervisory Tools in Industrial Countries

Regulators in industrial countries have a variety of supervisory ratios to portray the quality of bank balance sheet and off balance sheet commitments. These ratios are meant to convey the strength and volatility of bank earnings, the ability of the bank to remain liquid in the face of a temporary loss of access to short-term funding markets, the ability of banks to sustain sharp increases or declines in interest rates, and, above all, the quality of bank credit commitments, including letters of credit and derivatives as well as traditional loans. The summary statistic for bank risk, which is eventually intended to include a composite assessment of both credit and market risks, is the capital-to-risk-weighted asset ratio.

Specifically, bank supervisors use several key ratios to evaluate the quality of a bank. First, to permit supervisors to evaluate loan credit quality, banks must report the ratio of non performing loans to loans. Usually the former is defined as loans to borrowers that have interest payments overdue thirty days or more. Banks must also report the ratios of loan loss reserves to loans and loan loss reserves to non performing loans. Second, to evaluate liquidity, banks must report the ratio of liabilities immediately due, such as large, short-term certificates of deposit, to immediately saleable assets, such as government securities for which there is a ready market. Liabilities immediately due are determined not necessarily by maturity but by the probability that investors will withdraw their funds on the maturity date. For example, a large portion of the demand deposit base of U.S. banks actually behave as long-term funds: depositors are reluctant to move their transaction account to another bank, even in the face of a crisis because doing so is expensive and the deposit insurance system is reliable.

Third, regulators use several measures of earnings quality. Earnings volatility is measured by, among other things, analyzing the impact of interest rate changes on bank cash flow, which is measured through application of duration analysis of bank receipts and payments.[1] Bank earnings strength is measured by

[1]Duration measures the current maturity of a fixed income instrument as the weighted average of the time to receipt of the instrument=s payment stream; the weights used are the present values of the future payments to be received. Duration analysis evaluates the sensitivity of a bank=s assets and liabilities to changes in interest rates.

comparing return on assets and return on equity to those of groups of similar banks, a procedure known as peer group analysis. Of course, for bank earnings comparisons to be meaningful, supervisors must ensure that banks are provisioning adequately for the various risks they face out of their cash flow. For example, banks that underfund their loan loss reserves are also overstating their net income. If banks accrue interest on loans on which interest is not actually being paid, they will also overstate their income. Hence, it is typical for supervisors to limit the time period in which banks can accrue interest. For example, in the U.S., it is ninety days.

The capital-to-risk-weighted asset ratio is quickly taking on the role of summary statistic for most of the risks enumerated above. This is because, in theory, each of the above supervisory ratios imply an adjustment to the value of assets and liabilities that ultimately affects the size of the banks= capital account. For example, an increase in loan loss reserves reduces the value of the net loan portfolio without changing the value of bank non equity liabilities. Hence, an increase in loan loss reserves must result in a decrease in the equity capital account.[2] Market risks, such as bank net exposure to interest rate changes, are also being introduced as part of the capital requirement. Hence, if duration analysis indicates exposure, banks will find that their capital requirement has increased.

2. Conditions Necessary for Successful Application of Ratios

To make the above system work, accounting and supervisory standards must provide an accurate portrayal of the true character of the bank balance sheet as well as off balance sheet commitments. This is important because the public safety net creates incentives for banks to evade supervision by misstating the risks that it faces and overstating the size of its capital account relative to the size of its balance sheet. Hence, accounting rules for classification of assets must be clear and supervisors must have the skills to determine whether the rules are being appropriately applied. For example, bank loan documentation records must be reliable enough for the supervisor to determine whether proper accrual of interest policies are being followed.

[2]If a bank increases loan loss reserves from its net cash flow, it must reduce dividends or reduce retained earnings. In the latter case, the impact of provisioning on the capital account is negative. In the former case, its effect on the capital account is less direct. Expected dividends decline, placing pressure on the bank to increase future payout ratios.

The increasingly sophisticated supervisory systems covering complex risks has raised the question of whether supervisors can adequately analyze a bank or whether they must increasingly depend on the internal procedures for risk control administered by the banks. For example, in the U.S., there are serious proposals to let banks use their own internal models of risk assessment towards determining capital requirements. The banking industry generally supports the approach toward capital standards followed by the December 1996 Amendment to the Basle Capital Accord that permits banks to use internal models, under restricted parameters, to evaluate market risk in relation to capital.[3] However, rather than having to rely on quantitative input parameters set by regulators, a number of large banks have asked for flexibility in the use of their own risk assessment models.[4] These proposals result from the fact that many regulators have recognized that they cannot police all risks; instead, they must depend on internal mechanisms to make it in employees= interest to ensure that risks are evaluated properly.[5]

In contrast, the supervisors in most Latin American countries are still at the stage of trying to make the accounting and supervisory standards stringent enough to provide a somewhat accurate portrayal of the risks faced by a bank. The most common failing is to provide adequate classification procedures for loan risk, resulting in underprovisioning of loans. However, there are hidden, and therefore perhaps more dangerous problems. For example, in many major markets reported balance sheets are not detailed enough to trace flows of funds in the interbank market. Asset classification procedures often lead to large categories for diverse assets or other assets. Capital account reconciliation statements are usually not provided, making it difficult for supervisors to trace the sources of increases in bank capital from one reporting period to the next. In some cases, reporting periods are not even standardized across banks, making it difficult to create ratios that provide meaningful performance comparisons across banks. Thus, the question of internal incentive systems for risk

[3]For a further discussion of the Amendment to the Basle Accord, see IMF (1996).

[4]See, for example, Institute of International Finance (1995).

[5]Support for market-based regulation is also found in the academic literature. See, for example, Goodhart (1996). In January 1996, New Zealand implemented a new system of regulation for banks based on a market-based approach. For a discussion on this system, see Nicholl (1996).

management, which is now a major issue in the industrial world, seems far down the list of priorities in Latin America. However, even if the legal and accounting problems in Latin America were corrected so that supervisory ratios could be accurately measured, the appropriate environment for the successful application of supervisory ratios to constrain bank risk taking would still not exist. In particular, even if the value of assets could be accurately assessed, concentration of wealth in the hands of a few investors and the consequent lack of development of a real market for equity considerably weaken bank equity to risk-weighted-asset ratios as a regulatory tool to constrain bank risk taking. In the following section, an accounting framework for bank capital is presented that shows how equity market conditions affect the quality of reported bank capital. It also provides some evidence to support the assertion that the capital reported by many banks in Latin America may not be a reliable constraint on bank risk taking.

III. Equity Market Development and the Feasibility of Enforcing Capital Standards

The purpose of a capital standard is to reduce the incentive that stockholders have to take risk at the expense of the public safety net available to banks. This incentive originates in the fact that cost of liabilities covered by the safety net does not fully reflect the risk of the balance sheet because the government --and, therefore, the taxpayers-- absorbs some of the risk at a below market price. As a result, uninsured equity investors can capture the upside from risk taking without fully paying for the downside. By increasing the proportion of equity funding to insured funding,[6] regulators attempt to reduce this incentive: by forcing equity holders to increase their own funds at risk relative to the total risks assumed by the bank, regulators reduce shareholders' net expected gain from risk taking.

[6]Too big to fail doctrines often make it difficult to distringuish between insured liabilities, which are often limited to small deposits, and other liabilities, especially short-term money market instruments.

This general proposition about shareholder behavior would seem to apply in both developing and industrial countries, once accounting standards in the former countries provide an accurate assessment of risk. However, the rest of this section attempts to demonstrate that the market and ownership structure for both financial and non financial firms in Latin America limits the usefulness of capital requirements as an instrument to reduce bank risk, even when industrial country accounting standards are applied. Specifically, because wealth in Latin America is highly concentrated, the potential market for equity capital is small, and hence concentrated and uncompetitive.[7] Therefore, it is difficult for regulators to determine whether shareholders= wealth is really at risk when they supply equity capital to a bank. Morever, since wealth concentration creates incentives for investors to supply low quality bank capital, the public safety net will be severely underpriced, creating incentives for bank risk taking greater than those existing in industrial countries where developed equity markets discourage investors from supplying low quality capital to banks.

As an introduction to this issue, it is helpful to recount some of the concerns of regulators in industrial countries about the quality of bank capital. For example, regulators in the U.S. worry about Adownstreaming@ debt issued at the bank holding company level as equity to the bank owned by the holding company.[8] Regulators worry about downstreaming for two reasons. First, debt liabilities pay a contractual interest rate, and hence the investor holding this security can sue in bankruptcy court if payments are not made. A case might arise in which the bank holding company fails to make an interest payment on its debt because one of its non bank subsidiaries is in financial difficulty. To meet the obligation, the holding company may attempt to increase dividend payments from the bank to the holding company, which would weaken the bank. Worse yet, the holding company might attempt to increase dividend payments by forcing the bank to take increased risk. Second, debt securities, unlike equities, have maturities. If, at maturity, the holding company cannot rollover

[7]Although there are no precise estimates of wealth concentration in Latin America, there is abundant evidence on income concentration. For example, in industrial countries the highest decitile of the population has, on average, an income level 17 times that of the poorest decitile. In Latin America, this related figure is 52 times. See Londoño (1996).

[8]A bank holding company is a company that holds as assets the equity of a bank or of several banks as well as other financial companies whose business is closely realted to banking. A bank holding company can Adownstream@ debt as equity to banks by issuing debt as a liability and using that debt to fund its holding of bank equity.

its debt, it would have to sell the equity of the bank. If a market cannot be found, the bank would have to liquidate some of its assets, reducing the capital cushion available to protect the bank insurance fund.

The rest of this section is organized as follows. First, a simple accounting framework is developed to demonstrate how wealth concentration coupled with an explicit or implicit safety net, acts to reduce the value of a capital-to-risk-asset ratio as a tool for controlling bank risk in developing countries. The second subsection describes contrasting conditions in industrial country equity markets that make it possible for capital ratios to be a reliable tool for managing risk in the presence of a public safety net. The third subsection provides evidence supporting the claims stated above. Finally, this section concludes by showing how the problems of bank quality in Latin America become exposed during crises periods.

1. An Accounting Framework for Bank Capitalization

This subsection demonstrates that Aaccounting@ capital, even when evaluated by industrial country accounting standards, may not represent Areal@ capital when wealth and equity holdings are highly concentrated. The first example describes a simple and unrealistic case, in which individuals are permitted to use banks they own to make loans to themselves for the purpose of injecting capital into the bank they own. The remaining examples assume that regulators prohibit self-lending, but, because of the concentrated nature of wealth, they cannot prohibit reciprical loan deals among a few individuals that have almost the same consequence.

a. *Example 1: An individual uses a bank loan from his bank to capitalize the same bank*

An obvious example of the difficulty of tracing and regulating the interrelationships among banks and non banks is presented in Figure 1a. An individual, Individual A, owns an industrial company, Company A, whose equity value of 75 appears as an asset on his personal balance sheet. This individual also holds cash assets equal to 25. The offsetting liability item is net worth. Individual A decides to start a bank, Bank A. Assume that regulators require a minimum of 100 in capital to start a new bank, and the new bank must have assets of 25 in cash. Assume also that, once the bank begins taking deposits, it must hold a 25 percent reserve to deposit ratio. To capitalize the bank, Individual A sets up a bank balance sheet with two accounting entries.

The first is a bank loan of 75 from Bank A to individual A as an asset item. The second is a liability item, labelled capital, also to 100. Individual A buys stock in bank A worth 100. His means of payment is 25 in cash and 75 in loans from Bank A.

As a result of these transactions, Individual A=s balance sheet now consists of equity in both the bank and the company of 100 and 75, respectively. His liabilities are now 100 in net worth and 75 as a loan from Bank A (Figure 1b). Bank A holds a loan to individual A for 75 and 25 in cash as assets. As indicated in Figure 1c, it can now issue 100 in deposits at an interest rate that does not fully reflect the risk of the bank balance sheet because depositors have some expectation that the public safety net will protect them.[9] The bank lends 100 to Company A. With the new loan, Company A has more than doubled in size, as indicated in Figure 1c.

[9]For example, where commercial paper markets exist in Latin America, interest rates are substantially above those paid on bank deposits, whereas, in contrast, in the U.S. these rates are the same. It should be noted that liquidity characteristics as well as risk characteristics affect these relative rates.

Because the quality of bank capital in this example is extremely low, the underpricing of the public safety net is very severe. Individual A, therefore has clearly gained by establishing a bank since his company receives a cheap loan while his risk exposure from holding equity in the bank is offset by a liability to the same bank.[10] Company A can even receive a loan at a below market interest rate from the bank, as a result of the bank=s low cost liabilities. Individual A therefore obtains a capital gain on the project funded by the low cost loan. If Company A goes bankrupt, the equity in Bank A disappears because the company defaults on its loan. Depositors, realizing the bank has no equity, run the bank, taking the 25 in cash but losing the remaining 75 of their deposits, for which they expect compensation from the insurance fund. Individual A has gone bankrupt because his equity in the company as well as in the bank have no value.

Thus, the individual has established a bank to provide 100 in capital to his firm at the risk of losing 25, which is his cash investment. The remaining 75 in equity he places in the bank has no cost to him since this asset is offset by a liability to the same banking institution. If the asset fails to perform, he offsets it with a failure to pay his liability. The individual will be willing to risk his 25 in cash to establish a bank if the expected return on the cheap loan he can make to his company offsets the expected cost of losing the cash. Obviously, the lower the cost of bank liabilities --because of the underpricing of the safety net-- and the more the company can borrow from the bank, the more likely the individual is to establish a bank. Notice that, in the absence of regulation or market forces that constrain the expansion of the bank, after the initial investment of cash in the bank, increasing capital to the bank is essentially costless because for every dollar he increases bank capital, he can offset the transaction with a similar liability to the bank.[11] We next consider how a regulator might prevent related parties from supplying costless equity to their banks.

b. *Example 2: Bank owners cannot capitalize a bank by borrowing from the bank they own.*

One possibility is to prevent banks from lending money to the individuals that own them, that is, relaxing the assumption in example 1. Several potential bank owners can get around this regulation, however, by

[10]The conditions in the equity market are also likely to create monopoly power in banks as well, which will also keep deposit rates below competitive levels.

[11]Depositors, however, must be willing to put cash into the bank to permit it to expand.

lending to each other to establish banks, a case illustrated in Figure 2a. In this figure, two individuals, A and B, each own an industrial company, also A and B. Each company has issued 75 in equity, which is owned by the respective individuals and funded by net worth, as before. Each individual also holds 25 in cash.

Since it is illegal for a bank to lend funds to its major shareholders, the two individuals must establish banks by borrowing from the other individual=s bank, as indicated in Figure 2b. Individual A transfers 25 in cash to Bank A, which makes a loan of 75 to Individual B. The bank issues 100 in equity to Individual A, who buys the equity with 25 in cash and with a loan of 75 from Bank B. Individual B buys 100 in equity in Bank B with 25 in cash and a loan of 75 from Bank A. The two banks now take deposits of 100 and make loans of 100 to Companies A and B respectively. (See Figure 2b.)

Assume, as before, that Company A goes bankrupt. Individual A loses the equity in Company A, and equity in Bank A disappears since Company A defaults on its loan from Bank A. Depositors run Bank A, taking the cash. They also demand payment of Individual B=s loan of 75, which he repays by turning over to them the equity in Bank B. Individual A now has no income to pay his bank loan to Bank B, so equity in Bank B falls to 25, the value of the cash in the bank. Depositors in Bank A, therefore, have claim to cash in Bank A as well as three quarters of the remaining equity in Bank B. Bank B depositors now become skeptical about the quality of their bank and stage a run, but since Company B is still solvent, they obtain the full value of their deposits.

Individual B retains control of his company, but he loses three quarters of the value of his invested cash to depositors in former Bank A. He must therefore weigh the value of his gain through access to cheap credit against his expected loss in cash before entering into a reciprical loan contract between his bank and Individual A=s bank. This, of course, is the same calculation that A makes when he borrows money from his own bank. Thus, reciprocal loans expose A and B to risk that the other=s bank will go into default, implying that investors need a higher expected rate of return than in the previous example. However, if both banks fail, risk positions are the same as if each bank had lent funds to its owner.

To make this case equivalent to the case in which each individual borrows from his own bank, the two individuals must find a way to protect their cash in their bank if the other bank should go bankrupt. One way to do this would be to sell minority shares in the banks, asking the minority shareholders to put up the cash. This,

of course, would only be possible if disclosure requirements were weak and minority shareholders inattentive to the potential risk of the equity they purchase. Given the state of disclosure requirments in many Latin American countries, it may be possible to structure these kinds of deals.

c. *Example 3: Banks cannot lend to related parties.*

Regulators might still try to foil the schemes of Individuals A and B by prohibiting ownership of industrial companies and banks by the same individual, that is, relaxing an assumption in example 2.[12] This regulation, however, may be harder to enforce than the regulation prohibiting bank loans to owners of banks because, as is typical in some Latin American markets, wealth may be too concentrated to permit separation of ownership. Nevertheless, assuming that this regulation is enforceable, we now determine whether its existence changes incentives to establish banks with reciprical loans.

[12]Even in the U.S., a single individual can own both a bank and an industrial company, although common ownership by a holding company is prohibited.

As before and indicated in Figure 3, Banks A and B now make loans to Individuals B and A, respectively, of 75. Each individual contributes 25 in cash to buy equity in his bank equal to 100. Each bank issues 100 in deposits to make loans to companies that are not related to Individuals A or B. Because the banks can still have access to low cost liabilities from stockholders= point of view owing to underpriced insurance, banks can earn exceptional profits directly from loans rather than through subsidized loans to related companies. Assume that Bank A=s loan to unrelated parties goes into default. The capital of Bank A disappears, and the depositors run the bank, taking the 25 in cash and demanding repayment of Bank A=s loan to Individual B. Instead, Individual B turns over 75 of his equity in Bank B to depositors of Bank A. Since Bank A is bankrupt, Individual A ceases payment on his loan of 75 to Bank B, handing over worthless equity in Bank A to Bank B. Bank B=s equity value has now fallen to 25, equal to the value of the cash in the bank. Again, Individual B potentially loses three fourths of his cash to depositors in Bank A. Therefore, joint ownership of a bank and an industrial company is not necessary to make the establishment of a bank extremely profitable. The only necessary condition is concentration of wealth in an environment where an explicit or implicit safety net is present. The latter assumption is necessary because small, concentrated equity markets are necessary for transactions such as those described in the accounting framework to take place.[13] In the next subsection, we show why such transactions are highly unlikely to occur in large industrial economies with dispersed wealth.

[13]It might be argued that regulators could effectively prohibit the transactions presented in Figure 3 by prohibiting individuals from funding bank equity with loans from any source. This regulation, however, would be difficult to enforce as individuals could create shell companies whose stock is held by an individual. That individual funds the shell company=s stock with a bank loan. The shell company then holds the equity of the bank.

2. A Stylized Equity Market in Industrial Countries

As economies become larger, the evidence from large industrial countries suggests that two things happen that have an important consequence for the market for bank stock, which we assumed in the previous section was illiquid. The first is that the size of non financial enterprises increases. This requires the assembly of larger pools of capital to supply these organizations with funds.[14] The second is that the wealth holding becomes more dispersed, implying that individual balance sheets grow at a slower rate than the economy as a whole.

The first factor implies that, as economies become larger, the need for large banks increases, since large firms need a large pool of short-term funds.[15] Prudentially, banks must limit their exposures to single borrowers as a percent of capital.[16] The second factor, coupled with the first, implies that outside investors will hold a larger portion of bank stocks as economies become larger.

These two factors change the dynamics of the accounting framework described above. First, it is no longer possible for a single wealtholder or a small group of wealtholders to assemble enough cash to purchase a significant share of a large bank. This implies that outside shareholders must play a bigger role in the capitalization of large banks than they do in developing countries. Second, in developing markets large wealtholders can supply leveraged capital -- that is, equity funded with loans -- to a bank and still maintain the confidence of outside investors such as depositors because of the relative strength and size of their overall

[14]There are, of course, many large banks in Latin America relative to the size of their economies. But these banks are much smaller than the large banks of major industrial countries that pool capital from sources worldwide. Moreover, in the recent trend of merges and bank consolidation in several Latin American countries, foreign capital has been often present.

[15]Firms also diversify their funding sources as they become large, causing, for example, an expansion of equity markets.

[16]Bank funds can be mobilized to lend to a single large borrowower through the loan syndication market rather than through an expansion of a single bank=s balance sheety. However, a single bank often provides a credit line to a single borrower that, if use, becomes a syndicated loan. Credit line exposure to a single borrower represents a risk that must be diversified with a relatively large balance sheet. In addition, it takes a fairly large bank to assemble a large pool of lenders into a syndication group. These groups are typicially managed by large wholesale banks. In addition, some analysts argue that there are operating economies of scale in banking. However, operating economies of scale imply deconcentration as markets expand rather than an expansion in bank size.

balance sheet relative to their investment in bank capital. In contrast, in large markets with dispersed wealth, an individual would have to borrow too much money relative to his net worth to make his majority interest investment in a large bank believable. Also, it would be more risky to form reciprocal lending relationships as described above. This is because each party=s exposure to the other party=s bank would increase relative to his net worth as the leverage ratio of each investor increased. Hence, it is likely that part of the equity investment would have to be funded by third party lenders whose expected return on investment does not include the benefits of reciprical lending described above. Outside lenders would subject proposed loans to more severe credit tests than reciprical lenders.

All of the above factors lead to a reduction in insider ownership relative to outsider ownership, which increases the incentive for insiders to manage the bank in their interests rather than in the interests of all shareholders. For example, insiders can place themselves in positions of senior management and take high salaries out of the bank, reducing dividends to outsiders.[17] However, in order for banks to attract the outside investors they need, institutions and bank behavior must change to provide assurance that outsider investor interests will be protected. It is now in the interest of the bank to provide disclosure concerning insider equity holding. Banks must demonstrate to outside investors that internal controls prevent managers from playing the role of insiders by increasing perqs. The ultimate protector of outsider shareholder interests is the market for takeovers, which mobilizes multitudes of small shareholders to act as a single shareholder. The increase in market size, the dispersion of wealth, and the institution of minority shareholder protections reduce the possibility that equity can be injected into banks at only marginal risk to the investor. As a result, equity injections under these conditions represent a real transfer of risk from the general public to shareholders. This, in turn, reduces the underpricing of a safety net from the stockholder point of view, and therefore, reduces incentives for risk taking activities. Thus, capital standards become a viable tool for restraining bank risk in industrial countries.

3. Empirical Evidence on the Supply of Equity

[17]The abuses associated with leveraged holdings of bank stocks are likely to decline as markets become large. These abuses can

occur in small markets because bank owners can strike reciprical deals with offsetting loan payments to each other. In large markets, loans to buy bank stocks will operate as arm-s length markets.

As discussed above, because the high degree of concentration of wealth in Latin America relative to that of industrial countries permits bank owners in the former region to transfer some of the risk of their investment activities to the general public, their cost of funding is cheap. As a result, bank owners in these markets can extract large profits. Risky investments can be made either to related parties at below market rates or to unrelated parties at market rates. Because bank owners can supply capital to their banks at very little real cost to themselves, they can meet the demands of regulators for higher capital-to-risk-weighted asset ratios. The complex connections among balance sheets of major wealtholders make it difficult for regulators to evaluate the true quality of bank capital.

The factors described in the previous paragraph should make it possible for bank owners in Latin American countries to raise large amounts of capital relative to the capital base of their bank over a short period of time. Chart 1 displays the growth rate of capital, net of reevaluation adjustments to bank assets and retained earnings, relative to real loan growth rates for Argentina, Colombia, Ecuador, Mexico and Peru, as well as for Japan and the U.S.[18] The data cover various years, depending on data availability. The data presented in Chart 1 indicate that growth rates of capital has been quite significant -- greater than 30 percent -- in at least one year of the periods covered in all Latin American countries in the sample. Growth rates are especially high in Ecuador and Colombia in 1995 and Peru and Argentina in 1994. In contrast, growth rates of capital in Japan and the U.S. are less than 10 percent.

[18]Retained earnings are only available for Mexico. In the other markets we used total net earnings, which assumes all earnings are retained. No adjustment for asset prices was available for Peru since this item is not accounted for in the capital account. For Argentina, the data are for the 20 largest private banks. Our measure of capital should approximate a real growth rate of capital since bank earnings should include a primium for inflation to keep the real value of the balance sheet constant. Prudent banks should retain the inflation premium in the capaital account to keep the real value of capitial constant. Hence, capital obtained from outside should represent increases in real capital.

An important reason why we might observe such a rapid growth of capital in Latin America is that bank capital starts from a very low base relative to its level in industrial countries.[19] Thus, the data could indicate a stock adjustment problem rather than an indication of the quality of the equity market for bank stocks. Such an interpretation is supported by the fact that Mexican banks raised a lot of capital in 1993 and very little in 1994 and Peruvian banks raised a lot of capital in 1994 but very little in 1995. However, in the previous subsections, we pointed out that the extremely small capital base in most Latin American markets is, in fact, the reason why major wealthholders are able to control most banks in a given market.[20] Therefore, stock adjustment problems and concentration of wealth are both characteristics of small markets. Moreover, the fact that within a given country the rates of growth of capital change drastically from one year to the next is further indication of the ability of shareholders to mobilize capital quickly and easily.

Chart 1 also indicates that net equity grew at a slower rate than real loans in several markets for several time periods. It might be argued that this implies that banks in these markets faced problems in raising capital. However, as indicated in Chart 2, for those countries and time periods when net equity growth rates were slower than real loan growth rates, the net equity to loan ratio was substantially above 8 percent, which would meet BIS standards if loans were the only risk asset on the balance sheet.[21] It should also be noted that, even after loan growth exceeded capital growth, equity to loan ratios remained above 8 percent.[22]

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[19]Capital growth rates, as measured in Chart 1, cannot be the result of accounting overstatement of bank earnings since we have calculated growth rates net of retained earnings. However, growth rates can be overstated due to lack of provisioning for bad credits that would exceed net earnings. But if capital were needed for provisioning, it would still have to be raised from sources other than earnings, which again raises the question of whether it is raised in a true market or not.

[20]Of course, not all bankers in Latin America are motivated by the forces described in the framework. Some actually prefer to issue equity in international markets precisely to avoid any appearance of conflict of interest.

[21]Since charts 1 and 2 refer to equity to loan ratios and the BIS standards refer to capital to asset ratios, the following table presents capital to loan ratios and capital to asset ratios for selected Latin American countries. These are not risk-weighted ratios.

[22]In Mexico, capital-to-risk-weighted assets are reported by Comision Nacional Bancaria y de Valores since 1991. It is this ratio that is used for constructing Mexican data in Chart 2.

4. The Role of the Equity Account in Banking Crises in Latin America

The accounting framework suggests that, when equity markets are concentrated, there is a lack of outside investors that can replenish bank capital in a crisis. Hence, regulators have to design programs to inject regulatory capital into the banking system during a crisis. In Chile in 1984, and in Mexico in 1995-96, programs were devised to exchange non performing bank loans for indexed bonds. This prevented banks from having to write down the value of bad loans and permitted them to maintain the appearance of high capital ratios during the crisis. In contrast, in industrial countries where markets for bank stocks either exist or can be developed, regulators can force bank stockholders to write down the value of their investment. Hence, as a result of market conditions, equity ratios often do not decline in Latin America during a crisis whereas they do decline during a crisis in industrial countries.

The interconnections between banks through the financing of bank equity capital with loans from other but related banks can contribute to the lack of market for bank assets in a crisis since it facilitates the spread of credit problems from one bank to several banks. For example, if an individual has purchased bank stock with a loan from another bank, and the bank in which he owns stock fails, that individual will then default on loan payments to the bank from which he borrowed the funds. That is, financial fragility is greater in Latin America because an adverse shock hitting a particular institution can quickly spread to other institutions through the interrelationship of balance sheets, soon generating a systemic crisis. Both these problems are mitigated in industrial economies. In the first case, more reliable accounting standards and loan risk classification imply that loan loss reserves will absorb much of the shock of the deterioration in credit quality. Second, the share of unleveraged equity in the major banks is likely to be a higher percentage of total equity for the reasons described above.

In addition, in small markets, banking crises are likely to be associated with general movements in the economy, creating high correlations between equity values of financial and non financial firms. In contrast, in large markets, banking crises are more likely to be regional or caused by a relatively small segment of the economy, leading to much lower correlations between the equity values of financial and non financial firms. For example, in Mexico, the correlation of the financial equity index and the non financial equity index was over

.99 from September 1994 through June 1996.[23] Thus, during the crisis, the value of all shares fell together. In contrast, in the U.S. in 1987, during a period of severe stress in the banking system, the correlation between these two indexes was only .63.

These factors cause secondary markets for bank assets or for banks themselves to dry up much more quickly than in industrial countries. In industrial countries, assets can be sold at a discount from their face value, and, correspondingly, the capital value of the bank can be written down. A price can therefore be identified at which point the bank is insolvent, and the bank can either be sold or dissolved. If it is dissolved, regulators can find markets for pieces of the former bank to reduce their liability to pay off insured depositors.[24]

For example, in the U.S., banks and thrift institutions in Texas suffered a crisis severe enough to force most major institutions into insolvency. However, regulators were able to sell major Texas bank holding companies to outside investors at prices substantially higher than the net (negative) value of financial assets because outside capital was willing to place a postive value on the underlying distribution network and customer connections of the bank. The market for thrift institutions was not nearly as strong, primarily because the thrifts had weak distribution systems and a customer base that was much more volatile than bank customer bases. The thrift deposit base was mostly time deposits whose customers were highly interest rate sensitive whereas commercial bank customers used their bank mainly for transactions purposes,which created a more loyal customer relationship. Nevertheless, regulators could find buyers, albeit at substantial discounts, for much of the repossessed real estate owned by thrifts.

Thus, in markets like the U.S., when banks get into trouble, asset values are written down, and capital declines. In 1987, the year that substantial losses were recognized in the Texas banking system and the year that New York banks recognized substantial losses on their Latin American loan portfolios, capital at New York banks fell by 14 percent and capital at other large banks fell by 6 percent. Capital in the entire U.S. banking system fell by 1.5 percent in that year. Also, in Japan, in 1994, as a result of non performing loans, capital at city banks fell by 1.5 percent.

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[23]Correlations were calculated from equity price indices.

[24]For a discussion of how the lack of markets for bank assets or for banks themselves imposes severe constraints on banking crises resolution in Latin America. See Rojas-Suárez and Weisbrod (1996a).

In contrast, in nominal terms, Mexican bank balance sheets and capital accounts expanded in 1995, with nominal capital increasing by 40 percent.[25] Assets and liability growth was slower than inflation because loans interest rates earned on loans and paid on deposits were below the inflation rate; hence, the real value of loans and deposits declined. In addition, the banking authorities swapped loans for bonds, reducing risk asset ratios. Thus, loan losses were partially absorbed by depositors and stockholders through inflation and partially by the authorities.[26] But for most banks, nominal capital was not written down as a result of sale of assets.

The fact that real debt burdens were reduced through inflationary losses absorbed by depositors rather than by writing down the value of equity is consistent with the notion that regulators had to design government programs to recapitalize banks rather than sell banks or bank assets at prices that would have limited government losses to tolerable levels. Hence, regulators had very limited capacity to use the capital account for its designed purpose: they could not force a write down of assets and close banks because, in reality, there was no market for these assets within the domestic market. The problem here is quite similar to the one described above. Because the balance sheets of major wealth holders are tied closely together, they all decline at the same time. Therefore, there is no internal wealth to support the system. In contrast, in the U.S., when Texas collapsed, outside wealth came into the market, thereby reducing the government cost of a bailout.

[25]In the U.S., declines in real and nominal capital were approximately equal because the inflation rate was low.

[26]The authorities did close a few small banks, forcing equity holders to lose nominal as well as real capital.

In Argentina, capital accounts did not expand significantly in 1995 for the twenty largest private banks as a whole. However, arrangements for non deposit funding to troubled banks was expanded so that these banks could meet deposit withdrawals without reducing the value of their loans portfolios. For the twenty largest banks as a whole, deposits fell by 4.4 percent, total liabilities increased by 4.4 percent, and total loans increased by 4.2 in 1995. Thus, the real value of Argentine balance sheets remained approximately constant, indicating that loan values were not written down substantially.[27] As in the case of Mexico, this shows that markets were not readily available for disposing of non performing bank assets.[28]

IV. Liquidity as a Constraint

As discussed in the previous section, the concentration of ownership and wealth that exists in many Latin American markets makes it difficult to find markets for assets of failed banks or for the failed banks themselves. As a result, asset prices can fall much more drastically in Latin America than in the industrial countries during a banking crisis. Hence, capital ratios that appear healthy in normal times will not provide much protection against bank failures in a crisis. An alternative means of protecting the value of bank assets relative to bank liabilities is to require banks to hold liquid assets whose value does not deteriorate in a banking crisis. In this section, we examine the feasibility of such a policy, and analyze the evidence of how these policies have worked during banking crises.

This section will show that, as in the case of capital, the feasibility of an effective liquidity requirement, depends on whether such a requirement can be enforced. Again, this depends on the strength of the incentives and the quality of assets used for liquidity purposes.

1. Bank Demand for Liquidity

[27] A few large private banks reported substantial decreases in the value of their loan accounts. In some cases, these decreases were supported by injections of capital or by expansions in their liability accounts, indicating that loan write downs did not account for the full loss in value of these assets.

[28]However, as indicated in Section IV below, some banks were able to find markets for their assets during this crisis.

Independent of reserve requirements, banks have a demand for liquid assets to meet temporary excessive deposit withdrawals and to provide a means to meet unexpected demands for funds, such as unforeseen requests for extension of the term of a loan. Holding liquid assets has a cost, which is the difference in the interest rate earned on a liquid and a non liquid asset. This does not necessarily imply that banks will be unwilling to hold liquid assets, however, because bank customers may be willing to absorb the cost of these assets. For example, depositors might be willing to accept a lower interest rate payment from banks holding higher ratios of liquid assets to deposits if they believe that their deposits will be more liquid as a result. Potential borrowers may be willing to pay higher fees on credit lines from banks holding high ratios of liquid assets because they can be more certain that the bank can provide a loan under their line when liquidity is especially tight.

Banks, however, have a wide variety of means of promising liquidity to their loan and deposit customers. Individual banks can contract with other banks for lines to borrow in the interbank market. Banks can make loans to customers whose balance sheets will remain liquid, even under extremely tight credit conditions. Or, they can secure access to long term floating rate funds to assure borrowers that credit will be available under a wide variety of circumstances. It can be argued that many of the above tools are less reliable than liquid assets. For example, in periods of tight liquidity, there may be no bank in the market that has excess funds to lend in the interbank market. Hence, bank lines will be of little use in providing liquidity to the system. Similarly, it may be very difficult to find borrowers whose balance sheets will remain liquid under extremely tight credit conditions.

If banks and their customers perceive these problems, banks will find it profitable to hold a liquid asset. However, under conditions such as those in Latin America, it may be difficult to find such an asset. For example, if banks choose to hold domestic currency, or deposits at the central bank denominated in domestic currency, they will have a liquid asset that maintains its value in domestic currency, by definition. But if their deposit customers should demand a foreign reserve asset in a crisis, the bank and their customers may discover that domestic currency has become quite illiquid in terms of the foreign reserve asset. For example, in a financial crisis created by devaluation of the domestic currency, the price of domestic currency can fall drastically relative to foreign reserve assets.

Thus, to ensure liquidity, bank customers in Latin America might demand that their banks hold foreign reserve assets. These assets, however, will probably be very expensive to hold. For example, it is often the case that domestic currency financial instruments have a risk premium incorporated in their interest rate to compensate holders for the possibility of a devaluation. Thus, if a bank holds foreign reserve assets for liquidity, this asset may pay an interest rate substantially below its cost of deposits.

The bank may find it desirous to maintain credit lines with a foreign bank rather than hold liquid assets, but, of course, this strategy may end up being more expensive if the bank eventually has to borrow large sums at very high interest rates. Holding liquidity in domestic currency will be cheaper in this regard as well. For example, a bank can maintain a domestic currency line of credit with its central bank that might be very cheap, depending on the discount policy of the central bank. But, just as in the case of liquid assets, a line in domestic currency will be an inferior liquidity source relative to a line to a foreign bank denominated in foreign currency.

If, for some reason, banks and their customers underestimate the need for liquid assets on bank balance sheets, a reserve requirement policy might be justified. To determine when and in what form reserve requirements are a useful regulatory tool in Latin America, we turn to empirical evidence of bank behavior in Argentina and Mexico during the latest financial crisis. Argentina applied a reserve requirement on bank deposits whereas Mexico did not.

2. Empirical Evidence on the Demand for Liquidity

The reserve requirement applied to bank deposits in Argentina prior to the 1995 financial crisis was effectively a US dollar reserve requirement. Argentina maintained a one to one exchange rate with the US dollar, and the central bank promised to maintain full dollar backing for the monetary base. Hence, reserve requirements on peso deposits were invested in US dollar liquid assets by the central bank. Banks were also free to issue foreign currency deposits, which were also subject to reserve requirements. However, banks held these reserve requirements in the form of US dollar deposits in US banks or in short-term US Treasury securities. Reserve requirements on both domestic and foreign currency bank deposits were 43 percent for transaction accounts and 3 percent on time deposits.

In contrast, Mexico did not apply reserve requirements to bank deposits nor did it promise to maintain

parity between the new peso and the US dollar. Nevertheless, Mexican banks held liquid assets in the form of domestic currency government securities, which, of course, could only provide liquidity protection in domestic currency. These securities were made highly liquid as a result of central bank policy, which effectively permitted banks to use securities to settle their payment obligations with the Banco de Mexico beginning in March 1993.[29] Under central bank policy, banks with deficit positions in their accounts with the central bank could, at the end of the day, sell a government security to the central bank under a repurchase agreement, which was effectively a collateralized loan from the central bank to the bank. Even though these repurchase agreements had a one day maturity, banks were guaranteed the right to roll them over: when a bank repaid its loan, this created a deficit in its account with the central bank, which, it could again cover with a repurchase agreement. Since securities could be used to settle payments, from the bank=s point of view they were as good as cash.

Chart 3 indicates that the liquid asset to asset ratio was greater in Mexico in 1994 than it was in Argentina, despite the fact that Mexico did not have a reserve requirement. This suggests that it was cheaper for Mexican banks to hold liquid assets than for banks in Argentina -- that is, the income forgone by holding liquid assets was lower in Mexico than in Argentina. Based on the discussion in the previous subsection, this should not be surprising. Banks in Mexico could hold domestic securities paying peso interest rates as liquid securities. The interest rate on these securities was probably close to the domestic wholesale deposit rate.[30] In contrast, in Argentina, banks had to hold foreign reserve assets, which paid lower interest rates than domestic deposits.

[29]See, Banco de México (1993)

[30]This conjecture is based on the fact that, beginning in 1993, repurchase agreement rates on government securities were slightly below those paid on wholesale deposits.

Of course, it might be argued that Mexican domestic securities were less liquid instruments than short-term U.S. assets so that Mexican banks were not really more liquid than those in Argentina. However, within the context of the Mexican peso market, central bank policy was conducted to assure the liquidity of the securities market, as indicated above. Thus, in judging liquidity needs, Mexican banks and their customers had to determine whether they were willing to suffer the potential costs of holding a new peso security that might become illiquid in the event of a crisis in the peso market.

One way to assess Mexican banks= attitudes with respect to the availability of local market liquidity is to determine whether banks were willing to expand their new peso loans when domestic liquidity was relatively cheap after the change in central bank policy in early 1993. Here banks differentiated themselves clearly. Some viewed the availability of liquidity as an opportunity to expand quickly. It is quite probable that banks that expanded loan portfolios rapidly extended risky loans to customers whose ability to withstand a depreciation crisis was relatively weak. In contrast, the largest banks in Mexico displayed a lack of willingness to expand loans rapidly. This signified a concern for the quality of peso loans in a peso crisis by both banks and their deposit customers.

Indeed, while the largest banks expanded their nominal loan portfolios at a 6 percent annual rate in 1993 and a 27 percent annual rate in 1994, other banks= loan portfolio grew at a 35 percent annual rate in 1993 and a 41 percent annual rate in 1994. Also, depositors were willing to supply funds to the largest banks at an interest rate about 400 basis points below that paid by other banks, indicating that some depositors were quite concerned about how loan portfolios of the latter banks would fare in a new peso crisis.

After the depreciation crisis, it became quite clear that the loan portfolios of the smaller banks as a whole were less able to withstand the pressures created by the crisis than the loan portfolios of the largest banks. Thus, one important result of the easy domestic liquidity policy in Mexico was to encourage the expansion of risky banks relative to the system as a whole, a point we will return to in the next section.

3. Reserve Requirements as a Means of Financing Bank Runs

In a financial crisis as deep as those experienced in some Latin American countries, liquidity requirements may play a more important role in protecting the value of deposits than capital requirements. After all, in 1995, many analysts claimed that Argentine banks financed deposit withdrawals by divesting cash assets. In contrast, the Mexican banking system experienced net nominal deposit withdrawals only after accounting for interest credited. Hence, there was no divestiture of cash assets in the Mexican market. In this subsection, we investigate whether reserve requirements in Argentina and lack of reserve requirements in Mexico affected this outcome.

In 1995, among the 20 largest private banks in Argentina, the banks that experienced the largest declines in bank deposits were those with a low ratio of transaction accounts, defined as demand deposits and savings accounts, to total liabilities.[31] (Chart 4) During the financial crisis, Argentine authorities reduced reserve requirements to permit banks to finance deposit withdrawals from their stock of cash assets. Because reserve requirements in Argentina were substantially higher for transaction accounts than for time deposits, banks with low ratios of transactions accounts to total deposits had much smaller cash to asset ratios (about 5 percent), on average, than high transaction account banks (about 15 percent). As a result, the former group of banks, which experienced by far the most deposit withdrawals, could not finance these withdrawals by reducing cash assets. This, of course, left low-transaction account banks with a problem as to how to finance deposit and liability withdrawals.

[31]The analysis is based on the twenty largest private banks for convenience reasons.

Of the ten banks with the lowest transaction deposit to deposit ratio, nine experienced deposit withdrawals. Five of these were able to finance the withdrawals by reducing assets, sometimes at a loss in the capital account. While this was not particularly good news for the shareholders of these organizations, it does indicate that there was a secondary market for some bank assets in Argentina. The remaining four, however, required substantial inflows of non deposit liabilities or of capital to finance deposit outflows, indicating their asset portfolios could not be marketed to fund deposit withdrawals. These banks likely received non deposit funding from other banks.

Thus, among the 20 largest private banks, some banks were able to provide liquidity to their depositors while holding very low reserve requirements. Hence, the Argentine experience shows that, in markets where central bank exchange rate and operating procedures keep liquidity costs high, some banks will find ways to create their own liquidity, even if reserve requirements are low.[32]

[32]The argument of how bank incentives to hold liquidity assets can be improved by avoiding a monetary policy aiming at smoothing interest rate fluctuations is fully developed in Rojas-Suárez and Weisbrod (1996b).

In Mexico, banks did not sell liquid assets to finance loan expansion or to finance deposit withdrawals. In fact, in contrast to Argentina, through September 1995, security to deposit ratios rose dramatically at small banks that had previously operated with relatively little liquidity. This is because small banks sold loans to the authorities in exchange for securities, or they had issued subordinated debt to expand capital and invested the proceeds in bonds. A possible reason why depositors did not withdraw their funds and thereby force banks to sell securities is that this transaction would have resulted in the exchange of one new peso investment (a deposit) for another (a bond).[33] This, of course, was a consequence of the fact that the Mexican banking system only promised liquidity in terms of domestic currency, in contrast to the Argentine system, which promised liquidity in foreign currency. It should be noted that the lack of liquidity in foreign currency would have remained even if the Mexican banks had been subject to reserve requirements as long as the central bank would have invested these reserves in domestic securities.

In comparing the Argentine and Mexican experiences, it is clear that, while liquidity ratios were higher in Mexico, the quality of liquidity was lower. This is because Mexican liquid assets did not maintain their value in terms of the U.S. dollar during the crisis whereas Argentine liquid assets did. Therefore, depositors in Argentina had the option of withdrawing funds from the Argentine banking system and moving into U.S. dollar assets at a fixed price. In contrat, in Mexico, if depositors would have withdrawn their funds from, they could only have purchased U.S. dollar assets at a very high price in terms of pesos. The central bank was not in a position to accommodate liquidity demands because these demands were for foreign currency assets. Thus, as in the case of capital, it is the quality of the instrument that matters for investor confidence in the system.

V. Devising Supervisory Procedures for Latin American Banks

The data in the previous sections indicate that supervisory ratios constructed for banks in Latin America must be interpreted with care. Capital-to-risk-asset ratios suffer from inadequate accounting procedures as well as more fundamental problems concerning the structure of ownership of banks, which constrains the

[33]Since, as is well documented, the Mexican crisis took the public by surprise, massive capital flight did not precede the crisis, as was the case during the 1982 crisis. After the devaluation of the peso in December 1995, depositors had few choices to protect the real value of their wealth. A flight to U.S. dollar assets would have been expensive. By and large, the only domestic alternative, given the lack of

development of liquid markets for bank equity. From an industrial country=s perspective, the Latin American situation probably appears somewhat discouraging because regulators in industrial countries depend heavily on equity investors to block poorly run banks from obtaining equity necessary for expansion under the capital guidelines. Equity investors are both uninsured and sophisticated, unlike depositors, who are assumed to have little incentive to evaluate bank risk. Without critical equity investors, Latin American supervisors seem to be at a clear disadvantage to their colleagues in industrial countries.

Somewhat surprisingly, however, often times deposit markets in Latin America play a similar role as equity markets in industrial countries, at least in terms of providing information about the quality of banks. There are two possible reasons for this. The first is that risky banks offer high interest rates to uninformed depositors to attract funds from new customers that they use to expand their portfolios of risky loans or to roll over bad credits. Banks must pay higher rates, even on insured deposits, because new customers have switching costs. The second is that sophisticated depositors attempt to obtain high yields from risky banks under the assumption that they can withdraw their funds in time to avoid bank collapses. Risky banks probably offer high rates for both these reasons. However, from the supervisor=s point of view, the major issue is whether deposit markets can help identify risky banks.

1. Market Assessment of Banks in Countries that Have Experienced a Recent Crisis: Argentina and Mexico

In assessing how depositors and other liability holders value banks, it is important for regulators to understand how business differences across different classes of banks affect liability holders= perceptions of the risk of bank liabilities. For example, in Argentina, among the twenty large private banks mentioned in the previous section, the median interest rate paid on bank deposits in 1994 was higher at the high transaction banks than at the low transaction banks. However, the range of interest rates paid by the low transaction banks was much wider that among the high transaction banks, indicating that the perception of quality varied much more widely among the former group of institutions. (Table 1)

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developed capital markets, was to shift from bank deposits, guaranteed by the government, to another government liability.

Table 1. Argentine Banks Cost of Average Liabilities (1994)		
	Median	Range
Low Transaction Banks	5.60%	8.11%
High Transaction Banks	6.61%	2.89%
Source: Banco Central de la República Argentina, ESTADOS CONTABLES DE LAS ENTIDADES FINANCIERAS, various issues.		

After accounting for differences in liability costs related to business differences, it is possible to determine whether depositors received higher interest rates from riskier banks. Chart 5 ranks low transaction banks in Argentina by interest paid on liabilities for 1994, the year prior to the financial crisis against non-deposit liability growth in 1995. Those banks experiencing the greatest non deposit liability growth in 1995, which indicates an illiquid asset portfolio in the face of deposit runs, paid the highest interest rates on deposits in 1994. Morever, as indicated in Chart 6, among high transaction banks, those that lost the highest percentage of deposits in 1995 had the highest interest expenses in 1994. Thus, it appears that liability holders in Argentina predicted fairly accurately how banks would perform during a crisis. The perception of depositors would probably have appeared even better if we could have identified the costs of identical instruments to each of the banks before the crisis.

In Mexico, clear distinctions do not exist between banks based on deposit mix. Nonetheless, investors charged a wide range of interest rates on liabilities to different banks in 1993, almost two years before the crisis. Beccause no bank in Mexico experienced a run equivalent to those experienced by some low transaction banks in Argentina, we cannot use deposit withdrawals as a means of gauging depositor assessment of bank risk during the crisis. Instead, we examine whether liability holders accurately predicted the condition of banks in 1996 based on interest rates paid by individidual banks as a percent of average liabilities in 1993. We assume that interest rates paid by banks in 1996 reflect the true condition of a bank at that time since there has been much publicity about bank loan quality and their need for government assistance. Thus, Chart 7 plots interest paid on liabilities, which is obtained from bank income statements, in 1993 for twelve Mexican banks against interest paid on liabilities for a half year in 1996.[34] As is evident from the chart, the ordering of bank risk is fairly similar. These predictions would be more accurate if we could compare interest paid on specific instruments in 1993 versus 1996, as some of the difference in relative interest rates between the two periods may be due to changes in the structure of the liability portfolio.

[34]We exclude banks that had very small balance sheets in 1993 and those banks that were intervened by the government, on the assumption that the market no longer evaluates the risk of these banks as stand alone entities.

2. An Examination of Tiering in Other Markets

As indicated in Charts 8a, b, and c, in three other Latin American markets, Colombia, Ecuador, and Peru, we see evidence of interest rate tiering among banks. These charts plot interest paid on average liabilities against liability mix. In all three countries, banks with very similar liability mixes have widely varying liability costs. If the experiences of Argentina and Mexico are any guide, those banks paying high interest rates on liabilities, holding liability mix constant, may create problems for bank supervisors in the event of a banking crisis.

VI. Policy Considerations

Because of the concentration of financial and non financial wealth in Latin America and because many banks in Latin America do not face a real market for bank stock, it is difficult for regulators to depend on capital standards to control bank risk, even if accounting standards are improved so that asset values are more correctly stated relative to liabilities. However, as the experience in industrial countries demonstrates, regulators must depend on a pool of investors who evaluate bank risk from a market perspective to constrain the behavior of risky banks. If investors did not extract a heavy price for providing equity to risky institutions, capital standards would have little impact on bank risk. This implies that market discipline is a necessary ingredient to enforce successfully regulatory policies.

Because it will take time to develop liquid equity markets in the region, Latin America=s regulators must make do with the limited markets available for pricing bank risk, which are the liability markets. Because liability markets provide powerful signals about the relative strength of banks, regulators= first priority must be to ensure that these markets are working as effectively as possible. Thus, policy prescriptions can be divided in two groups: those that can have an immediate effect in improving a country=s supervisory capacity to assess bank soundness and those that will yield results over time. This section discusses these two kinds of policies.

1. Policies Having Immediate Impact

a. *Policies designed for deposit markets.*

To sharpen the signals about bank risk available from deposit markets, policy makers should encourage the public offering of certificates of deposits so all investors can compare rates offered by the various banks. In addition, it would also be useful to encourage banks to announce prime interest rates to establish a marketwide benchmark for pricing credit risk. Publishing interbank bid and offer rates among the various banks would also improve information flow on bank quality. This information should be relatively inexpensive to gather and process.

b. *Policies designed to limit access to the public safety net.*

Regulators and central bank authorities must be very careful not to follow policies that encourage

depositors in the belief that markets will always remain liquid. For example, bank access to central bank funding, both to settle payments and for routine borrowing, should be strictly limited. Probably, some banks, those with very high cost of funds, should be cut off from central bank funding all together until deposit markets are willing to provide cheaper funds.

The Argentine data indicate that the deposit run problem seems to be less severe at high transaction account banks, but this can create its own dangers. Banks that feel confident that their depositors will not run the bank may be tempted to hold risky and illiquid portfolios. Fortunately, these risks seem to be priced in the deposit market. They are probably more sharply priced when these banks fund themselves in the money market, such as large certificates of deposit and interbank funds. Thus, an appropriate policy would be to strictly limit these banks= access to central bank funding as well so that they are forced to meet shortages of cash by entering the inter bank market. If rates paid in this market are public, the transaction-oriented depositor would gain valuable information about his bank. It is also important to limit deposit insurance coverage to small depositors to further encourage the pricing of risk in large deposit markets.

c. *Central Bank operating procedures and bank risk*

Controlling bank risk through information provided by the deposit market requires a different set of policies than constraining risky banks by telling them to raise more equity. If deposits are short-term, as most of them are in Latin America, some depositors are likely to refuse to roll over their deposits in the event of a rapid deterioration in bank risk, as the Argentine experience demonstrates. This implies that regulators and central bank policymakers must be particularly concerned with the liquidity of bank assets. To prevent bankers from becoming overconfident about the ability of risky borrowers to remain liquid during tight credit periods, central bank operating procedures must be designed to keep liquidity scarce, even during relatively stable periods. This will give bank incentives to find alternative sources of liquidity even if reserve requirements are low. Thus, central banks should avoid engaging in policies to smooth daily fluctuations in short-term interest rates.[35]

[35]See Rojas-Suárez and Weisbrod (1996b) for a more detailed analysis of the interrelationships between central bank provision

2. Policies that Yield Results over Time

No matter how efficiently the deposit and other liability markets operate, they do not give regulators the same control over bank risk that effective equity markets would provide. This is because, with deposit-determined risk, the regulator lacks a prior constraint tool. He cannot ask a risky bank to raise more deposits, for example. Hence, it is crucial that regulators attempt to improve the market for bank stock in their country. This implies consolidated supervison and perhaps requiring major stockholders of banks to publish their personal balance sheets. However, no matter what the rules are in this regard, equity markets are not likely to become transparent until a diverse group of investors and users of capital enter the market. The best way to achieve this goal is to open the banking market up fully to foreign competition. Such competition is not likely to penetrate into the business and banking relationships of the local establishment, but it will provide an outside source of capital both for the pursuit of new wealth and as a possible market stabilizer in the event of a banking crisis.

One method by which diversity in the banking market might be encouraged is to permit foreign firms to manage pension funds, which are expanding rapidly across the region. Since private capital markets are underdeveloped in most of the countries of the region, a major investment of these funds will inevitably be bank deposits. Foreigners will make their investments in banks with an eye toward return and safety rather than with an eye toward cementing a business relationship. In addition, these funds might become a source of financing for bank capital.

It should also be noted that, in the absence of strong equity markets, the role of reserves for possible loan loss takes on greater importance. Hence, the regulator should insist that conservative policies provisioning for past due loans should be followed and that provisions are made out of income rather than from transfers from the capital account, which may not represent real capital. In other words, the regulator should be very strict about bank dividend policy. Banks should not be allowed to pay dividends until the regulator is certain that income is not overstated as a result of accruing interest on past due loans and that provisioning for non performing loans is adequate.

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of liquidity and its impact on bank asset quality.

VII. Conclusions

This paper has examined the feasibility of applying bank supervisory techniques used in the industrial economies to the banking systems of Latin America. Specifically, the paper considered whether risk-weighted-capital-to-asset standards used so successfully to control bank risk in industrial countries would be a useful tool for controlling risk of Latin American banks. It has often been argued that such standards cannot be successfully applied until appropriate accounting and supervisory standards are followed in the region. In addition, however, this paper argues that capital requirements cannot be an effective tool for restraining bank risk unless well-developed markets for equity exist. In the absence of such markets, equity investors do not necessarily act as residual risk bearers, which is a necessary condition for effective capital standards.

We argue that equity markets in Latin America do not function well because of the high concentration of wealth in the region and the resultant illiquidity of equity markets. As a result, investors who control banks can subvert the intent of capital requirements, even if the bank itself is subject to rigorous accounting standards. This is because investors in developing countries having majority interest in a bank can offset their equity positions in a bank with a liability position, either to their own bank or to a related party. The high concentration of wealth has two important consequences from the regulator=s point of view: First, the interconnection of balance sheets implies that the probability of a shock resulting in the failure of a few banks will develop into a systemic crisis is greater in Latin America than in industrial countries -- that is, Latin American banking systems are more fragile than their industrial country counterpart. Second, because the quality of bank capital is low, available public safety nets (like deposit insurances) will be severely underpriced, creating incentives for bank risk taking greater than those existing in industrial countries.

The evidence presented in the paper supports the above propositions. The fact that banks in many countries have been able to expand their capital base at high rates of growth in short periods of time is consist with the conclusion that bank owners can supply equity to their banks at relatively low cost. In addition, the fact that sources of new bank equity are not available in Latin America during a banking crisis also signifies that equity markets are concentrated and not very liquid.

The lack of strong markets for bank stocks has led supervisors, on a number of occassions, to shift their attention from capital standards to liquidity requirements. Liquidity ratios can be a useful tool during a crisis because liquid assets are supposed to maintain their value during periods of distress. The evidence analyzed in this paper, however, indicates that, as with capital requirements, the effectiveness of liquidity requirements depends on the quality of assets used to satisy the requirements. Indeed, it is shown that the experience in Latin America demonstrates that domestic currency denominated liquid assets are likely to become illiquid in a crisis in terms of foreign reserve assets, which are the assets many investors want to hold during a crisis. Thus, it might appear to be prudent policy to require that banks hold foreign reserve assets to maintain liquidity in a crisis. Argentina, in fact, pursued such a policy by placing high reserve requirements on transaction deposits. The evidence from this Argentine experience, however, indicates that reserve requirements did not provide liquidity to the banks that experienced the greatest loss in deposits in 1995 since these banks held relatively few transaction (demand and savings) deposits. Many of these banks, however, were able to remain liquid because they held very liquid asset portfolios. Thus, our interpretation of the evidence is that many Argentine banks followed sound liquidity policies, not because of reserve requirements but because of the operating procedures of the central bank that limited the supply of liquidity to banks because of the nature of its exchange rate policy. As a result, prudent banks realized that they must maintain their own liquidity because they cannot depend on the central bank.

The weaknesses of both capital standards and liquidity ratios in the context of the Latin American market raise the issue of how supervisors can identify and monitor risky banks. Fortunately, deposit and short-term liability markets work fairly well in identifying risky banks. In both Argentina and Mexico, liability markets signalled which banks would perform badly in the crisis.

The policy conclusions derived from the analysis can be divided into policies that can have an immediate impact on bank soundness and those that will take time to yield results. Within the first group, appropriate policies include improving the efficiency of short-term liability markets--including disclosure of key market rates--to facilitate identification of risky banks and limitation on public safety net devices, including lender of last resort and deposit insurance. They also include the avoidance of monetary policies aimed at smoothing fluctuations in short term interest rates; instead, the design of central bank operating procedures should aim

at keeping the cost of liquidity high. The second group of policy measures include those necessary to improve the performance of equity markets by improving accounting standards, increasing disclosure of consolidated balance sheets, and increasing foreign participation in the market.

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