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Mexico's experiments with bank privatization and liberalization, 1991–2003

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Abstract

During the 1990s Mexico conducted two experiments with its banking system. In the first experiment (1991–96) it privatized the banks. This experiment took place with weak institutions to enforce contract rights. It also took place without institutions that encourage prudent behavior by bankers. The result was reckless behavior by banks, and a collapse of the banking system. In the second experiment (1997–2003), Mexico reformed many of the institutions that promoted bank monitoring and it opened up the industry to foreign investment. It was less successful, however, in reforming the institutions that promote the enforcement of contract rights. The result was that bankers behaved prudently, but prudent behavior in the context of weak contract rights implies that banks are reluctant to extend credit to firms and households.

JEL classification: D23; F23; G21; G28; G38

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1. Introduction

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

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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 profitable and stable, but that is risk averse. It therefore extends only modest amounts of credit to firms and households. The ratio of private sector lending to GDP in Mexico is only 11%, an extraordinarily low figure in relationship to that of other middle-income developing countries.

This paper seeks to understand why the first experiment failed and the second experiment produced disappointing results. I argue that there were two fundamental flaws in the 1991–96 privatization experiment. The first flaw was that Mexico had weak institutions to assess the creditworthiness of borrowers ex ante and enforce the contract rights of bankers ex post. The second flaw 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, however, the government was compelled to make a series of decisions that reduced the incentives of bank directors, bank depositors, and bank regulators to enforce prudent behavior by the privatized banks. The institutions that emerged out of the privatization process included regulated entry, extremely permissive bank accounting standards, regulatory forbearance, unlimited deposit insurance, and an auction payment system that allowed bankers to purchase the banks with borrowed funds – sometimes from the same banks that they were purchasing.

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 (1997–2003), many of the institutions that encouraged imprudent behavior were reformed. The problem of property rights, 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.

2. 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 it faced a serious fiscal crisis. Second, bankers faced expropri-

ation 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 20th 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 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. 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.

2.1. 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 (1988–94) and his party (the Partido Revolucionario Institucional, 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 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 bank 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 hyper-inflation 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

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

auction of state-owned firms, whose sale would not only provide the government with extraordinary revenues but would also reduce the drain that these (perennially unprofitable) firms put on the annual budget. It was, in short, in the interests of the government to obtain the highest price possible for the privatized banks.

2.2. 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 1915–16, 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 et al., 2003, Chapter 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, which required a constitutional amendment, was ratified by the Mexican congress with virtually no debate.

At the time of 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. The PRI had won every presidential and gubernatorial election, and had dominated both houses of congress, since 1929.[3] 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.

[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 1982 expropriation.

[3] As a technical matter, the PRI was founded in 1946, out of the reform of an earlier party, the Partido de la Revolución Mexicana (PRM, founded in 1938). The PRM itself had been founded out of the reform of a pre-existing party, the Partido Nacional Revolucionario (PNR), which had been founded in 1929. As a practical matter, therefore, the PRI dates from 1929. The PRI's 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 won the presidency.

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

2.3. 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% of total bank assets. The government did not break these up, but sold them as is.

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, the provisions governing banking in the 1994 NAFTA agreement severely limited the participation of foreign banks in Mexico. NAFTA provided that US and Canadian banks could own no more than 30% of a Mexican bank's capital. It also provided that US and Canadian banks could not purchase a controlling interest in any Mexican bank whose market share exceeded 1.5% and that the total market share under their control could not exceed eight percent. This restriction meant that foreign banks were effectively excluded from the market, because there were only two banks with market shares of 1.5% or less. Over a six-year transitional period US and Canadian banks could gradually hold larger market shares, up to a maximum of 15% 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 US and Canadian concerns for a three-year period if foreign banks as a group controlled more than 25% of the market. Foreign banks were also still subject to the rule that they could own no more than 30% of a Mexican bank's stock (Murillo, 2002, p. 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.

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 0.30. 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.[4] 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 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.[5]

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, p. 78). Mexico's bid-to-book

[4] 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.

[5] 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. The results are consistent with the results in Table 1. We therefore do not reproduce them here.

[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.

Table 1
Decomposing bid to book ratios in Mexico's bank privatization

	Specification 1	Specification 2	Specification 3	Specification 4	Specification 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

Dependent variable is the price paid/book value.
T statistics are in parentheses.
Method: Least squares.
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*, 1982–93.

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. Moreover, research by Gunther et al. (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 Mexico's government-owned banks, even before they were auctioned. 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% 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 much of 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.

2.4. 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 19th century United States, when banks were chartered by 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. 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, p. 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 monitor one another.

The original payment plan devised by the government called for a 30% payment three days after the announcement of the auction winner, with the remaining 70% due in 30 days. The bankers, however, convinced the government to replace those 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 (Unal and Navarro, 1999). 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% of the cost of acquiring a bank in this manner (Mackey, 1999, pp. 55, 61, 141, 216).[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 resources were the premiums paid by banks, and were very

[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% was a purchasing option for the group that bought the bank that they could exercise after the auction process closed (Unal and Navarro, 1999).

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, p. 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, p. 53).[8]

In short, the Banco de México explicitly stated that it was not only guaranteeing all deposits *(including inter-bank 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.

2.5. 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 2 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), as early as December 1991 more than 13% of the loan

[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, p. 53).

Table 2
Non-performing loans (at year end)

	Declared non-performing (NPL) as percent of total loans (%)	Renewed and rediscounts (%)	FOBAPROA as percent of total (%)	Declared NPL plus rediscounts as percent of total (%)	Declared NPL plus rediscounts plus renewed and restructured as percent of total (%)	Declared NPL plus rediscounts, restructured and FOBAPROA as percent of total (%)
1991	3.6	9.9	0	13.5	13.5	13.5
1992	4.7	10.0	0	14.7	14.7	14.7
1993	6.0	10.2	0	16.2	16.2	16.2
1994	6.1	11.0	0	17.1	17.1	17.1
1995	6.2	20.7	9	13.3	26.8	36.3
1996	5.7	26.7	20	10.8	32.5	52.6
1997	10.2	0.0	29	10.2	10.2	39.0
1998	10.2	0.0	29	10.2	10.2	39.7
1999	8.2	0.0	35	8.2	8.2	43.5
2000	5.5	0.0	29	5.5	5.5	34.4
2001	4.9	0.0	28	4.9	4.9	32.7
2002	4.4	0.0	23	4.4	4.4	27.1
2003	3.2	0.0	21	3.2	3.2	24.1

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.

portfolios of Mexico's banks were non-performing. By December 1993 the rate was over 16%.

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 widespread default among borrowers with variable rate loans. Gonzalez-Hermosillo et al. (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.

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, pp. 294–296). 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. Thus, the bankers found themselves in a scramble for market share. As Gruben and McComb (1997, 2003) have shown, Mexico's banks 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 (Negrin, 2000; Mackey, 1999, p. 25). Moreover, the banks themselves had weak internal systems of credit analysis – to the point that they were non-existent (Mackey, 1999, p. 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.[9] Bankruptcy procedures in Mexico were (and still are) cumbersome in the

[9] The fact that property rights were difficult to enforce was not independent of the fact that the Mexican government was unconstrained in its authority and discretion. The ability of banks to enforce contract rights requires clear titling, well-organized property registries, and efficient police, courts, and legal codes. These institutions and organizations emerge in societies *over time*, because societies *choose* to invest in them. When property rights are not excludable (because property is subject to government expropriation) societies do not have incentives to invest in these organizations and institutions. As a consequence of the low level of transparency of property rights, governments cannot easily tax property. This produces a paradoxical outcome: unconstrained governments tend to be poor: they lack the administrative capacity to enforce property rights even if they wanted to. The result is an equilibrium in which property rights have low transparency, low transferability, and low enforceability – but in which the degree of excludability is increased.

extreme. Not only did the country have few bankruptcy judges, the bankruptcy law required judges to pass resolutions on each and every objection presented by debtors. Debtors could therefore delay the recovery of property by raising long strings objections – and they could obtain information about how to file these objections from publications of the country's various debtor organizations. In addition, even when favorable judgments were rendered, they were 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, p. 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.[10]

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, p. 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 et al., 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, p. 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, 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.

2.6. 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 3 demonstrates, total real bank lending doubled in the space of just three years (1991–94). Housing loans grew at an even faster rate: 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

[10] The situation was actually much worse than these figures indicate, because Mexico's departure from generally accepted accounting practices lowered the reported levels of non-performing loans. See Table 2 for the sources from which I made these estimates.

Table 3
Mexican bank lending, by category (balances at year end, in millions of real – December 2000 – Pesos)

Year	Commercial [a]	Consumer	Housing	Government [b]	FOBAPROA and IPAB [c]	Renewed, restructured, or rediscounted [d]	Total private lending [e]	Total lending
1991	776,386	91,312	114,805			112,256	982,502	1,135,275
1992	961,879	127,757	178,439			148,728	1,268,076	1,486,542
1993	1,181,744	118,880	248,808			187,766	1,549,432	1,848,061
1994	1,423,325	109,387	299,437			244,066	1,832,149	2,210,693
1995	801,937	51,617	192,304	957	156,237	339,796	1,045,858	1,645,428
1996	513,686	27,745	80,338	18,587	273,760	364,298	621,770	1,361,865
1997	405,675	39,415	173,251	88,181	340,212	–	618,340	1,178,827
1998	388,886	32,400	178,847	92,705	346,423	–	600,133	1,174,333
1999	312,687	35,238	147,583	91,707	377,561	–	495,508	1,070,100
2000	318,320	40,596	131,224	153,331	290,161	–	490,141	1,002,592
2001	288,685	54,548	119,868	147,977	258,939	–	463,101	932,432
2002	296,116	71,837	114,223	188,042	216,169	–	482,176	952,051
2003	275,532	99,609	100,128	179,940	179,538	–	475,268	856,783

Source: Aggregates created by the author from the loan portfolios (“Carteras de Credito”) published in Comisión Nacional Bancaria *Banca Multiple*, 1982–93; 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.

[a] The commercial loan category did not exist before 1997, thus it was estimated as a residual of total loans minus consumer, housing, government, restructured and renewed and non-performing loans.

[b] Does not include government bonds, which are held in the securities portfolio.

[c] Value of FOBAPROA and IPAB promissory notes held by banks. They are treated as loans, because they represent loans transferred to FOBAPROA and IPAB.

[d] Rediscounted loans are non-performing loans whose principal was rolled over. 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.

[e] Includes commercial, consumer, and housing.

was non-performing, and the principal value and past due interest of those loans were continually rolled over into an accounting category called "rediscounts" (See Table 3). 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%: the difference was funded through inter-bank lending, predominantly from foreign banks in foreign currency (Mackey, 1999, pp. 60, 98). Foreign denominated liabilities therefore grew rapidly, from 11% of total Mexican bank liabilities in December 1991 to 14.7% in December 1993, to 27% in December 1994. 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, p. 32). In point of fact, the borrowers tended not to have sources of income in dollars (Krueger and Tornell, 1999).

Even more rapid than the growth in lending, was the growth of non-performing loans. Table 2 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% in December 1991 (the declared ratio of non-performing to total loans), the ratio would have 13.5%. Instead of being 6.1% in December 1994 (the declared rate), it would have been 17.1%. 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 fifth column of Table 2 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% in December 1996, the ratio jumps to 32.5%.

Even this figure is likely an underestimate, because beginning in February 1995 banks were allowed to swap many of their 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 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%.

2.7. 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.[11] 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 US 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% of their loan portfolios out of inter-bank 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 negative in the last quarter of 1994, and stayed there all through 1995 (Mishkin, 1996, p. 31). This required that the government pursue a tight monetary policy, raising central bank interest rates. The inter-bank loan rate, at its peak, hit 114%. Mortgage interest rates jumped to 74% by March 1995, from 22% 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 2 we estimate the ratio of non-performing to total loans. If we include principal rollovers and the value of FOBAPROA 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% at the end of 1994 to 36% by the end of 1995, and to 53% at the end of 1996. As debtors stopped making payments, income from loans dropped precipitously. Net interest margins (the spread

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

between what banks charge for loans and what they pay depositors) actually became negative from December 1995 to September 1997 (see Table 4).

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

Table 4
Interest rate spreads, Mexican banking system, 1993–2003

Year	Quarter	Net interest margin (%)
1993	September	4.1
1993	December	1.3
1994	March	1.5
1994	June	1.4
1994	September	1.4
1994	December	1.6
1995	March	1.5
1995	June	0.1
1995	September	0.5
1995	December	−0.6
1996	March	−2.0
1996	June	−1.5
1996	September	−1.5
1996	December	−1.0
1997	March	−0.5
1997	June	−0.3
1997	September	0.0
1997	December	
1998	March	0.8
1998	June	0.9
1998	September	1.1
1998	December	1.4
1999	March	1.1
1999	June	1.1
1999	September	1.3
1999	December	1.3
2000	March	1.0
2000	June	1.1
2000	September	1.1
2000	December	1.0
2001	March	1.5
2001	June	1.4
2001	September	1.4
2001	December	1.3
2002	March	1.3
2002	June	1.3
2002	September	1.5
2002	December	1.4
2003	March	1.4
2003	June	1.4
2003	September	1.3
2003	December	1.5

Source: Same as Table 2.

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 lent the banks capital sufficient to maintain a 9% 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.[12] 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, p. 65).

Second, the government moved to protect borrowers, and in so doing protected the banks. There were several 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, pp. 82–86).

Third, Mexican banks had significant amounts of short term, dollar denominated debt. 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 10-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

[12] In the event of non-payment, however, the shares likely would not have had much value.

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.[13] As La Porta et al. (2003) have shown, 20% 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% higher probability of default, and had a 30% 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, p. 70).

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, p. 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 3). Thus, the percentage of bank loan portfolios composed of FOBAPROA bonds grew from 9% in 1995, to 20% in 1996, 29% in 1997 and 1998, and finally topped out at 35% in 1999 (see Table 2). 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% of Mexican GNP (Murillo, 2002, p. 24, 27).[14]

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. It was one of the reasons why the PRI lost its control of the lower house of Congress in 1997. That opposition congress then

[13] 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 was a rational response to the difficulty of enforcing contract rights through the legal system and did not result in the 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).

[14] This puts Mexico's experience in the mid-range of LDC bank bailouts, which have ranged from 5 to 50% of GDP. See Keefer (2004).

held up the approval of the 1999 budget for nearly nine months while it carried out an investigation of the FOBAPROA bailout. Ultimately, 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 IPAB bonds, and IPAB was given the task of recouping and liquidating the assets backed by those bonds.[15] 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.

3. 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 are not part of their employee benefits. Related party loans are permitted, but they cannot exceed the net capital of the bank.[16]

Second, banks are required to diversify risk. As of June 1998, bank loans to any individual cannot exceed 10% of the bank's net capital, or 0.5% of the total net capital of all banks. The same law also enjoins banks from granting loans to companies that exceed 30% 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 is not checked (or where it is checked and it is poor) must be provisioned at 100% (Mackey, 1999, p. 117).

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

[15] One crucial difference between FOBAPROA and IPAB bonds is that the latter are tradable.

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

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, pp. 127–129).

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 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 5 as Foreign de Novo banks – which did not engage in retail lending. By December 1999, 20% of bank assets were controlled by foreign banks, and as of December 2003 the share of Mexican bank assets under foreign control increased to 82%.

The entry of foreign banks into the Mexican market succeeded in recapitalizing the banking system. Non-risk weighted capital–asset ratios have increased monotonically since 1997, hitting 9% by the end of 1997, 10% by 1999, and 12% by 2003.

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

Table 5
Foreign bank market shares, by percent of bank assets (at year end)

Year	Foreign de Novo (%)	Foreign MA (%)	Total Foreign (%)
1991	1		1
1992	1		1
1993	3		3
1994	4		4
1995	2	3	5
1996	3	4	7
1997	4	7	11
1998	2	18	20
1999	2	18	20
2000	3	54	57
2001	5	49	54
2002	4	78	82
2003	6	76	82

Source: Same as Table 2.

had to either be moved back into the regular loan portfolio or be declared non-performing. As Table 2 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% of all loans were considered non-performing. Many of these loans were subsequently transferred to FOBAPROA, which pushed down the non-performance ratio to 8.2% by the end of 1999. Nevertheless, even after the FOBAPROA–IPAB repurchase programs ended in 1999, the ratio of non-performing loans continued to fall. As of December 2003 it was 3.2%.

3.1. 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. The government has responded with reforms of the laws governing foreclosure on delinquent consumer and housing loans. Loans on these assets now take the form of a trust (with the bank being both the trustee and beneficiary) – rather than a lien. This takes the adjudication of foreclosures out of the hands of the commercial courts (Caloca González, unpublished paper). Nevertheless, contract rights are still, by the standards of developed economies, difficult to enforce. The reason is that property rights systems are composed of numerous, mutually reinforcing institutions, not all of which can be reformed by legislative or administrative acts. Consider, for example, the enforcement of housing loans. Debtors can frustrate a bank's attempt to repossess a house under the new form of mortgage contracts by "leasing" the house to a family member, who is then protected by Mexico's renter's laws. Debtors can also frustrate a repossession by employing an informal institution: the ability to organize a public demonstration of an entire neighborhood against a repossession, which dissuades the police from carrying it out.[17]

Foreign banks have responded to the difficulty of enforcing property rights by being risk averse. One form their risk aversion takes is that they allocate less of their assets to loans for private consumption and investment, and more of it to direct loans to government entities (primarily states and municipalities) as well as to investments in government and corporate securities. The proportion of assets that banks

[17] As a consequence, some lenders engage in costly monitoring and enforcement mechanisms. For example, non-bank financial entities that specialize in housing loans (known by the Spanish acronym, SOFOL) send agents directly to the homes of debtors in arrears immediately after a payment is missed. If they think that there is a high probability that the debtor will be unable to make the payment, they will then pay the debtor to vacate the house, rather than go through the lengthy legal process of foreclosure and repossession. We note, in addition, that these non-bank intermediaries are also protected by the Mexican government from default risk. Much of the funding for the SOFOLES comes from loans made to them by a government development bank (the Sociedad Hipotecaria Federal – SHF). The SHF then provides a guarantee of loans made by the SOFOLES to homeowners. Thus, the SOFOLES bear low levels of risk: they are more mortgage brokers and real estate developers than banks.

have allocated to credit for households and private business enterprises therefore declined from 49% in December 1997 to 30% in December 2003 (Haber and Musacchio, 2004). This decrease is not just relative to the stock of bank assets, it is an absolute decrease in real terms. In point of fact, the stock of bank lending to households and business enterprises fell in real terms by 23% from December 1997 to December 2003 (see Table 3).[18]

One might argue that the decline in the ratio of private loans to assets in Mexico's biggest banks is a consequence of changes in the macroeconomy that might have made credit extension more risky. One might also argue that the decline in private lending is the consequence of the fact that until the end of 1999 Mexico's largest banks (which were later purchased by foreign banking conglomerates) were able to transfer many of their weakest loans to the government's deposit insurance agencies (FOBAPROA, and its successor IPAB).

We therefore draw on research by Haber and Musacchio (2004) that explores the independent impact of foreign ownership on bank strategies and performance. We reproduce their results on private lending in Table 6. The regressions indicate that, controlling for changes in the macroeconomy and FOBAPROA–IPAB swaps, banks have been reducing the amount of credit they extend (as a percentage of their assets) over time. The coefficient on time in specification 1 indicates that, all else being equal, banks have been reducing the share of their assets that they extend as private loans by 0.57% points *per quarter*. Over 29 quarters the effect is huge – a 16.5% point drop in lending to firms and households. Haber and Musacchio also find that Foreign MA banks (Mexican banks that have been purchased by a foreign bank) have reduced the share of their assets that they allocate to private lending even more than domestically-owned banks. As specification 2 of Table 6 demonstrates, all else being equal, Foreign MA banks allocate 4.6% points less of their assets to private loans than do domestically-owned banks. Moreover, this result is robust to the addition of a time trend (specification 3). That is, the overall trend for the industry is to make fewer loans to households and business enterprises, and Foreign MA banks make fewer loans still.[19]

The second form that risk aversion takes is that foreign banks subject borrowers to more intense screening. We cannot directly observe the process of borrower screening, but we can observe its outcome: a bank that screens borrowers more closely will have a lower ratio of non-performing to total loans. We reproduce Haber and Musacchio's results on borrower screening in Table 7. The dependent variable in the regression is the ratio of non-performing to total loans. The regression controls for the allocation of bank portfolios (with variables for consumer, housing, and commercial loans over assets), the percent of a bank portfolio that is composed

[18] These data understate the degree to which lending has declined. Our data are stocks of loans, not flows. Inasmuch as many types of loans, particularly those for housing, automobiles, and other consumer durables, have multi-year terms, the stock of loans is serially correlated. The implication is that the flow of new loans for private purposes has declined more dramatically than the data we present here.

[19] These results are robust to the addition of other control variables (bank market shares, equity ratios, cash–asset ratios) that we do not reproduce here.

Table 6
Private lending regressions

	(1)	(2)	(3)
Money market rate	0.0009	0.0016	0.0007
	(1.78)*	(2.55)**	(1.40)
Inflation	−0.2204	0.3167	−0.1846
	(1.76)*	(2.45)**	(1.58)
Industrial output growth	−0.1433	−0.0654	−0.1636
	(1.78)*	(0.54)	(1.97)*
FOBAPROA over assets	−0.6500	−0.6120	−0.6193
	(20.26)***	(20.85)***	(20.58)***
Time	−0.0057		−0.0052
	(5.90)***		(5.42)***
Foreign MA		**−0.0460**	**−0.0427**
		(3.49)***	**(3.29)*****
Constant	0.6188	0.4640	0.6170
	(22.78)***	(45.15)***	(22.44)***
Observations	559	559	559
R-squared	0.31	0.31	0.31
F	104.81	163.25	149.61

Dependent variable is housing, consumer, and commercial loans divided by assets.
Functional form is OLS. Observations are quarterly, March 1997–June 2004. The five highest and lowest values of the dependent variable were dropped. The sample is restricted to Foreign MA and Domestic Banks, no Foreign de Novo banks. Robust *t* statistics in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. (Standard errors are clustered at the quarterly level.)
Source: Haber and Musacchio (2004).

of FOBAPROA–IPAB bonds, and changes in the macroeconomy (with variables for inflation, short term interest rates, and industrial output growth). The regressions indicate that foreign banks screen borrowers more intensively. All else being the same, Foreign MA banks have a ratio of non-performing to total loans that is 2.54% points below that of domestic banks. This result is robust to the addition of a time trend (see specifications 2 and 3). Moreover, the coefficient on Time is not statistically significant, which suggests that there is no spillover from foreign banks to domestic banks (if there were, we would expect to see a statistically significant and negative coefficient on time).[20]

Is the risk aversion of foreign banks in Mexico economically rational? There are two testable implications of this question. In an efficient market, one would expect that banks that are willing to bear higher risks should earn higher returns than banks that are relatively risk averse. As a logical corollary, we should expect that foreign banks (which we know are relatively risk averse) should earn lower returns than domestic banks (which we know to be relatively risk neutral). Second, one should expect that when bank loan portfolios are adjusted for risk, the differences in rates

[20] These results are also robust to a series of additional variables that control for equity ratios, liquidity ratios, and bank market shares. We therefore do not reproduce those results here.

Table 7
Non-performing loan regressions

	1	2	3
Money market rate	−0.0004	−0.0002	−0.0004
	(1.17)	(0.66)	(1.08)
Inflation	0.1897	0.1602	0.1928
	(2.69)**	(2.35)**	(2.71)**
Industrial output growth	−0.0935	−0.0810	−0.0929
	(2.29)**	(1.92)*	(2.19)**
Consumer loans over assets	−0.0601	−0.0591	−0.0604
	(2.80)***	(2.74)**	(2.72)**
Housing loans over assets	0.7447	0.7382	0.7448
	(18.31)***	(18.52)***	(18.30)***
Commercial loans over assets	−0.0411	−0.0349	−0.0411
	(3.11)***	(2.57)**	(3.11)***
FOBAPROA over assets	−0.0619	−0.0729	−0.0618
	(4.91)***	(5.05)***	(4.89)***
Time		−0.0003	0.0000
		(0.79)	(0.08)
Foreign MA	**−0.0254**		**−0.0254**
	(7.68)***		**(7.65)*****
Constant	0.0370	0.0357	0.0360
	(5.10)***	(2.51)**	(2.65)**
Observations	559	559	559
R-squared	0.44	0.41	0.44
F	83.59	84.35	77.92

Dependent variable is non-performing loans divided by total loans.
Functional form is OLS. Observations are quarterly, March 1997–June 2004. The five highest and lowest values of the dependent variable were dropped. The sample is restricted to Foreign MA and Domestic Banks, no Foreign de Novo banks. Robust *t* statistics in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. (Standard errors clustered at the quarterly level.)
Source: Haber and Musacchio (2004).

of return among bank types should become smaller in magnitude and/or become less statistically significant.

Table 8 tests these hypotheses by estimating an OLS regression on the rate of return on equity. It controls for changes in the macroeconomy with variables for inflation, the money market interest rate, and industrial output growth. Specification 1 includes a variable for time, and finds that banks have become progressively more profitable. The coefficient of 0.0022 implies that, controlling for changes in the macroeconomy, bank rates of return have increased by 0.22% points *per quarter*. The cumulative effect is non-trivial: all other things being the same, *quarterly* rates of return are 6.38% points higher in the second quarter of 2004 than in the first quarter of 1997 (0.22 times 29). On an annualized basis, this implies that banks in 2004 earn rates of return more than 20% points above their 1997 levels.

Specification 2 substitutes the Foreign MA dummy for Time. We should expect the coefficient on Foreign MA to be negative (more risk averse banks should have

Table 8
Rate of return on equity regressions

	(1)	(2)	(3)	(4)	(5)
Money market rate	0.0008	0.0004	0.0008	0.0003	0.0004
	(1.83)*	(0.74)	(1.82)*	(0.50)	(0.78)
Inflation	0.1437	−0.0665	0.1438	−0.0792	−0.0741
	(1.54)	(0.92)	(1.54)	(1.31)	(1.01)
Industrial output growth	−0.0927	−0.1357	−0.0927	−0.1463	−0.1278
	(1.60)	(1.99)*	(1.60)	(2.36)**	(1.84)*
Time	0.0022		0.0022		
	(4.86)***		(4.88)***		
Foreign MA		**0.0007**	**−0.0003**	**−0.0054**	**0.0021**
		(0.17)	**(0.07)**	**(1.22)**	**(0.49)**
Consumer loans over assets				0.0015	
				(0.03)	
Housing loans over assets				0.1750	
				(3.97)***	
Commercial loans over assets				−0.0089	
				(0.63)	
FOBAPROA over assets				0.0298	
				(2.26)**	
NPL_over_Loans					0.0726
					(3.14)***
Constant	−0.0445	0.0200	−0.0445	0.0194	0.0164
	(3.00)***	(4.57)***	(2.99)***	(2.18)**	(3.30)***
Observations	571	571	571	558	571
R-squared	0.05	0.03	0.05	0.12	0.04
F	13.34	4.34	10.86	10.68	9.30

Functional form is OLS. Observations are quarterly, March 1997–June 2004. The five highest and lowest values of the dependent variable were dropped. The sample is restricted to Foreign MA and Domestic Banks, no Foreign de Novo banks. Robust *t* statistics in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. (Standard errors are clustered at the quarterly level.)
Source: Haber and Musacchio (2004).

lower rates of return). We find, however, that the coefficient on Foreign MA is not statistically significant.

In specification 3 we include both the Foreign MA dummy and time. We find that the (non-) result we obtained on Foreign MA is robust to the addition of a time variable. We also find that the time variable retains its magnitude and significance. That is, the overall trend is for banks to become more profitable, and Foreign MA banks are neither more nor less profitable than domestic banks. In sum, we can reject the first hypothesis. Foreign banks do not earn lower rates of return than domestic banks, even though Foreign MA banks are willing to bear less risk than domestic banks.

Perhaps it is the case that controlling for ex ante default risk will produce the results we would expect in an efficient market. That is, when we control for the way that banks allocate their assets among different types of loans (and implicitly between loans and securities, because the loan categories are over assets), we should find a positive coefficient on the riskiest loan categories. We might also expect that

controlling for risk will cause the coefficient on Foreign MA to become negative (banks that bear less risk should earn lower rates of return).

The results, presented in specification 4 of Table 8, are striking in three senses. First, the coefficient on housing is positive and highly significant. It implies that there is a positive return to holding (relatively risky) housing loans. Second, the coefficient on FOBAPROA is also positive and significant. It implies that there is also a positive return to holding relatively low risk FOBAPROA–IPAB promissory notes. Third, the coefficient on Foreign MA remains statistically insignificant. The regression detects no differences in the rates of return of Foreign MA and domestic banks.

Perhaps the ex ante allocation of bank assets is not an ideal way to measure the riskiness of bank portfolios. In specification 5 we therefore substitute an ex post measure of risk: the ratio of non-performing to total loans (NPL). We find that there is some return to risk: the NPL variable is positive and statistically significant at the five percent level. Inasmuch as we know that Foreign MA banks have fewer (high risk) non-performing loans, we would expect that controlling for risk would produce a lower, risk adjusted rate of return for Foreign MA banks. Surprisingly, it does not. The coefficient on Foreign MA remains statistically insignificant. In sum, no matter how we specify the regression, Foreign MA banks have the same rates of return on equity as domestic banks – even though Foreign MA banks are more risk averse. The results suggest that that there is little payoff for banks to be risk neutral. Riskier portfolios do not produce higher rates of return.

Table 9
Commercial bank lending as a percent of GDP (at year end)

Year	Total loans as % of GDP[a]	Private sector lending as % of GDP[b]	Private sector (excluding FOBAPROA) as % GDP[c]
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
2003	14	11	8

Source: Bank loan data from Table 2; GDP data from Instituto Nacional de Estadística Geografía e Informática website.

[a] Includes all performing loans. Declared non-performing loans and rediscounts not included.

[b] Total loans, minus loans to government entities.

[c] Total loans, minus those to government entities and the value of FOBAPROA and IPAB bonds held in the loan portfolio.

Precisely because banks in Mexico have become increasingly risk averse since 1997 they play only a small role in financing the real economy. As Table 9 demonstrates, bank lending as a percentage of GDP was only 14% at the end of 2003. To put this into perspective, in a typical OECD country, the ratio of bank lending to GDP is on the order of 100%. This ratio is also low compared to Mexico's historical standards: at the time that the banks were privatized in 1991 the ratio was 24%. 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%. If we exclude FOBAPROA and IPAB promissory notes held in bank loan portfolios, the ratio is lower still: 7%.

Not surprisingly, surveys carried out by Mexico's central bank indicate that, as of 2002, only 15% of small firms, 19% of mid-sized firms, and 24% 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).

4. 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. 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 – including loans made by banks to their 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 the government's own regulators were hamstrung by the quality of information they had at their disposal.

The 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 police services that can expedite the enforcement of judicial rulings.

This latter set of institutions – those that enforce contract rights ex post – cannot be reformed at the stroke of a pen. Some institutions, such as the legal form of contracts, can be reformed by administrative or legislative action. Other institutions, however, are more difficult to reform because they are informal (for example, the ability of debtors to organize public demonstrations against property repossessions) or because they require changes in fundamental political institutions (for example, the institutions that govern the judiciary and the police). Mexico, as a society, has been engaged in this more difficult process of fundamental political reform since 2000. It is, as yet, too early to know whether those reforms will be successful.

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