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Mexico's Experiments with Bank Privatization and Liberalization, 1991-2002

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Over the past decade Mexico has conducted two experiments with its banking system. The first took place in 1991 when the government privatized the commercial banks that it had expropriated in 1982. The second took place in 1997, when the government, having had to rescue the banks that it had just privatized, allowed foreign firms to purchase controlling interests in the restructured banks. It also carried out a reform of accounting rules and reorganized the country's deposit insurance system.

Neither of these experiments produced the outcome that the government and the Mexican public expected. The first experiment produced a banking system that became insolvent within four years and that had to be bailed out at a cost estimated at $65 billion. The second experiment produced a banking system that is stable, but that extends very little credit to firms and households. The ratio of private sector lending to GDP in Mexico is only 11%, an extraordinarily low figure both by Mexico's historical standards and in relationship to that of other middle-income developing countries.

This paper seeks to understand why both of these experiments failed. It argues that there were two fundamental flaws in the privatization experiment (1991-96). The first flaw was that Mexico had weak institutions to assess the creditworthiness of borrowers ex ante and enforce the property rights of bankers ex post. There were neither private credit bureaus nor a judicial system that could adjudicate foreclosure and bankruptcy cases in an efficient manner.

The second flaw in the 1991 privatization was that the Mexican government sought to maximize the prices at auction for the banks. In order to get Mexico's bankers to pay high prices, the government was compelled to make a series of other decisions that reduced the incentives of bank directors, bank depositors, and bank regulators to enforce

prudent behavior by the privatized banks. Indeed, the institutions created out of the negotiations between the government and the bankers were a recipe for an insolvent banking system. They included regulated entry, unusually liberal bank accounting standards, regulatory forbearance, a deposit insurance system that guaranteed virtually all bank liabilities (including deposits, loans, and credits) and an auction payment system that allowed bankers to pay for the banks with money that they borrowed—sometimes from the same banks they had just purchased, with the collateral for the loans being the bank shares.

The combination of these two flaws—weak property rights and weak institutions to enforce prudent behavior—produced lending strategies that, at the very least, were reckless. Even before the peso crisis of December 1994 (which is often blamed for the collapse of the banking system) many of Mexico's banks were teetering on bankruptcy.

During the liberalization experiment (1997-2002), many of the institutions that encouraged imprudent behavior were reformed. The problem of assessing credit risk ex ante and enforcing property rights ex post, however, remained. As a result, bankers adopted a strategy that is rational for them under the circumstances but that is negative from the point of view of economic development: they tend to hold government securities or make loans to government entities rather than provide credit for private investment and consumption.

Privatization and Collapse, 1991-96:

All markets are embedded in political systems. The market for Mexico's privatized banks was not an exception to this general rule.

Two features of Mexico's political economy fundamentally shaped the process of privatization. First, the Mexican government wanted to maximize revenues from privatization because of it faced a serious fiscal crisis. Second, bankers faced expropriation risk: the Mexican government had few limits on its authority and discretion; and it had already expropriated the banks on two earlier occasions in the twentieth century.

Aligning the incentives of the government and the bankers was not, therefore an easy process: Bankers who face expropriation risk do not, as a general rule, pay price premiums for banks. Nevertheless, the incentives of the government and the bankers were aligned by the creation of institutions that minimized the amount of capital that the bankers actually had at risk. These institutions were not created in a single stroke. Rather, they emerged over time, out of the interaction of the government and the bankers during the process of privatization and afterwards: each discrete decision or agreement drove the next decision or agreement. Once the government made the move of seeking a premium price for banks, the relentless logic of the situation drove the game. The outcome of this game, however, was a banking system in which the group that had the most at risk—Mexico's taxpayers (who would have to fund the deposit insurance system in the event of bank insolvency)—had no active voice in the game as it was being played.

The Fiscal Incentives of the Salinas Government

Mexico's banks were privatized as part of a broad program of privatization of state-run enterprises. The purpose of this privatization program was largely fiscal. Fiscal success, however, also had crucial political implications for the government of President

Carlos Salinas de Gortari (1988-1994) and his party (the Partido Revolucionario Institucional, generally known by its Spanish acronym PRI). Indeed, because of the economic crisis of the 1980s, Salinas' electoral victory in 1988 was by the smallest margin in the history of the PRI, and even that narrow victory was the product of electoral fraud.[1]

The fiscal crisis had its roots in the 1970s, when Mexico's governments began to spend far more than they could raise through the country's inadequate taxation system. These deficits were financed by increasing the money supply, by directed lending from the banking system to government-owned firms, and by borrowing from foreign banks. By the summer of 1982 this strategy had become unsustainable: Mexico was entering into a hyper-inflation and the government could not service the foreign debt. The government of José López Portillo (1976-82) therefore suspended payment on its international debts, converted dollar denominated accounts to pesos at the official rate of exchange (roughly half the black market rate), blamed the bankers for the collapse of the exchange rate, and then expropriated the banks. Neither the governments of Miguel de la Madrid Hurtado (1982-88) nor Carlos Salinas de Gortari (1988-94) had the ability to raise taxes effectively. Foreign borrowing, for obvious reasons, was also not a viable alternative. They could also not deficit spend, because they were committed to curtailing hyperinflation through balanced-budget fiscal policies.

Salinas' strategy to satisfy his fiscal and political challenges was to find extraordinary (non-recurring) revenue sources. The obvious source of these revenues was the sale of state-owned firms, which covered every imaginable type of enterprise,

[1] Fearing that Salinas was losing the election, the government announced that the computer system that counted votes had crashed. During the intervening days, while the computers were putatively being

including hotels, airlines, railroads, steel mills, sugar refineries, and banks. Inasmuch as many of these firms tended to be money-losers (over half of government revenues went to support the operating losses of state-owned enterprises) their sale would not only provide the government with extraordinary revenues but would also reduce the drain on the budget. It was, in short, in the interests of the government to obtain the highest price possible for the privatized banks.

The Problem of Expropriation Risk

Mexico's potential bankers, for their part, perceived that they faced expropriation risk. This was not, for them, a distant, theoretical abstraction. The Mexican government had expropriated the banks twice before. The first occasion was in 1915-1916, when President Venustiano Carranza expropriated the banks in order to finance his military campaign against Pancho Villa and Emiliano Zapata during the Mexican Revolution. The "intervened" banks, stripped of their liquid assets, were later returned to the bankers in the early 1920s. (Maurer, 2002; Haber, Razo, and Maurer, 2003, chap. 4). The second occasion occurred in 1982, when López Portillo expropriated the banks in an attempt to blame the country's desperate economic situation on the country's bankers, rather than on his government's mismanagement of the economy.[2] Significantly, the expropriation,

repaired, the president of the PRI proclaimed Salinas' victory.

[2] Because López Portillo sought to blame the bankers for Mexico's economic crisis, he adopted the rhetorical strategy of referring to the expropriation as a "nationalization," as if the banks had been foreign-owned and had been working against the interests of the nation. In point of fact, foreign-owned banks had been legally blocked from operating in Mexico since the 1880s. Exceptions were granted for the "representation offices" of large foreign banks, but these were not permitted to engage in retail banking operations. They existed to facilitate loans to the Mexican government, as well as to provide credit to large scale Mexican firms. They typically did this in cooperation with Mexican banks. Significantly, foreign bank representation offices were excluded from the 1982 expropriation.

which required a constitutional amendment, was ratified by the Mexican congress with virtually no debate.

At the time of the 1991 bank privatization there was little reason to believe that the government might not expropriate the banks again. President Salinas might have been pro-business, but there was no telling what his successors might want to do, and there were few checks on presidential power. There was, in fact, little practical distinction between the PRI as a political party and the government. PRI candidates had won every presidential election since 1929.[3] Over that same period, the PRI also held overwhelming majorities in both houses of congress.[4] The PRI's monopoly on power meant that formal constitutional rules about checks and balances were a dead letter: there were neither ex ante veto points in the decision structure of the polity nor ex post sanctions for public officials who behaved in an arbitrary fashion. The Mexican president had virtually unlimited policy authority: congress merely rubber stamped presidential initiatives. He could, therefore, reduce property rights at will.

Moreover, the Mexican government, as the bankers well knew, did not have to engage in de jure expropriation in order to reduce the property rights of the bankers. The government had a broad range of methods by which it could carry out a de facto expropriation: it could raise the tax rate; increase reserve requirements (and require that those reserves be held in government bonds); finance deficits by increasing the money supply, thereby setting off an inflation that would essentially be a tax on the holders of

[3] As a technical matter, the PRI was founded in 1946, when the Partido de la Revolución Mexicana (PRM, founded in 1938) changed its name and its governance structure. A similar reform (and name change) had given rise to the PRM, whose predecessor party the Partido Nacional Revolucionario (PNR) had been founded in 1929. As a practical matter, therefore, the PRI dates from 1929.

[4] This monopoly on power was not broken until the 1997 congressional elections, when the PRI lost its majority in the lower house. In 2000, an opposition candidate finally won the presidency.

cash; or impose interest rate ceilings, driving profit margins to zero. In point of fact, Mexico's governments of the 1970s had actually done all of these things, reducing the property rights of the bankers even before the de jure expropriation of September 1982 (Del Angel-Mobarak, 2002).

Aligning Incentives: The Technical Process of the Bank Privatization

Getting entrepreneurs who believe they face expropriation risk to offer premium prices for banks is a difficult task. The sale of Mexico's banks was not an exception to this general rule.

The Mexican government therefore signaled bidders that they would not have to operate in a competitive environment. The Mexican banking industry at the time of privatization in 1991 was composed of 18 banks, four of which controlled 70 percent of total bank assets. The government did not break these up, but sold them as is. The government also made it clear that it would regulate entry into the banking industry: obtaining a charter required the permission of the Secretary of the Treasury.

The government also signaled potential bidders that they would not have to compete against foreign banks. Foreign banks were not allowed to participate in the 1991-92 bank auctions. Moreover, as Mexico entered into the NAFTA negotiations it essentially honored its commitment to protecting the market of the domestic bankers. The provisions governing banking in the 1994 NAFTA agreement severely limited the participation of foreign banks in Mexico. NAFTA provided that U.S. and Canadian banks could own no more than 30% of a Mexican bank's capital. It also provided that U.S. and Canadian banks could not purchase a controlling interest in any Mexican bank whose

market share exceeded 1.5 percent and that the total market share under their control could not exceed eight percent. This restriction essentially meant that foreign banks were excluded from the market, because there were only two banks with market shares of 1.5 percent or less. Over a six-year transitional period U.S. and Canadian banks could gradually hold larger market shares, up to a maximum of 15 percent by the year 2000. Even after this transitional period, however, NAFTA allowed the Mexican government the right to freeze the purchases of Mexican banks by U.S. and Canadian concerns for a three-year period if foreign banks as a group controlled more than 25 percent of the market. Foreign banks were also still subject to the rule that they could own no more than 30 percent of a Mexican bank's stock. (Murillo 2002: 35).

At the same time that the government signaled bankers that they were purchasing secure oligopolies, it structured the auction process so as to maximize the prices on offer. The formal rules of the auction specified that bids would be sealed and that the managerial expertise of the bidding groups would be taken into account. (Unal and Navarro 1999). The notion that the government would take the quality of management into account was, however, eviscerated by a decision to only do so if the second highest bid was within three percent of the first highest. This meant that the highest bidders always won the auction—regardless of their qualifications to run a bank.

Consistent with its goal of maximizing prices on offer, the government also did not bring Mexico's accounting standards in line with generally accepted accounting standards. One of the most lenient of Mexico's bank accounting rules was that when a loan was past due, only the interest in arrears was counted as non-performing. The principal of such loans could be rolled over, and counted as a performing asset.

Moreover, the past due interest could be rolled into the principal and the capitalized interest could be recorded as income. Reforming this rule (as well as others that inflated bank capital and assets) would have lowered the market value of the banks, because it would have increased the ratio of non-performing to total loans, lowered the banks' reported rates of return, and decreased the book value of assets. How much lower the banks would have been valued is difficult to know. It is known, however, that the government contracted outside consulting firms to provide it with a valuation of the banks. It did not, however, make the results of those studies public. (Unal and Navarro, 1999).

The government then auctioned the banks sequentially. Rather than a single round of sealed bids, the government sold the banks in six rounds of bidding between June 1991 and July 1992. This increased competition for the banks in the later rounds, thus creating a "cascade effect." In Table 1 we demonstrate that the most important determinant of the price paid for a bank (in terms of its bid-to-book ratio) was the bidding round in which it was purchased. All things being equal (size of bank, profitability, number of bidders) each additional round of bidding pushed up the bid-to-book ratio by .30. This ratio is stable across alternative specifications and is always significant at the one percent level. In fact, bidding round is the only statistically significant variable that has a positive sign in the regressions. Surprisingly, neither the rate of return on assets, the rate of return on equity, nor the number of bidders is statistically significant.[5] Perhaps most surprisingly, the market power of a bank (measured as the log of bank assets) is statistically significant, but it has the wrong sign: market power is negatively correlated

[5] We measure profitability as both the rate of return on assets and the rate of return on equity over the three years prior to the auction.

with the bid to book ratio. This is not the outcome that one would expect from theory: one would usually expect that the market power of a bank would be capitalized in its auction price.

One might argue that the positive correlation between the bid-to-book ratio and the bidding round is an artifact of the way we measure the bidding variable (a single variable with a range of 1-6, corresponding to each bidding round). We therefore re-estimated the regressions measuring bidding round as a series of dummy variables (one for each bidding round). The results we obtain, reported in Table 2, are consistent with the results in Table 1. The dummies for bid rounds two and three have low magnitudes and are not statistically significant. In bid round four, however, both the magnitude and the statistical significance of the dummy increases—although it is still only significant at the 20 percent level. The dummies for bid rounds number 5 and 6, however, have very large magnitudes (1.68 and 1.38, respectively) and both are highly significant. In short, our results are not sensitive to the specification: a series of sequential auctions dramatically raised the bid to book ratios.

This set of institutional arrangements produced an average (weighted) bid-to-book ratio of 3.04, and an income of $12.4 billion for the Mexican government.[6] Indeed, bid-to-book ratios of 3.04 suggest that the government received a substantial premium. In United States bank mergers during the 1980s, for example, the average bid-to-book ratio was 1.89 (Unal and Navarro, 1999: 78). Mexico's bid-to-book ratios were also high by European standards: in European bank privatizations the typical bid-to-book ratio was on the order of 2.5—and European bankers did not face the same expropriation and default

risk as did Mexican bankers. Research by Gunther, Moore, and Short (1996) indicates that the share of past due loans, the return on banking assets, and the industry's capital to asset ratio were all moving in a direction indicating increasing weakness among the government-owned banks. An analysis by Unal and Navarro (1999) of the market value of traded shares around the time of the auction is consistent with the Gunther, Moore, and Short view: the prices paid at auction carried a premium of 45 percent over the value of that equity as priced by the Mexican stock market.

Readers may wonder why bankers were willing to pay a substantial premium for the banks at auction. The reason, as we shall discuss in detail below, is that the money that they were putting at risk was not their own. Much of it was borrowed—some of it from the same banks that had just been purchased. Moreover, the government's commitment to guarantee all deposits (including interbank loans) meant that the group that ultimately bore most of the financial risk were not bank shareholders, but Mexico's taxpayers.

Who Monitored the Banks?

Reckless behavior by banks is typically prevented by monitoring by three groups: government regulators, bank directors, and bank depositors (particularly large corporations who have significant deposits at risk). If the latter two groups have substantial money at risk, government regulation is not even necessary. This was the case, for example, in the nineteenth century United States, when banks were chartered by

[6] A bid to book ratio of 3.53 is commonly cited in the literature. This is the unweighted average. But, Mexico's largest banks actually received lower multiples of their book value when they were auctioned than the smaller banks. Hence, the weighted average ratio was 3.04.

state governments that did not actually have the administrative capacity to regulate the hundreds of banks that operated within their borders. (Rockoff, 1974, 1985).

Mexico's regulators were not effective monitors: they were inexperienced, and the tools they had at their disposal were blunt in the extreme. It was, after all, the government itself that had designed Mexico's extremely permissive bank accounting standards. For example, Mexico's accounting rules allowed the banks to include deferred income taxes in their calculations of Tier I capital. Moreover, prior to 1995, the National Banking Commission (known by its Spanish acronym, CNB) did not have sufficient information technologies on hand to actually gather information from the banks in a timely manner. It also lacked the authority and autonomy to properly supervise the banks (Mackey 1999: 97). Mexico's bankers may, in fact, have expected a high degree of regulatory forbearance. (Gruben and McComb 1997).

Mexico's bank directors were also ineffective monitors. This is somewhat surprising in light of the fact that bank directors in the pre-1982 period had created elaborate networks of interlocking directorates to police one another (Del Angel-Mobarak 2002). What was different in the post-1991 period was that the bankers did not have enough of their own capital at risk to give them incentives to do so.

The reason why the bankers did not have enough of their own capital at risk was because the government, in its goal of maximizing income from the auction process, agreed to a set of payment rules that allowed the bankers to borrow much of the funds to pay for the banks—some of it from those very same banks.

The original payment plan devised by the government called for a 30 percent payment three days after the announcement of the auction winner, with the remaining 70 percent due in 30 days. The bankers, however, convinced the government to replace these rules with one that gave them time to finance their purchases with outside sources of funds. Under the new plan, the first payment was reduced to 20%, a second payment of 20% was to be paid 30 days later, and the remaining 60% was to be paid four months after that. The bankers used the five month period between the auction and the final payment to raise the funds to purchase the banks from outside investors. These funds came from a variety of sources—small Mexican investors, commercial paper, foreign banks, other Mexican banks, and in some cases, the same bank that had been purchased. That is, some shareholders were able to finance or refinance their share purchases with a loan from the same bank they were purchasing, with the collateral for the loan being the shares that were being purchased. In one particularly well documented case, a group of purchasers actually financed 75 percent of the cost of acquiring a bank in this manner. (Mackey 1999: 55, 61, 141, 216; Unal and Navarro, 1999).[7]

The lack of effective monitoring by bank regulators and bank directors meant, of course, that Mexico's depositors faced considerable risk. Thus, the logic of the situation now required that they too be protected. As a technical matter, bank deposits in Mexico were insured by a Trust Fund (the Fund for the Protection of Bank Savings, known by its Spanish acronym, FOBAPROA), up to the available resources in FOBAPROA. These

[7] In the case of Banca Serfin (Mexico's third largest) an additional departure from the usual procedures might also have reduced the director's capital at risk. Unlike its practice in all the other bank auctions, the government held back 16% of the stock from the bidding process. This remaining 16 percent was a purchasing option for the group that bought the bank that they could exercise after the auction process closed. (Unal and Navarro, 1999).

resources were the premiums paid by banks, and were very limited. As a practical matter, however, FOBAPROA had the ability to borrow from the Banco de México (the Central Bank). According to Mexico's Law of Credit Institutions, the Technical Committee of FOBAPROA (on which sat representatives from the Ministry of the Treasury, the National Banking Commission, and the Banco de México) made recommendations that were forwarded to the governor of the Banco de México, who then acted on behalf of the bank, in its capacity as FOBAPROA's fiduciary trustee and legal representative (Mackey 1999; 44).

The Banco de México's guarantee, moreover, was not just implicit, as a consequence of its fiduciary relationship to FOBAPROA. It was an explicit promise. The Banco de México was supposed to publish, in December of each year, the maximum amount of obligations that would be protected by FOBAPROA during the following year. Instead, its 1993 and 1994 statements (published in the Diario Official, Mexico's version of the Federal Register) did not actually list amounts, but provided the following blanket statement:

"Based on Section IV of Article 122 of the Law of Credit Institutions, and considering that it has been a tradition that the Mexican financial authorities try to protect investors from any loss in case of insolvency of Credit Institutions, the FOBAPROA's Technical Committee has decided to continue with such tradition, for this reason it has been agreed that FOBAPROA will endeavor to honor all of the liabilities charged to financial institutions that participate in the fund, provided that they are derived from their

operations, excluding liabilities arising from subordinated debentures, liabilities resulting from illicit, irregular, or bad faith operations…" (As quoted in Mackey 1999: 53).[8]

In short, the Banco de México explicitly stated that it was not only guaranteeing all deposits *(including interbank deposits),* it was also guaranteeing virtually all bank liabilities (deposits, loans, and credits) with the exception of subordinated debt.

Precisely because there was unlimited deposit insurance, bank depositors did not, therefore, police banks by withdrawing funds from banks with risky loan portfolios. Research by Martinez Peria and Schmukler (2001) that analyzes changes in time deposits and interest rates in Mexico from 1991 to 1996 finds that various measures of banks' riskiness did not influence deposit growth through September 1995. Banks with riskier loan portfolios offered higher interest rates, and those rates attracted deposits.

Poised for Collapse:

The lack of effective monitoring meant that the Mexican banking system quickly began to accumulate a large volume of non-performing loans. As Table 3 demonstrates, when we sum the value of declared non-performing loans (which only included past due interest) to the value of "rediscounts" (the rolled over principal of those non-performing loans), the result is that as early as December 1991 more than 13 percent of the loan portfolios of Mexico's banks were non-performing. By December 1993 the rate was over 16 percent.

[8] From 1995 to 1997, the statement was amended slightly, by adding the following phrase "and liabilities derived from loans granted between banking institutions participating in funds transfer systems administered by the Bank of Mexico, to back up obligations chargeable to the Bank of Mexico, as well as liabilities in favour of intermediaries belonging to the same financial group as the bank." (Mackey 1999: 53).

Not surprisingly, Mexico's banks were losing money right from the beginning. In Table 4 we estimate the average (weighted) real rate of return on assets. It was negative in 1991, 1992, and 1993, and 1994. Moreover, even these sizable losses understate the fragile nature of the banking system: the banks' practice of rolling over past due interest into principal, and treating the increase in principal as income, inflated bank returns. Had generally accepted accounting standards been followed, the losses would have been even larger than those we report here.

Thus, the Mexican banking system was poised for collapse even before the peso devaluation of December 1994 (the so-called Tequila Crisis), which caused the central bank to raise interest rates and generated a widespread default among borrowers with variable rate loans. Gonzalez-Hermosillo, Pazarbasioglu, and Billings (1997) have demonstrated this using a hazard model to predict bank failure after privatization through 1995. Their results strongly show that it was not the macroeconomic shock of the 1994-96 peso crisis that led to bank failure. Rather, that event served as a tipping point for banks that were fragile to begin with. Gonzalez-Hermosillo, Pazarbasioglu, and Billings (1997) also demonstrate that "contagion effects," or the overall fragility of the banking system, set the stage for the entire system to become destabilized by the tequila crisis. In other words, it was not just individual banks actions that led to that bank's downfall, it was the actions of its competitors as well. The peso crisis simply tipped the scales of a precarious industry.

How the industry came to this precarious situation is the subject of some debate. There is widespread agreement that the root cause was ineffective monitoring. There is not, however, agreement on whether ineffective monitoring allowed inexperienced and

over-optimistic bankers to act in an imprudent manner or whether ineffective monitoring allowed bankers to engage in tunneling. The two hypotheses are not mutually exclusive: both could have been going on.

The first view—that bankers were inexperienced and overly-optimistic—stresses that the level of financial penetration in Mexico in 1991 was quite low by the standards of developed countries, and thus bankers perceived that there would be lucrative returns from entering the underserved Mexican market. (Mansell-Carstens, 1996: 294-96). This view also stresses that the bankers evidently believed that they had purchased secure oligopolies. (Gruben and Welch 1996). They underestimated, however, the degree to which banking markets in Mexico were contested. They also misjudged the government, which soon granted charters to an additional 17 banks. By 1993, just two years after privatization, the Herfindahl Index had fallen from .14 to .10, implying that the competitive structure of the banking industry had moved from being identical to one in which there were seven banks of equal size to one in which there were ten banks of equal size. (See Table 5) Thus, the bankers found themselves in a scramble for market share. As Gruben and McComb (1997 and 2003) have shown, Mexico's banks actually competed so aggressively for market share that they operated beyond the point where marginal costs equaled marginal revenue.

The inexperienced banker view would also stress that Mexican bankers did not know how difficult it would be to assess credit risks. There was, in fact, virtually no private credit reporting in Mexico. The Mexican Bankers Association had started to pool credit information in the early 1930s, but in 1933 the central bank took this authority from them. In 1964, this department of the central bank was constituted as a government-

run credit agency. As often happens with government-run credit reporting, however, the information available to this agency was often out of date and limited in scope. (Negrin, 2000). In July 1993, the first private credit bureaus were finally founded but it was not until February 1995, that rules were established governing their operation. (Mackey 1999: 25). Moreover, the banks themselves had weak internal systems of credit analysis—to the point that they were non-existent. (Mackey 1999: 56).

Finally, the inexperienced banker view would stress that Mexico's bankers did not understand how difficult it would be to enforce their property rights once borrowers reneged. Bankruptcy procedures in Mexico are cumbersome in the extreme. Not only does the country have few bankruptcy judges, the bankruptcy law requires judges to pass resolutions on each and every objection presented by debtors. Debtors can therefore delay the recovery of property by raising long strings objections—and they can obtain information about how to file these objections from publications of the country's various debtor organizations. In addition, even when favorable judgments are rendered, they are not always enforced. As a consequence, the attempt to recover collateral through the legal system often took (and still takes) between three and seven years. (Mackey 1999: 101). As a consequence, collateral recovery rates were amazingly low: five percent in 1991 and 1992, seven percent in 1993, and nine percent in 1994. (See table 6). The situation was actually much worse than these figures indicate, because Mexico's departure from generally accepted accounting practices meant that the value of non-performing loans was seriously under-reported. Had generally accepted accounting practices been followed, the ratio of repossessed collateral to non-performing loans would have been far lower than the data presented here.

The second view, which we will call the tunneling view, would stress that Mexico's bankers were not sheep to be fleeced, they were experienced businessmen who understood the environment in which they operated. It would also stress the fact that some of the banks had been purchased with funds from those same banks, in which the collateral for the loans were the bank shares. (Mackey 1999: 141). Finally, it would stress the fact that evidence from later in the 1990s (the period 1995-98, when the government was intervening insolvent banks) indicates that the bankers had engaged in widespread insider lending, and that the loans they made to themselves had lower interest rates, higher rates of default, and lower rates of collateral recovery than unrelated arm's-length loans. (La Porta, Lopez-de-Silanes, and Zamarripa 2003.)

There is not yet sufficient evidence to adjudicate between these two views. The inexperienced banker view receives considerable support from the fact that in 1996 there were roughly 1.75 million debtors who participated in various government-run, debtor relief programs. (Mackey 1999: 92). The tunneling view receives considerable support from the La Porta et. al. research on the higher propensity of related loans to go in to default. La Porta et. al, do, however, focus on the period when the banks were already being intervened and/or bailed out by the government. Mexico's bankers may have realized that they were about to lose control of their banks, and thus had strong incentives to make loans to themselves that they did not intend to repay. An analysis of loan portfolios during the period 1991-95 would help adjudicate between the two hypotheses.

The Expansion of Credit and the Growth of Non-Performing Loans:

Regardless of the specific mechanism, one thing is certain: bank credit in Mexico grew at a prodigious rate. As table 7 demonstrates, the compound rate of growth of bank lending was on the order of 24 percent per year. Housing loans in particular grew phenomenally fast: from December 1991 to December 1994 real lending for housing and real estate nearly tripled. Moreover, this is a lower bound estimate of the growth of housing lending because it includes only performing loans. Much of the housing portfolio was non-performing, and the principal value and past due interest of these loans were continually rolled over into an accounting category called "rediscounts." Inasmuch as the value of rediscounts was nearly equal to the total value of housing loans in December 1994, the threefold increase in housing loans from December 1991 to December 1994 is a lower bound estimate. The actual rate of growth might have been nearly twice that.

Notably, the rapid growth in lending was not matched by an equally rapid growth in deposits. In 1993, 1994, and 1995 loans outstripped deposits by roughly 20 percent: the difference was funded through inter-bank lending, predominantly from foreign banks in foreign currency. (Mackey 1999: 60, 98). Foreign denominated liabilities therefore grew rapidly, from 11 percent of total Mexican bank liabilities in December 1991 to 14.7 percent in December 1993, to 27 percent in December 1994. (Mishkin 1996). As Mishkin has pointed out, the practice of Mexican banks of matching these foreign denominated liabilities with foreign denominated assets (loans made to Mexican firms in dollars) did not reduce the bank's exchange rate risk. Unless the borrowing firms had sources of income in dollars, they would have had great difficulty in servicing their debts

in the event of devaluation. (Mishkin 1996:32). In point of fact, the borrowers tended not to have sources of income in dollars (Krueger and Tornell 1999).

The growth in lending was also not matched by an equally rapid growth in capital. Mexico's banks were severely undercapitalized. In table 8 we calculate the capital adequacy ratios of Mexico's banks. We are unable to calculate these ratios on the basis of risk-adjusted assets (as is commonly done in such analyses) because of the lack of adequate data prior to 1997. We are able, however, to estimate a uniform series of asset values by applying post 1997 accounting standards to pre-1997 bank financial statements. Our results indicate that during the 1991-95 period, banks maintained capital-assets ratios of only six to seven percent. Had we not adjusted the data to bring pre-1997 financial statements into line with post-1997 financial statements, the capital assets ratios would have been even lower still—in most quarters the ratio of capital to assets would have only been five percent.

Even more rapid than the growth in lending, was the growth of non-performing loans. Table 3 presents estimates of non-performing loans based on different ways of treating the various rollovers and restructurings that were permitted under Mexican accounting rules. One way that banks handled past due principal was to "rediscount" them—essentially creating a category of rollovers that reflected the low probability that the loans would be repaid. These rediscounts were not listed in the portfolio of performing loans, but they were not listed as being non-performing either. If we add these rediscounts to declared non-performing loans, then the default rate jumps dramatically. For example, instead of being 3.6 percent in December 1991, (the declared ratio of non-performing to total loans) the ratio would have 13.5 percent. Instead of

being 6.1 percent in December 1994 (the declared rate) it would have been 17.1 percent. The practice of "rediscounting" loans began to be phased out by banks in 1995. Instead, they began to renew or restructure unpaid principal, and treated these rollovers as performing. In the third column of table 3 we include the value of these renewed or restructured loans along with rediscounts and declared non-performing loans. Treating these rollovers as past due loans produces even more striking results. Instead of a non-performing ratio of 5.7 percent in December 1996, the ratio jumps to 32.5 percent.

Even this figure is likely an underestimate, because beginning in February 1995 banks were allowed to swap many of their non-performing loans for promissory notes from Mexico's deposit insurance system as part of a bailout (a subject to which we will return at length). If we add the value of these FOBAPROA promissory notes to the value of declared non-performing loans, rediscounts, and restructured or renewed loans, then the percentage of loans that were non-performing actually exceeded the percentage of loans that were in good standing: in December 1996 the non-performance ratio would have been 52.6 percent.

Collapse and Bailout

Even had there been no peso crisis of 1994-95, the Mexican banking system would have collapsed. The government's mishandling of the exchange rate merely hastened the banking system's demise. There is a sizable literature on the so-called Tequila Crisis, but for our purposes here we note that the overvaluation of the peso by the Salinas government made a bad situation worse.[9] The crawling peg exchange rate policy of the Salinas government had been established to help fight inflation, and it had been

largely successful in accomplishing that goal. Given the fact that Mexican interest rates were considerably higher than U.S. rates, and that the government was signaling an intention to maintain a stable (and overvalued) exchange rate, there were strong incentives for both Mexicans and foreigners to deposit funds in Mexican banks. There were also incentives for Mexican firms, including banks, to sign debt contracts denominated in dollars. (As mentioned previously, Mexican banks were funding roughly 20 percent of their loan portfolios out of interbank loans, much of it from foreign banks). By the end of 1994, however, it was becoming increasingly clear that the exchange rate was seriously overvalued. Once that happened, bank depositors had every incentive to withdraw their funds and convert them to dollars before the government allowed the currency to float freely. Firms with dollar denominated debts could not, however, act so quickly: as a result, the peso value of their debts nearly doubled in the space of a few days once the exchange rate was allowed to float.

The collapse of the exchange rate created two problems for the banking system. First, foreign currency loans represented roughly one-third of total loans made by Mexican banks. Many of these loans, however, had been made to firms without sources of foreign currency income. (Krueger and Tornell, 1999). Second, the collapse of the peso gave foreign portfolio investors strong incentives to pull their funds out of Mexico. Net foreign portfolio investment flows turned in the last quarter of 1994, and stayed there all through 1995. (Mishkin 1996:31). This required that the government pursue a tight monetary policy, raising central bank interest rates. The interbank loan rate, at its peak, hit 114 percent. Mortgage interest rates jumped to 74 percent by March 1995, from 22

[9] See Krueger and Tornell 1999 for a discussion of the exchange rate policy and its implications for the banking sector.

percent just five months before. (Gruben and McComb 1997). The rapid rise in interest rates pushed risky, but performing, loans into default. As the stock of non-performing loans mounted, and as the size of the deposit base shrank because of the run on the peso, the banks became insolvent.

The dimensions of the collapse can be seen through several measures of bank performance. In table 3 we estimate the ratio of non-performing to total loans. If we include principal rollovers and the value of FOBAPRA promissory notes as non-performing (as we shall discuss below, the government itself has implicitly declared the loans covered by the FOBAPROA program to be unrecoverable), then the ratio of non-performing loans grew from 17 percent at the end of 1994 to 36 percent by the end of 1995, and to 53 percent at the end of 1996. As debtors stopped making payments, income from loans dropped precipitously. Net interest margins (the spread between what banks charge for loans and what they pay depositors) actually became negative from December 1995 to September 1997 (See Table 9). As a consequence, bank financial margins (which include income and expenses from securities investment as well as loan-deposit operations) fell as well (See Table 9). As margins fell, so too did rates of return. In table 5 we estimate that the real rate of return on assets was negative 33 percent in 1995, negative 23 percent in 1996, and negative 14 percent in 1997. Not surprisingly, banks retreated from the loan business. Real lending to consumers and businesses contracted by 64 percent from December 1994 to December 1997. (See Table 7).

The government responded with a bailout of the banking system—the particulars of which warrant some discussion. First, the government sought to prop up the banks by lending them the capital necessary to maintain adequate reserves. A trust fund was

created (known by its Spanish acronym, PROCAPTE) by the government's bank deposit insurance agency (FOBAPROA) with funds provided by the central bank. This trust fund essentially lent the banks capital sufficient to maintain a 9 percent capital ratio in exchange for five-year subordinated debentures from the bank. In the event of non-payment, the debentures were convertible to ordinary stock that could be sold by the government. Banks were enjoined, during the period that they participated in PROCAPTE, from issuing dividends or from issuing additional debt instruments to capitalize the bank. (Mackey 1999: 65).

Second, the government moved to protect some borrowers, and in so doing protected the banks. There were several pieces to these debtor protection programs, and as time went on the extent and terms of these programs became gradually more lenient. As a first step, the government created an indexed accounting unit (known by its Spanish acronym, UDIS) and allowed loans to be re-denominated in these units. Banks were then allowed to transfer loans to a government trust fund, which converted them to UDIS and which bore a real interest rate of four percent plus a margin to reflect the credit risk of the borrower. A series of additional programs soon followed, each of which was targeted at different groups of debtors (including consumers, the holders of home mortgages, small businesses, and agriculture) and each of which was reformed over time to offer debtors even larger discounts off of their payments. (Mackey 1999: 82-86).

Third, Mexican banks had significant amounts of short term, dollar denominated debt—most of which had accumulated as a consequence of funding their loan books via inter-bank loans from foreign financial institutions. The government therefore opened a

special dollar credit window at the Banco de México to provide them with foreign currency.

Fourth, the government cleaned the bank's balance sheets of non-performing loans through a loan repurchase program run by FOBAPROA. In exchange for their non-performing assets, the banks received a non-tradable, zero coupon ten-year FOBAPROA promissory note that carried an interest rate slightly below the government CETES (Treasury bond) rate. The bankers agreed that for each peso in FOBAPROA bonds they received, they would inject 50 centavos of new capital, so as to recapitalize the bank. Banks were charged with collecting the principal and interest on the loans transferred to FOBAPROA. As a practical matter, however, they did not do so. (Krueger and Tornell, 1999; Murillo 2002).

Banks that were in serious financial distress were intervened by the government's National Banking and Securities Commission (known by its Spanish acronym, CNBV). When a bank was intervened, the CNBV seized control of the bank and suspended shareholder rights. It then replaced the management of the banks and appointed a managing intervener. The CNBV intervener cleaned the non-performing loans from the balance sheet through the FOBAPROA bond mechanism discussed above and injected new capital through the PROCAPTE program. The government, via FOBAPROA, also guaranteed all of the deposits of the bank. Finally, the CNBV arranged for the bank to be sold to another institution, or it liquidated the bank. In some cases, the CNBV carried out a *de facto* intervention: in which it removed the bank's management and then arranged for another financial institution to invest in or acquire control of the bank. In all, 12 banks were formally intervened, with another three undergoing de facto intervention.

Mexico's bankers may have anticipated the intervention and bailout. Indeed, given that Mexico had unlimited deposit insurance and that many of the banks were "too big to fail," it is hard to see how they would not have expected one to take place. The anticipated intervention and bailout, however, appears to have given some bankers the incentive to make large loans to themselves—and then default on the loans.[10] As La Porta et. al. (2003) have shown, 20 percent of all large loans from 1995 to 1998 went to bank directors. These insider loans carried lower rates of interest than arm's length loans (by four percentage points), had a 33 percent higher probability of default, and had a 30 percent lower collateral recovery rate.

The looting of the banks by their own directors was, in fact, made possible by a revision of the rules governing the FOBAPROA loan repurchase program. When the program was first instituted in 1995, the following types of loans were ineligible for repurchase by FOBAPROA: past due loans; loans held by companies in bankruptcy; loans discounted with development banks; loans denominated in UDIS, and loans to related parties (loans to directors, their families, or their firms). As the situation of the banking system continued to deteriorate, however, the Technical Committee of FOBAPROA dropped these restrictions. (Mackey 1999: 70). Thus, the banks were able

[10] Mexico's bankers had been engaged in related lending for over 100 years before the failed related loans of 1995-98. Related lending during this earlier period a rational response to the difficulty of enforcing contract rights through the legal system. Related lending during the pre-1991 period did not, in fact, result in bankers looting their own banks. First, bank directors monitored one another through complex networks of interlocking directorates. Second, shareholders developed mechanisms to monitor directors. Third, because there was no deposit insurance, depositors policed banks by withdrawing deposits from risky banks. (Maurer 2002; Del Angel-Mobarak, 2002; Maurer and Haber 2004).

to transfer to FOBAPROA a large number of loans that were highly unlikely to ever be repaid, as well as loans made to the bank's own directors.

In fact, there were no general guidelines regarding limitations and restrictions on the whole range of FOBAPROA programs. Rather, participation was determined on a case by case basis. (Mackey 1999: 52). Not surprisingly, the FOBAPROA bailout was not (as originally anticipated in early 1995) a one-time event. Rather, it became an open-ended mechanism, with loans being transferred from the banks to FOBAPROA through 1999. (See table 7). For the same reason, bank interventions were also not a one time event, but were spread out from 1994 to 2001. As of June 1999, the total cost of the bailout programs was 692 billion pesos ($65 billion) roughly 15 percent of Mexican GNP. (Murillo, 2002: 24, 27).

The fact that the banking system bailout involved an implicit transfer from taxpayers to bank stockholders, who included some of Mexico's wealthiest men, produced a political firestorm in Mexico—one that held up the 1999 budget for nearly nine months. Ultimately, in 1998, Congress agreed to disband FOBAPROA and replace it with a new (more autonomous) deposit guarantee agency, the Bank Savings Protection Institute (known by its Mexican acronym, IPAB). Most (although not all) FOBAPROA bonds were swapped for similar IPAB bonds, and IPAB was given the task of recouping and liquidating the assets backed by those bonds. This was a de facto admission that the loans that had been swapped for FOBAPROA promissory notes were unrecoverable. Congress also agreed that the annual cost of the banking sector rescue would be paid for by the government out of each year's budget. (McQuerry 1999). This was a de facto admission that the new IPAB bonds had the status of sovereign debt.

Liberalization without Property Rights

Saving the Mexican banking system not only required that the government bail out depositors (and some of the stockholders), it also required that the banks be put on a more sound footing.

The government therefore carried out a series of reforms designed to improve monitoring and recapitalize the banks. First, insider lending is now more difficult to carry out. Banks are required to publish consolidated accounts that included the operations of their subsidiaries. Banks are also precluded from making loans to bank officers and employees that were not part of their employee benefits. Related party loans are permitted, but they cannot exceed the net capital of the bank.[11]

Second, banks are required to diversify risk. As of June 1998, bank loans to any individual cannot exceed ten percent of the bank's net capital, or 0.5 percent of the total net capital of all banks. The same law also enjoins banks from granting loans to companies that exceed 30 percent of the bank's net capital, or six percent of the total net capital of all banks.

Third, capital requirements have been increased and a regulatory system has been introduced that establishes reserve minimums in accordance with the riskiness of a bank's portfolio. In particular, banks are required to access the credit record of borrowers (by using a credit bureau). Loans in which the credit record are not checked (or where it is checked and it is poor) must be provisioned at 100 percent. (Mackey 1999: 117).

[11] Prior to 1995 related party loans could not exceed 20 percent of the total portfolio of the institution. Related party loans often exceeded even this extremely permissive limit. (Mackey 1999: 141).

Fourth, as of January 1, 1997 new accounting standards, which more closely approximate generally accepted accounting standards, went into effect. For example, the accounting treatment of past-due loans has been reformed to bring it into line with generally accepted standards. In addition, repurchase agreements are no longer treated as assets, and inter-bank loans must be separately grouped in financial statements. Mexican banks still do not, however, adhere to all features of generally accepted accounting standards. In particular, banks are still allowed to record deferred taxes as Tier I capital. This may overstate the quantity and quality of the capital available to the banks. (Mackey 1999: 127-29).

Finally, the rules governing deposit insurance have been reformed. Unlike its predecessor (FOBAPROA), IPAB does not provide unlimited insurance. As of January 1, 2005, insurance is limited to 400,000 UDIS (roughly $100,000 at the current rate of exchange) and covers bank deposits only, instead of a broad range of bank liabilities.

The government has also lifted the restrictions on foreign ownership of Mexican banks. The government began to remove restrictions on foreign bank acquisitions of Mexican banks in February 1995, when foreign banks were permitted to purchase Mexican banks with market shares of six percent or less. This still kept the largest Mexican banks off the table. In 1996, all restrictions were removed on foreign bank ownership in Mexico (with the new regulations going into effect in 1997).

As a result, foreign banks began to purchase controlling interests in Mexico's largest banks. In December 1996 (just prior to the new rules regarding foreign ownership), only seven percent of total bank assets in Mexico were controlled by foreign banks. Roughly one-half of these foreign-controlled assets were in free standing

investment banks—what we refer to in Table 10 as Foreign de Novo banks—which did not engage in retail lending. By March 1997, however, 14 percent of bank assets in Mexico were controlled by foreign banks. By December 2000, 48 percent of bank assets were controlled by foreign banks, and as December 2002 (when Citibank purchased Banamex), the share of Mexican banks under foreign control increased to 66 percent.

The entry of foreign banks into the Mexican market succeeded in recapitalizing the banking system. As table 8 demonstrates capital-asset ratios have increased monotonically since 1997, hitting 9 percent by the end of 1997, 10 percent by 1999, and 11 percent by 2002.

The combination of foreign bank entry, along with new accounting standards also appears to have reduced the level of non-performing loans in the banking system. As of 1997, banks had to declare both interest and principal as non-performing. In addition, banks could no longer carry bad loans in special accounting categories, they had to either be moved back into the regular loan portfolio or be declared non-performing. As table 3 demonstrates, the level of non-performing loans has declined monotonically since the entry of foreign banks and the enactment of the accounting reforms. In December 1997, by which time the changes in accounting rules governing non-performing loans had gone into effect, 10.2 percent of all loans were considered non-performing. By December 2000, that number had been cut in half (to 5.5 percent) and continued to trend downwards. In December 2002 the ratio was 4.4 percent.

The entry of foreign banks into the Mexican market has also had a positive effect on administrative efficiency of banks. In table 11, we present regression results from Haber and Musacchio's study of the impact of foreign bank entry on bank performance.

Their results indicate that the entry of foreign banks since 1997 has served to push down administrative costs. Specification 2 indicates that the 50 percent increase in foreign market share from 1997 to 2003 reduced administrative costs by 0.50 percentage points (50 percent times the coefficient of -.010). When Haber and Musacchio decompose this effect, they find that the decline in administrative costs is not produced by a spillover effect from foreign banks to domestic banks. The coefficient on time (which represents the trend for domestically owned banks) is not statistically significant. Mexican banks acquired by foreign banks (denoted as foreign MA banks in the table), as well as foreign de novo banks, start out with significantly higher administrative costs than their domestic competitors. As specification 5 makes clear, however, Foreign MA banks have seen a rapid decline in their administrative costs, on the order to 0.1 percentage points per quarter.

Foreign bank entry also appears to have increased competition in financial services, broadly defined. In table 12 we present regression estimates made by Haber and Musacchio on the effect of foreign banks on net financial margins (the profit margin on all bank operations, including securities trading, lending, and fee income). Their results indicate that as foreign market share increases, net financial margins decrease (specification 2). When they decompose the foreign effect on net financial margins (specifications 5 and 6), they find that the effect of foreign bank entry affects domestic as well as foreign banks. The coefficient on Time, which captures domestic banks, is negative (0.3 percentage points per quarter). The coefficients on Foreign MA (interacted with Time) and Foreign de Novo (interacted with Time) banks are larger still (0.4

percentage points and 0.6 percentage points per quarter, respectively). These results are robust to alternative specifications not reproduced here.

Property Rights and Bank Strategies

The entry of foreign banks into the Mexican market has not, however, solved all the problems of the Mexican banking system. Mexico's bankers still face difficulties in enforcing their property rights. Mexico does not have transparent bankruptcy laws, and the judicial system is inefficient in the extreme. Bankers have therefore responded in two predictable ways—neither of which is good from the point of view of economic growth.

The first response by banks to weak property rights is that they charge high loan margins. As table 9 indicates, the trend in net interest margins since 1997 has been upwards. This is particularly curious in light of the fact that the trend in net financial margins (the spread on all financial transactions) has been downwards. In table 13 we present the regression results from Haber and Musacchio's study of foreign banks in Mexico. Their results indicate that the upward trend in net interest margins displayed in Table 9 is not an artifact of aggregate data. When they control for the characteristics of banks and the performance of the macro economy, they find a positive correlation between increases in the market share of foreign banks (the foreign market share variable in specification 2) and increases in net interest margins. When they decompose the impact of foreign bank entry (specification 5), they find Foreign MA banks (Mexican banks purchased by foreign banks) have tended to hold their loan spreads constant. (The coefficient on Foreign MA interacted with time is not statistically significant). At the same time, domestic banks (represented by the Time trend) and foreign de novo banks

have increased their net interest margins (by .001 percentage points per quarter). Given the small magnitude of the constant (-.004), and large number of quarters (25), this increase of .001 is quite substantial. These results are robust to alternative specifications, not reproduced here. In short, the results indicate that while foreign banks may have made the financial services industry, broadly defined, more competitive, they have not made the credit sector of the banking industry more competitive.

The second response by banks to weak property rights is to reduce their loan portfolio. As Table 14 demonstrates, Mexican banks, particularly those that are foreign owned, have gradually retreated from the loan business. Rather than earn income from lending, which is subject to default risk, they have increasingly allocated their assets to the holding of securities. In 1997, 71 percent of Mexican bank assets were dedicated to loans. By June 2003, loans made up only 56 percent of assets. The drop is even more pronounced when we treat foreign owned banks in isolation from domestically owned banks. Foreign banks had loan asset ratios of 68 percent in 1997. By June 2003, the ratio of loans to assets in foreign owned banks had fallen to 53 percent. This pattern of lower loan-asset ratios in foreign banks holds up when subjected to statistical analysis that controls for other features of Mexican banks and changes in the Mexican economy (Haber and Musacchio 2004).

The decline in lending is not just relative to the size of assets. It is an absolute decline. As table 7 indicates, the real value of total bank lending at the end of 2002 was less than half of what it was at the end of 1994. Moreover, these figures understate the decline in lending. During the initial phase of bank privatization in Mexico, virtually all lending went either to consumers or to the private sector (see table 7). Since the 1995-96

crisis, the banks have retreated from consumer and private sector lending. By the end of 2002, nearly 20 percent of the loan portfolios of Mexican banks consisted of loans to government entities (primarily state and municipal governments). This is above and beyond the treasury bills held by the banks in their investment portfolios. If we sum all non-government lending (including the value of FOBAPROA and IPAB promissory notes, which arguably are a form of public debt) we find that real total lending for consumer, housing, and commercial purposes in 2002 was 765 billion pesos, roughly one third of its 1994 level. (See Table 7).

As a result, banks play only a small role in financing the real economy in Mexico. As table 15 demonstrates, bank lending as a percentage of GDP was only 15 percent at the end of 2002. To put this into perspective, in a typical OECD country, the ratio of bank lending to GDP is on the order of 100 percent. Moreover, it is low even by Mexican historical standards. At the time that the banks were privatized in 1991 the ratio was 24 percent. Moreover, because banks have shifted their lending strategies away from private firms and individuals, the ratio of lending for non-government purposes to GDP is lower still: 11 percent. If we exclude FOBAPROA and IPAB promissory notes held in bank loan portfolios, the ratio is lower still: 7 percent.

Not surprisingly, surveys carried out by Mexico's central bank indicate that, as of 2002, only 15 percent of small firms, 19 percent of mid-sized firms, and 24 percent of large firms report that banks were their principal source of financing. The vast majority of firms, regardless of size, report that they relied on their suppliers for most of their financing. Moreover, the surveys, which have been run quarterly since 1998, indicate

that the relative importance of bank financing has been declining over time. (Serrano 2001).

Conclusions and Implications

Are there any general lessons from Mexico's experiments with bank privatization and liberalization?

There are two sets of institutions necessary for the creation of a stable privatized banking system: institutions that give bankers an incentive to behave in a prudent manner; and institutions that give borrowers an incentive to honor credit contracts.

The institutions that encourage bankers to behave prudently do not emerge automatically. Governments and bankers do not have the same goals: they play a complicated game during the process of privatization, the purpose of which is to align the incentives of the other player with their own goals. This means that the initial moves of the government are crucial in determining the state of institutions at the end of play.

The initial move of the Mexican government—to maximize the price at auction of the banks—opened up a Pandora's Box. Once the government made that move, the logic of the game produced a string of moves by the bankers and the government, the end result of which were institutions that encouraged reckless behavior by bankers. The bankers would only pay the prices sought by the government if they could borrow the capital. Hence, the government bent the rules governing payment, giving the bankers time to borrow the funds. But, if the bankers borrowed much of the capital (and pledged their shares as collateral), it necessarily followed that the bankers did not actually have much of their own capital at risk. This meant that bank directors did not have strong incentives to monitor one another.

The government's decision to allow the bankers to borrow the capital to purchase the banks also meant that depositors and lenders to the banks were exposed to considerable risk. The collateral that guaranteed the loans that paid for the shares were the shares themselves. In the event of a bank failure, that collateral would have little value. Hence, the government had to bend the rules regarding deposit insurance, and guarantee virtually all bank liabilities—including inter-bank loans. In fact, the logic of the game was such that once the banking system started to collapse, the government had little choice but to bend its own rules yet again, and agree to repurchase a broad range of loans that were originally excluded from the repurchase program—including related loans those made to the bank's own directors.

Finally, the government's decision to maximize prices at auction opened up a third set of problems, related to its own ability to regulate the banks. Precisely because it sought to maximize the book value of the banks, it did not reform bank accounting rules to bring them into line with generally accepted accounting practices. This meant, however, that in later rounds of play between the government and bankers , the government's own regulators were hamstrung, because they did not have good information from the banks. It was therefore difficult for them to get a handle on the increasingly fragile state of the banks.

The institutions that institutions that give borrowers an incentive to honor credit contracts also do not emerge automatically. In order for the incentives of borrowers to be aligned with the incentives of lenders, borrowers must face credible sanctions for reneging on credit contracts. Those sanctions come in two forms: borrowers are denied access to credit in the future; and borrowers lose the assets that collateralized the loan

contract. The first set of sanctions requires that there be credit reporting bureaus, and that lenders be required to report all of their transactions to the bureau. (Otherwise, borrowers can move from lender to lender, reneging on contracts serially). The second set of sanctions requires that there be a judicial system that can adjudicate credit contracts fairly, quickly, and at low cost. It also requires that there be complementary institutions, such as property registries and marshal services that can expedite the enforcement of judicial rulings.

This latter set of institutions—those that enforce contract rights ex post—is not something that can be accomplished at the stroke of a pen. The enforcement of some types of loan contracts may, for example, be taken out of the hands of inefficient (and corrupt) judicial systems. Mortgage contracts, for example, can be enforced through a system of bilateral trusts that allow banks to foreclose without recourse to the courts. Not all types of loan contracts, however, can be easily adjudicated outside of the courts. Thus, part of a building an efficient and stable banking system is building an efficient (and non-corrupt) judicial system. Accomplishing that goal, however, typically requires the reform of fundamental political institutions.

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Table 1

Decomposing Bid to Book Ratios in Mexico's Bank Privatization

Dependent Variable is the Price Paid/Book Value
T statistics are in paretheses
Method: Least Squares

	Spec 1	**Spec 2**	**Spec 3**	**Spec 4**	**Spec 5**
Constant	2.66	6.57	4.95	3.7	4.1
	(7.32)	(4.65)	(4.02)	(2.74)	(2.30)
Log of Assets		-0.33	-0.31	-0.3	-0.2
		(-2.17)	(-2.63)	(-2.42)	(-1.60)
Bid Round	0.25		0.27	0.3	0.3
	(2.70)		(3.35)	(3.95)	(3.06)
Number of Bidders			0.17	0.2	0.2
			(1.44)	(1.93)	(1.55)
Return on Equity				0.01	
				(1.69)	
Return on Assets					0.1
					(0.63)
N	18	18	18	18	18
Adjusted R^2	0.27	0.18	0.49	0.55	0.47
Log likelihood	-17.89	-18.95	-13.38	-11.59	-13.11
Durbin-Watson	1.37	1.13	1.79	1.44	1.69
F-statistic	7.29	4.70	6.54	6.27	4.79
Prob(F-statistic)	0.02	0.05	0.01	0.005	0.01

Source: Data on assets, bid round, number of bidders from Murillo 2002; Data on return on assets and return on equity calculated from data in Mexico, Commision Nacional Bancaria, *Banca Multiple* , 1982-1993.

Table 2

Alternate Specifications of Price to Book Regressions

Dependent Variable is the Price Paid/Book Value

Method: Least Squares

Variable	Coefficient	t-Statistic
Constant	3.08	1.98
Log of Assets	-0.18	-1.29
Number of Bidders	0.28	2.17
Return on Equity	0.01	1.46
Bid Round 2	0.33	0.80
Bid Round 3	-0.06	-0.10
Bid Round 4	0.77	1.41
Bid Round 5	1.68	3.69
Bid Round 6	1.38	2.86
Adjusted R-squared	0.56	
Log likelihood	-8.15	
Durbin-Watson stat	2.15	
F-statistic	3.71	
Prob(F-statistic)	0.03	

Source: Same as Table 1.

Table 3

Non Performing Loans (At Year End)

Year	Declared Non-Performing (NPL) as Percent of Total Loans	Declared NPL Plus Rediscounts as % of Total	Declared NPL Plus Rediscounts Plus Renewed and Restructured as % of Total	Declared NPL Plus Rediscounts, Restructured and FOBAPROA as % of Total
1991	3.6%	13.5%	13.5%	13.5%
1992	4.7%	14.7%	14.7%	14.7%
1993	6.0%	16.2%	16.2%	16.2%
1994	6.1%	17.1%	17.1%	17.1%
1995	6.2%	13.3%	26.8%	36.3%
1996	5.7%	10.8%	32.5%	52.6%
1997	10.2%	10.2%	10.2%	39.0%
1998	10.2%	10.2%	10.2%	39.7%
1999	8.2%	8.2%	8.2%	43.5%
2000	5.5%	5.5%	5.5%	34.4%
2001	4.9%	4.9%	4.9%	32.7%
2002	4.4%	4.4%	4.4%	27.1%

Source: Calculated from data in Comisión Nacional Bancaria, *Banca Múltiple*, 1982-93; Comisión Nacional Bancaria y de Valores, *Boletín Estadístico de Banca Múltiple*, 1993-2002.

Table 4

Average (Weighted) Annualized Rates of Return of Mexican Banks

	Nominal Return on Assets[1]	Real Return on Assets[1]
1991	1.1%	-15%
1992	1.5%	-10%
1993	1.5%	-7%
1994	0.5%	-6%
1995	0.3%	-33%
1996	-0.7%	-23%
1997	0.5%	-14%
1998	0.5%	-14%
1999	0.2%	-12%
2000	1.0%	-7%
2001	1.2%	-4%
2002	0.7%	-4%

1. Changes in accounting rules in 1997 required that we adjust pre-1997 reported assets in order to make them comparable. Reported assets from 1990 to 1996 were adjusted by subtracting deudores por reporto and futuros a recibir, and adding preventive provisions for credit risk.

Source: Same as Table 3.

Table 5

Market Structure of the Mexican Banking System, 1980-2002

Year	Herfindahl Index on Assets	Four Firm Ratio on Assets
1980	0.14	65%
1982	0.13	66%
1983	0.14	67%
1984	0.15	68%
1985	0.15	69%
1986	0.16	72%
1987	0.18	76%
1988	0.20	78%
1989	0.19	76%
1990	0.15	69%
1991	0.14	67%
1992	0.13	63%
1993	0.10	54%
1994	0.15	68%
1995	0.12	63%
1996	0.11	59%
1997	0.16	71%
1998	0.14	66%
1999	0.14	67%
2000	0.17	74%
2001	0.18	77%
2002	0.16	73%

Source: Same as Table 3.

Table 6

Collateral Repossessions as Percent of Declared Non-Performing Loans

Year	Percent
1991	5%
1992	5%
1993	7%
1994	9%
1995	16%
1996	13%
1997	9%
1998	12%
1999	14%
2000	20%
2001	23%
2002	19%

Source: Same as Table 3.

Table 7
Mexican Bank Lending, By Category
(Balances at Year End, in Millions of Real--December 2000--Pesos)

Year	Commercial[1]	Consumer	Housing	Gov't[2]	Fobaproa and IPAB[3]	Interbank[4]	Renewed or Restructured[5]	Rediscounted[6]	Declared Non-Performing[7]	Total Non-Government Lending[8]	Total Lending
1991	776,386	91,312	114,805					112,256	40,516	1,135,275	1,135,275
1992	961,879	127,757	178,439					148,728	69,739	1,486,542	1,486,542
1993	1,181,744	118,880	248,808					187,766	110,864	1,848,061	1,848,061
1994	1,423,325	109,387	299,437			8		244,066	134,469	2,210,693	2,210,693
1995	801,937	51,617	192,304	957	156,237	900	222,249	117,548	101,680	1,644,471	1,645,428
1996	513,686	27,745	80,338	18,587	273,760	5,536	295,744	68,554	77,913	1,343,277	1,361,865
1997	405,675	39,415	173,251	88,181	340,212	11,984			120,110	1,090,646	1,178,827
1998	388,886	32,400	178,847	92,705	346,423	15,842			119,229	1,081,628	1,174,333
1999	312,687	35,238	147,583	91,707	377,561	17,797			87,527	978,393	1,070,100
2000	318,320	40,596	131,224	153,331	290,161	13,890			55,069	849,261	1,002,592
2001	288,685	54,548	119,868	147,977	258,939	16,817			45,598	784,455	932,432
2002	296,116	71,837	114,223	188,042	216,169	24,179			41,485	764,009	952,051

1. The commercial loan category did not exist before 1997, thus it was estimated as a residual of total loans minus consumer, housing, government, interbank, restructured and renewed and non performing loans.
2. Does not include government bonds, which are held in the securities portfolio.
3. Value of Fobaproa and IPAB promissory notes held by banks.They are treated as loans, because they represent loans transferred to Fobaproa and IPAB.
4. Prior to 1995 interbank lending was not reported separately, but was included in commercial loans.
5. Restructured and Renewed represent loans in danger of default. In 1997, new accounting standards required banks to either declare these as non-performing or treat them as performing loans.
6. Rediscounted loans are non-performing loans whose principal has been rolled over
7. Prior to March 1997 non-performing loans only include past due interest. The principal was held in rediscounted loans. As of March 1997, non-performing loans included both past due principal and interest. Non-performing loans both before and after 1997 include reductions for write downs against reserves.
8. Includes Commercial, Consumer, Housing, FOBAPROA/IPAB, Interbank, Renewed/Restructured, Rediscounted, and Non-Performing.

Source: Aggregates created by the author from the loan portfolios ("Carteras de Credito") published in Comisión Nacional Bancaria *Banca Multiple*, 1982-1993; and Comisión Nacional Bancaria y de Valores, *Boletín Estadístico de Banca Múltiple,* 1993-2002.
Deflated using wholesale price index from the Banco de Mexico web page: http://www.banxico.org

Table 8

Capital Assets Ratio[1], Weighted Average of Mexican Banks
(At Year End)

Year	Ratio
1991	6%
1992	7%
1993	7%
1994	6%
1995	7%
1996	6%
1997	9%
1998	9%
1999	10%
2000	10%
2001	10%
2002	11%

Assets not adjusted for risk.
1991-96 assets adjusted for accounting changes after 1997.

Source: Same as Table 3.

Table 9
Bank Profit Margins

Year	Quarter	Net Interest Margin	Net Financial Margin
1991	March		1.4%
1991	June		1.3%
1991	Sept.		1.4%
1991	Dec.	3.6%	1.6%
1992	March		1.7%
1992	June		1.6%
1992	Sept.		1.6%
1992	Dec.	3.2%	1.9%
1993	March		2.2%
1993	June		2.2%
1993	Sept.	4.1%	1.7%
1993	Dec.	1.3%	1.5%
1994	March	1.5%	1.6%
1994	June	1.4%	1.3%
1994	Sept.	1.4%	1.4%
1994	Dec.	1.6%	1.5%
1995	March	1.5%	2.0%
1995	June	0.1%	1.4%
1995	Sept.	0.5%	1.1%
1995	Dec.	-0.6%	1.3%
1996	March	-2.0%	1.0%
1996	June	-1.5%	1.1%
1996	Sept.	-1.5%	0.9%
1996	Dec.	-1.0%	0.8%
1997	March	-0.5%	1.0%
1997	June	-0.3%	0.9%
1997	Sept.	0.0%	0.9%
1997	Dec.		1.4%
1998	March	0.8%	1.3%
1998	June	0.9%	1.3%
1998	Sept.	1.1%	1.5%
1998	Dec.	1.4%	2.3%
1999	March	1.1%	1.8%
1999	June	1.1%	1.7%
1999	Sept.	1.3%	1.8%
1999	Dec.	1.3%	1.9%
2000	March	1.0%	1.8%
2000	June	1.1%	1.5%
2000	Sept.	1.1%	1.7%
2000	Dec.	1.0%	1.8%
2001	March	1.5%	1.9%
2001	June	1.4%	1.9%
2001	Sept.	1.4%	1.9%
2001	Dec.	1.3%	1.7%
2002	March	1.3%	1.5%
2002	June	1.3%	1.6%
2002	Sept.	1.5%	1.7%
2002	Dec.	1.4%	1.8%
2003	March	1.4%	1.5%

Source: Haber and Musacchio, 2004.

Table 10
Foreign Bank Market Shares, By % of Bank Assets
(At Year End)

Year	Domestic	Foreign de Novo	Foreign M&A	Total Foreign
1991	99%	1%		1%
1992	99%	1%		1%
1993	97%	3%		3%
1994	97%	4%		4%
1995	95%	2%	3%	5%
1996	93%	3%	4%	7%
1997	89%	4%	7%	11%
1998	80%	2%	18%	20%
1999	80%	2%	18%	20%
2000	52%	3%	45%	48%
2001	54%	5%	40%	46%
2002	34%	4%	62%	66%

Soucre: Same as Table 3.

Table 11
Administrative Costs Regressions[1]

T Statistics in Parentheses
Dependent Variable is Administrative Costs/Assets

	Spec. 1	Spec. 2	Spec. 3	Spec. 4	Spec. 5	Spec. 6
Constant	0.020	0.024	0.016	0.017	0.017	0.016
	(13.15)	(12.85)	(4.56)	(4.62)	(4.64)	(3.95)
MktShare	-0.051	-0.038	-0.039	-0.035	-0.030	-0.037
	(-1.66)*	(-1.23)	(-1.22)	(-1.03)	(-0.94)	(-1.08)
Loans/Assets	-0.001	-0.004	-0.001	-0.002	-0.006	-0.004
	(-0.36)	(-1.46)	(-0.57)	(-0.86)	(-2.35)**	(-1.32)
Foreign MA			-0.001	0.002	0.010	0.01
			(-0.32)	(0.36)	(1.73)*	(1.65)*
Foreign de Novo			0.012	0.014	0.021	0.020
			(1.70)*	(1.97)**	(2.99)***	(2.65)***
Time					0.000	-0.000
					(-0.88)	(-0.96)
Time*Foreign MA					-0.001	-0.001
					(-2.52)***	(-2.40)**
Time*Foreign de Novo					0.000	-0.000
						(-3.35)***
					(-3.95)***	
Foreign MktShare		-0.010		-0.010		0.004
				(-3.26)***		(0.66)
		(-3.60)***				
Observations	830	830	830	833	830	833
Number Groups	41	41	41	41	41	41
R^2 Within	0.00	0.02	0.01	0.02	0.06	0.05
R^2 Between	0.05	0.03	0.11	0.11	0.11	0.13
R^2 Overall	0.03	0.04	0.09	0.10	0.11	0.11
F	1.64	5.44	2.16	3.58	7.61	5.11

1. Functional form is OLS with fixed effects. Observations are quarterly, March 1997 to March 2003. No observations for December 1997.
* significant at 10%. ** signficant at 5%. *** significant at 1%.

Source: Haber and Musacchio, 2004.

Table 12
Net Financial Margins Regressions

T Statistics in Parentheses
Dependent Variable=Net Financial Margins/Assets

	Spec 1	Spec. 2	Spec. 3	Spec. 4	Spec. 5	Spec. 6
MktShare	0.223	0.259	0.104	0.111	0.047	0.045
	(0.76)	(0.89)	(0.35)	(0.37)	(0.16)	(0.15)
Equity/Assets	0.123	0.110	0.131	0.116	0.037	0.038
	(3.04)***	(2.73)***	(3.23)***	(2.88)***	(0.88)	(0.92)
Growth Industry	0.097	0.081	0.102	0.086	0.099	0.107
	(1.16)	(0.98)	(1.23)	(1.04)	(1.25)	(1.35)
Inflation	1.794	1.504	1.801	1.516	0.719	0.618
	(5.92)***	(4.84)**	(5.97)***	(4.91)***	(2.13)**	(1.79)*
Real Interest Rate	0.000	-0.001	0.000	-0.001	-0.002	-0.002
	(0.19)	(1.49)	(0.03)	(1.60)	(2.46)**	(2.10)**
AdminCost/Assets	-0.222	-0.169	-0.190	-0.132	0.011	-0.015
	(-0.56)	(-0.43)	(-0.48)	(-0.33)	(0.03)	(-0.04)
Loans/Assets	0.607	0.594	0.614	0.602	0.576	0.579
	(25.52)***	(24.90)***	(25.76)***	(25.20)***	(24.18)***	(24.22)***
Foreign MktShare		-0.131		-0.130		0.068
		(-3.72)***		(-3.70)***		(1.35)
Foreign MA			-0.008	0.012	0.075	0.070
			(-0.21)	(0.32)	(1.39)	(1.30)
Foreign de Novo			-0.179	-0.156	-0.089	-0.098
			(-2.80)***	(-2.45)**	(-1.38)	('1.50)
Time					-0.003	-0.004
					(-3.14)***	(-3.23)***
Time*Foreign MA					-0.004	-0.004
					(-2.05)**	(-2.05)**
Time*Foreign de Novo					-0.006	-0.006
					(-4.83)***	(-4.83)***
Constant	0.301	0.376	0.375	0.438	0.502	0.500
	(17.26)	(14.18)	(11.10)	(11.66)	(12.55)	(12.49)
Observations	832	832	832	832	832	832
Number of Groups	41	41	41	41	41	41
R2 within	0.55	0.56	0.56	0.57	0.59	0.60
R2 between	0.64	0.64	0.63	0.64	0.66	0.66
R2 overall	0.58	0.58	0.56	0.57	0.59	0.58
F	138.99	125.34	110.48	102.41	95.15	88.07
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

1. Functional form is OLS with fixed effects. Observations are quarterly, March 1997 to March 2003. No observations for December 1997.
* significant at 10%. ** signficant at 5%. *** significant at 1%.

Source: Haber and Musacchio, 2004.

Table 13
Net Interest Margin Regressions[1]

T Statistics in Parentheses
Dependent Variable is Net Interest Margin

	Spec. 1	Spec. 2	Spec. 3	Spec. 4	Spec. 5	Spec. 6
Constant	0.021	0.006	0.019	0.005	-0.004	-0.004
	(1.90)	(0.42)	(1.60)	(0.37)	(0.26)	(0.29)
Cash/Assets	0.009	0.080	0.009	0.008	0.007	0.008
	(0.55)	(0.49)	(0.53)	(0.47)	(0.41)	(0.45)
NPL/Loans	0.003	0.001	0.004	0.000	-0.016	-0.016
	(0.13)	(-0.04)	(0.22)	(-0.01)	(-0.76)	(-0.76)
AdminCost/Assets	0.709	0.716	0.705	0.715	0.767	0.761
	(3.36)***	(3.41)***	(3.33)***	(3.39)***	(3.64)***	(3.60)***
MktShare	-0.091	-0.104	-0.102	-0.107	-0.093	-0.094
	(1.14)	(-1.31)	(-1.24)	(-1.31)	(-1.13)	(-1.14)
Equity/Assets	-0.034	-0.033	-0.035	-0.033	-0.015	-0.016
	(-1.91)*	(-1.85)*	(-1.92)*	(-1.85)	(-0.76)	(-0.80)
Loans/Assets	-0.020	-0.017	-0.019	-0.017	-0.019	-0.018
	(-1.60)	(-1.42)	(-1.46)	(-1.36)	(-1.46)	(-1.42)
Growth Industry	0.047	0.039	0.047	0.039	0.034	0.034
	(1.56)	(1.29)	(1.55)	(1.29)	(1.10)	(1.12)
Inflation	-0.114	-0.045	-0.112	-0.046	0.042	0.026
	(1.13)	-(0.43)	(1.10)	(-0.43)	(0.35)	(0.21)
Real Interest Rate	0.000	0.001	0.000	0.001	0.001	0.001
	(0.85)	(1.95)**	(0.89)	(1.94)*	(2.26)**	(2.34)**
Foreign MA			0.006	0.002	0.000	-0.001
			(0.59)	(0.19)	(-0.01)	(-0.07)
Foreign de Novo			0.006	0.003	-0.003	-0.004
			(0.26)	(0.13)	(-0.12)	(-0.17)
Foreign MktShare		0.028		0.028		0.011
		(2.42)**		(2.35)**		(0.66)
Time					0.001	0.000
					(1.97)**	(0.98)
Time*Foreign MA					0.000	0.000
					(0.27)	(0.29)
Time*Foreign de Novo					0.001	0.001
					(2.10)**	(2.03)**
Observations	524	524	524	524	524	524
Number Groups	31	31	31	31	31	31
R^2 Within	0.05	0.06	0.05	0.06	0.07	0.07
R^2 Between	0.32	0.37	0.22	0.32	0.19	0.21
R^2 Overall	0.08	0.09	0.06	0.08	0.07	0.07
F	2.83	3.16	2.34	2.63	2.63	2.48

1. Functional form is OLS with fixed effects. Observations are quarterly, March 1997 to March 2003. No observations for December 1997.
* significant at 10%. ** signficant at 5%. *** significant at 1%.
Source: Haber and Musacchio, 2004.

Table 14
Loan-Asset Ratios by Bank Origin

(Weighted Averages, at Year End)

Year	All Banks	Domestic Banks	Foreign Banks
1991	54%	55%	29%
1992	64%	65%	39%
1993	62%	64%	37%
1994	61%	61%	49%
1995	64%	66%	39%
1996	60%	62%	33%
1997	71%	72%	68%
1998	69%	71%	61%
1999	64%	65%	57%
2000	63%	67%	60%
2001	57%	58%	55%
2002	59%	72%	52%
2003	56%	66%	53%

*2003 includes data until June quarter only

Source: Same as Table 3.

Table 15
Bank Lending as a Percent of GDP
(At Year End)

Year	Total Loans as % of GDP[1]	Private Sector Lending as % of GDP[2]	Private Sector (Excluding Fobaproa) as % GDP[3]
1991	24%	20%	20%
1992	29%	24%	24%
1993	35%	28%	28%
1994	38%	30%	30%
1995	32%	27%	24%
1996	26%	22%	16%
1997	21%	15%	8%
1998	21%	14%	8%
1999	18%	13%	6%
2000	16%	12%	7%
2001	15%	11%	7%
2002	15%	11%	7%

1. Includes all performing loans. Declared non-performing loans and rediscounts not included.
2. Total Loans, minus loans to government entities.
3. Total Loans, minus those to government entities and the value of Fobaproa and IPAB bonds held in the loan portfolio.

Source: Bank loan data from Table 7; GDP data from Instituto Nacional de Estadística Geografía e Informática website.