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**Banking With and Without Deposit Insurance:
Mexico's Banking Experiments, 1884-2004**

by

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The creation of a banking system requires the resolution of a fundamental problem.

Unless individuals and business enterprises deposit their wealth in banks, the banking system will be small and its ability to finance consumption and investment will be reduced. Once individuals and business enterprises deposit their wealth, however, they relinquish control over it to bank insiders (managers and directors) who can lose it by lending it in an imprudent manner.

Depositors will therefore not deploy their wealth unless they can be convinced that insiders will behave prudently or unless they can be assured that their wealth is not at risk, regardless of the actions of the insiders.

There are three groups that police imprudent lending by insiders and by extension protect the wealth of depositors. The first are depositors themselves, who can move their funds out of imprudently run banks. The second are shareholders, whose wealth is also at stake, and who can remove imprudent directors and managers. The third are government regulators, who mitigate the risk of imprudent behavior by limiting competition among banks, by enforcing minimum capital and reserve requirements, and by restricting the scope of contracts that banks may create.

The incentives of these three groups are not perfectly aligned. From the point of view of depositors, the solution that provides them with the most protection is deposit insurance. The greater the extent of deposit insurance, however, the weaker are the incentives of depositors to monitor insiders, shifting more of the burden of monitoring to shareholders and regulators. Indeed, deposit insurance creates well-known problems of adverse selection and moral hazard. Thus, banking systems with deposit insurance require strong institutions of corporate governance and close supervision of banks by regulators. Shareholders do not always have strong mechanisms, however, to police insiders: the institutions of corporate governance vary widely

across countries. Moreover, deposit insurance tends to reduce the incentives of shareholders to monitor insiders, because attempts by governments to protect depositors through bank rescues have the effect of preserving shareholder equity.

As a consequence, banking systems with deposit insurance tend to shift most of the responsibility of monitoring onto regulators. Regulators do not, however, always have strong incentives to carry out their supervisory functions so as to maximize social welfare. Indeed, there is a high degree of variance across countries in terms of the independence of regulators from political pressures, the quality of the tools that regulators have at their disposal, the proclivity of public officials to corruption, and the political institutions that align the incentives of public officials with the taxpayers who ultimately fund the deposit insurance system.

Precisely because there is such a high degree of variance in the network of institutions that work to mitigate imprudent behavior by bank insiders, there does not appear to be any single set of arrangements that is optimal for all countries. Understanding which sets of institutions work best in particular political and economic environments is not, however, an area that has been fully researched.

One approach to furthering our understanding is to use the historical record as a natural laboratory, focusing on a single case over an extended period of time. This paper therefore examines Mexico's various experiments with bank regulation over a period of 120 years, from 1884 to 2004.

Mexico is an ideal case in which to carry out such an analysis for three reasons. First, Mexico created a private banking system *de novo* on three separate occasions: 1884-1911, 1924-1982, and 1991-2004. Significantly, the first two episodes ended not because of the failure of the institutions that protected depositors, but because the government expropriated the banking

system for fiscal reasons and then held onto the banks for a period of years. This means that each of Mexico's experiments was as independent of the others as one is likely to find in any single country. Second, Mexico's underlying political institutions did not vary dramatically over the three experiments. From 1876 to 2000, the country was ruled by authoritarian governments that had high degrees of authority and discretion. Third, Mexico's property and contract rights environment was weak over the three experiments. While there have been improvements in credit reporting and bankruptcy procedures in the last five years, these reforms took place after the banking system collapsed in 1995-96 because of inadequate institutions to mitigate imprudent lending. This means that what varied from experiment to experiment were the institutions that protected depositors. Mexico's other institutions, while by no means immutable, were as stable as one is likely to find in any single case study.

Mexico's first experiment, 1884-1911, did not involve deposit insurance. The problem of imprudent behavior by insiders was mitigated by institutions that promoted good corporate governance and by limiting competition among banks through regulated entry. The resulting banking system was stable and profitable, but it attracted extremely low levels of deposits.

Mexico's second experiment, 1924-1982, also did not involve deposit insurance. The problem of imprudent behavior by insiders was again mitigated by the institutions that promoted good corporate governance: bank insiders monitored each other through a complex network of interlocking directorates. Reckless lending was also checked by the government's practice of requiring banks to hold a significant portion of their deposits as reserves, which is to say that much bank lending was forced lending to the government. But, good governance and high reserve requirements appear to have been only part of the story. Mexico's banking system was

also characterized by government development banks, which made long term loans to private enterprises. The evidence suggests, but is by no means conclusive, that entrepreneurs (many of whom were bankers) funded their riskiest ventures through the development banks, thereby shifting risk from the private banking system to the taxpayers who ultimately funded the government banks. As a consequence, the private banking system was profitable and stable, but government development banks wound up owning a large number of inefficient enterprises.

Mexico's third experiment, 1991-2004, involved deposit insurance. In fact, during the first phase of this experiment, 1991-1996, deposit insurance was unlimited. At the same time, however, the ability of the government to regulate Mexico's banks was minimal and the institutions that promoted good corporate governance were weak. The combination was disastrous: reckless lending, high default rates, and a taxpayer financed bailout of depositors, borrowers, and some stockholders. Many of these institutions were then reformed in 1997—particularly as regards the unlimited nature of deposit insurance and the ability of regulators to monitor banks. The result of these reforms has been extremely prudent lending practices.

Experiment One: Banking without Insurance in Porfirian Mexico, 1884-1911

In the late 1870s Mexico's banking system was so small as to be practically non-existent. Only two chartered banks existed in the entire country. One was a branch of a British bank that operated in Mexico City and focused primarily on financing foreign trade. The other was a small American-founded operation chartered by the government of the border state of Chihuahua. The reason for the absence of a banking system is not hard to divine: Mexico's nineteenth century governments, fighting for their survival against numerous rebellions, coups, secessions, and

foreign invasions, preyed upon private wealth. Bankers feared that as soon as they made their capital visible, by obtaining a charter, the government would confiscate it via forced lending.

Within a few years, however, Porfirio Díaz (Mexico's dictator from 1876 to 1911) enacted legislation that engendered the rapid expansion of the banking system. The key to Díaz's banking policies was that he provided bankers with a series of segmented monopolies and oligopolies that raised rates of return high enough to compensate them for the risk of expropriation. (Maurer and Gomberg, forthcoming).

The banking system was divided into three sectors: banks of issue, which issued bank notes, discounted bills, and made commercial loans; mortgage banks, which lent long term on agricultural and urban properties; and investment banks (bancos refaccionarios), which were supposed to make long-term loans to agricultural and industrial enterprises. Only one of these sectors, the banks of issue, prospered. As Riguzzi (2002) has shown, limitations on the number of charters the government was willing to grant to mortgage banks, along with difficulties in enforcing contract rights on real property, meant that there were never more than three mortgage banks in the entire country. From 1897 to 1911, total mortgage bank assets averaged only 6 percent of total banking system assets. The investment banks also faltered. They were at a distinct disadvantage against banks of issue, because they could not issue bank notes. They had to compete, however, in the same markets as banks of issue, because the latter were able to skirt the laws that restricted the term of their loans (to six months) by continually renewing credits as they expired. (Maurer 2002). As a consequence, there were never more than six chartered investment banks, and the combined assets of these banks, on average, accounted for only 10 percent of total banking system assets. Moreover, the largest bank of this type (the Banco

Central Mexicano) did not actually make any long term loans at all. Instead, it operated a clearinghouse for the notes emitted by smaller banks of issue. The investment banking charter was simply a way to get around regulatory restrictions on creating a clearinghouse.

The banks of issue, which accounted, on average, for 84 percent of all bank assets, operated a series of segmented oligopolies. Only two banks of issue—the Banco de Londres y México (which had a charter dating from the 1860s, granted during the period when France occupied Mexico) and the Banco Nacional de México (which received a charter from the Díaz government in 1884 that made it the treasury's fiscal agent)—were permitted to branch across state lines. All other banks of issue were prohibited from branching outside their concession territories, which were generally contiguous with state lines.

A series of regulatory barriers to entry then insured that only one bank of issue would receive a charter for that concession territory. First, banks without a federal charter were prohibited from issuing notes, meaning that they could not effectively compete against chartered banks. Second, the government levied a two percent tax on bank capital and a five percent tax on banknotes—but exempted the first bank of issue in each state to receive a federal charter. Third, the government established a minimum capital requirement for a bank of issue equivalent to 250,000 dollars—five times the minimum capital needed to found a national bank in the United States. Finally, the law specified that new issues of bank stock had to receive the approval of the Finance Minister. The effect of these laws, as Maurer (2002) has shown, was that there were usually only three banks in any state: a branch of the Banco Nacional de México, a branch of the Banco de Londres y México, and the bank of issue that held the territorial concession.

The high barriers to entry erected by Díaz produced a rapid expansion of the banking system. In 1897, when Díaz's regulatory system was finally in place, the entire banking system, including

mortgage banks, investment banks, and banks of issue, was comprised of just ten banks with total assets equal to only 12 percent of GDP. (See Table 1). By 1910, (Díaz's last full year in office before he was overthrown), there were 32 banks with total assets equal to 32 percent of GDP. Not only was this a sizable banking system by the standards of developing countries at the turn of the century, it was large by Mexico's current standards: the ratio of commercial bank assets to GDP in Mexico in 2004 was 33 percent.

Obtaining a concession for a bank of issue was a highly politicized affair. The founders of these banks tended to be wealthy merchants who had been engaged in private banking prior to seeking a charter from the Díaz government. In order to obtain and protect their charters, these merchants and private bankers recruited powerful public officials onto their boards of directors, including federal senators and deputies, state governors, cabinet ministers, the brother of the Treasury Secretary, and Porfirio Díaz's son. (Haber, Razo, and Maurer 2003, chap. 4).

One might imagine that Mexico's institutional environment—a dictatorship in which the dictator's cronies were among the bank insiders—would have given rise to reckless lending, if not outright looting. One might especially imagine this to be the case, considering that most bank loans went to bank directors themselves, or to firms controlled by them. (Maurer and Haber 2004). In fact, in Mexico's largest bank, the Banco Nacional de México, 100 percent of all non-government lending from 1888 to 1901 went to insiders. For other firms, Maurer and Haber's (lower-bound) estimates indicate that insider loans, as a percentage of all loans, varied from a low of 29 percent (the Banco de Nuevo León) to a high of 86 percent (the Banco Mercantil de Veracruz).

The evidence indicates, however, that banks practiced insider lending because, given the high costs of assessing default risk, it was the prudent thing to do. We know this to be the case for three reasons.

First, a reading the minutes of boards of directors meetings makes it clear that board members viewed insider loans as less risky than arms' length loans. In one particularly informative debate that took place among the board members of the Banco Nacional de México, some members objected to a loan being made to another bank (the Banco Oriental), until it was pointed out that the recipient bank was a good credit risk because it only made loans to its own board members. The reason why they viewed arms' length loans as risky was because experience had taught them that they lacked good mechanisms to assess the quality of borrowers. Unable to tell good credit risks from bad, they had responded by placing onerous requirements on borrowers, but these had worked to create adverse selection. (Maurer and Haber 2004).

Second, had insider loans been a mechanism for insiders to loot the banks at the expense of depositors, we would not expect the banking system to have been stable or profitable. As Table 1 demonstrates, however, the annual real return on the book value of equity from 1901-12 averaged 12 percent (these returns were not driven by the profits earned by a few large banks: the unweighted average was 10 percent). Moreover, there were no years in which the average rate of return was negative, and only one year (1908), when the average rate of return was zero. Mexico's banking system was also remarkably stable: as Table 1 demonstrates, the number of reporting banks and total bank assets increased steadily. The only downturn was in 1909, when, as a result of an externally generated crisis in 1908, seven small banks of issue failed (two were later rechartered as investment banks, while the others were purchased by larger, more solvent banks).

Third, as a result of the 1908 crisis, the government quickly organized a rescue by chartering a bank, (the equity coming from four of Mexico's largest banks, and debt financing coming from European bond holders), the *Caja de Préstamos para Obras de Irrigación y Fomento de la Agricultura*, whose purpose was to purchase bank loans and bank-issued mortgage bonds in order to inject liquidity into the banking system. (Maurer 2002: 66-68). One of the striking aspects of the *Caja* was that it only repurchased high quality, performing loans from banks, and it turns out that these high quality performing loans were exactly those loans that the banks had made to their own board members. Lest readers remain skeptical about the quality of these insider loans, I hasten to point out that the *Caja de Préstamos* may be the only banking rescue in history to actually make money: the *Caja de Préstamos* generated a real return to all claimants of its assets (bondholders and shareholders) of 4.9 percent in 1909, 6.0 percent in 1910, and 5.7 percent in 1911. As a consequence, neither the crisis of 1908, nor any previous bank failures, produced a single centavo in losses for depositors. (Maurer and Haber, 2004).

Why were Mexico's bankers so prudent? Why didn't they use insider lending, especially in the midst of a financial crisis to loot their own banks at the expense of depositors and minority shareholders? The answer is good corporate governance: bank directors had strong incentives to monitor each other; and minority shareholders could monitor bank insiders. As a result, loans, even those made to directors, were often structured as secured lines of credit.

One of the most striking characteristics of Mexico's banks during this period was that they had amazingly high capital-adequacy ratios, which is to say that their stockholders had significant amounts of capital at risk. From 1897 to 1910, the ratio of equity to assets never fell below 24 percent—three times Basle II standards. (See Table 1). Even the banks of issue, which had lower

capital-asset ratios because of their ability to create bank notes, had extremely high capital-asset ratios: from 1897 to 1910, the ratio of equity to assets never fell below 21 percent. In part, these capital ratios were driven by the legal requirement that note issues not exceed two (sometimes three) times a bank's cash on hand, or three times its paid-in capital. (Maurer 2002; 43, 111). In equal part, however, these capital ratios were driven by risk aversion on the parts of both bankers and noteholders. Banks usually did not, in fact, issue notes up to their legal maximum.

In addition, a sizable proportion of stockholder capital was owned by the insiders, and what was not owned by them was represented by independent directors. As of the 1884 Commercial Code, receiving a bank charter required the founding group (who became the directors) to subscribe to the first tranche of the bank's capital. Banks could later sell additional tranches of capital to outsiders. In addition, bank directors could (and often did) sell parts of their original stakes. These outside shareholders (who owned a majority of bank stock) then insisted on the appointment of independent directors (typically other bankers) who monitored the founding board members. As Razo (2003) and Musacchio (2005) have shown, the prevalence of independent directors, who were recruited from other bank boards, meant that there was a dense network of interlocking directorates which produced cross-monitoring of bankers by one another. In short, outside shareholders had a mechanism to monitor the insiders. There is direct historical evidence that this mechanism was employed by outside shareholders. In March 1908, the outside shareholders of the Banco de Jalisco, displeased with the discovery of "severe irregularities" in the bank's books, replaced the entire board of directors save the Vice-president. (Maurer and Haber 2004). Moreover, the fact that they owned much of the capital, and that there was cross-monitoring of boards through interlocking directorates gave insiders very strong incentives to

monitor each other: both their capital and their reputations in the broader business community were at stake.

Precisely because bank insiders had much at stake, the lending policies of Mexico's banks tended to be quite conservative. Typically, banks extended lines of credit to businessmen as individuals, not to the firms that they owned, and required that the lines of credit be secured by liquid assets, such as cash, government securities, or corporate securities, which were physically held by the bank. When lines of credit were secured by a cash deposit, they were obviously not 100 percent secured. Nevertheless, the existence of a security deposit substantially raised the cost of defaulting and lowered the cost of collateral repossession: the bank simply kept the security that it already held in its vault. (Maurer 2002).

Even though this banking system was stable, it attracted a low level of deposits—other than those held by banks to secure lines of credit. The data presented in Table 1 indicates that it took some time before savers were willing to trust their wealth to the banks. In 1897, deposits (exclusive of those securing credit lines) accounted for only two percent of total bank assets (and less than one percent of GDP). The deposit base then grew gradually, but even at its peak in 1910, deposits only equaled 16 percent of bank assets and five percent of GDP.

The banking experiment of Porfirian Mexico came to an end in 1911, when Díaz was overthrown, beginning a ten year period of coups, counter-coups, and civil wars that are collectively referred to as the Mexican Revolution. All sides in this conflict preyed on the banking system, but the coup d'grace for the private banks came in 1916 when one faction, led by Venustiano Carranza, intervened the banks, expropriating all of their liquid assets and leaving them in a state of suspended animation until the early 1920s. That is, the ultimate threat to bank

deposits came not from imprudent bankers, but from a predatory government. (Haber, Razo, and Maurer 2003, chap. 4).

Experiment Two: Development Banks as Implicit Deposit Insurance, 1924-1982

The lack of a functioning financial system jeopardized the survival of the governments that came to power immediately after the end of the Mexican Revolution in 1920. The two presidents who succeeded Carranza—the mechanism of succession being a bullet in Carranza’s head—(General Alvaro Obregón, 1920-24; and General Plutarco Elias Calles, 1924-28) were threatened by two civil wars and three attempted military coups. They therefore had strong incentives to create a banking system from which they could borrow in order to repel these attempts to overthrow them. Obregón and Calles therefore reconstituted the banking system by calling a special convention at the end of 1924 of government officials and bankers, some of whom had been major figures in the pre-revolutionary banking system.

The laws that were crafted at the 1924-25 convention re-created two crucial elements of the Díaz era banking system. First, the law did not provide for deposit insurance. Second, it grandfathered in all pre-existing banks and then gave the central government the right to regulate new entrants. The new laws also contained an added twist to the Porfirian banking system: it created a commercial bank that was owned by the government, the Banco de México. The purpose of the Banco de México was threefold: It served as the treasury’s fiscal agent; it rediscounted notes and made loans to private banks; and it lent money to business enterprises owned by prominent public officials. (Haber, Razo, and Maurer 2003, chap. 4).

These arrangements succeeded in coaxing capital bank into the banking system. As Table 2 demonstrates, the ratio of bank assets to GDP doubled from 1925 to 1926, and then continued

growing to 1929. Nevertheless, this banking system was quite small compared to that which had existed at the end of the Díaz period. The ratio of bank assets to GDP was only 12 percent in 1929, compared to 32 percent in 1910. (See tables 1 and 2).

Indirect evidence indicates that this banking system mobilized very little in the way of deposits. In 1924, the year before the new laws went into effect, the average equity ratio was 63 percent, implying a very small deposit base. (See Table 2). As the banking system grew in later years, there is some evidence that deposits grew as well: the equity ratio in 1929 had fallen to 36 percent. A large portion of the decline in the equity ratio, however, was almost certainly the product of note issues by the Banco de México. Indeed, there is reason to believe that wealthy individuals and business enterprises deposited much of their wealth in U.S. banks, because even Mexico's commercial banks did so. On average, from 1926 to 1929, 7.5 percent of Mexican commercial bank assets were deposited abroad. (Haber, Razo, and Maurer 2003, chap. 4).

In 1929, Mexico's remaining military leaders who had survived the civil wars and coups of the 1920s, were convened by President Calles with the purpose being to create a political party that would arbitrate disputes peacefully, as well as divide up spoils. This political party, the Partido Nacional Revolucionario, would, after several reforms, eventually become Mexico's modern Partido Revolucionario Institucional (PRI), which ran Mexico until the 2000 presidential elections. The creation of a stable political system allowed the government to then undertake a series of reforms to the banking laws that gave the government greater regulatory authority. In 1932, the Banco de México was converted into a central bank, giving it the ability to regulate the rest of the banking system by establishing reserve requirements. A reform of the law in 1936 increased the authority of the Banco de México by requiring commercial banks to maintain

reserves in cash at the central bank. It also moved many bank supervisory functions from the National Banking Commission to the Banco de México. A further set of reforms occurred in 1941, when, mimicking Glass-Steagal, commercial banks were forced to divest their investment banking operations into separate corporations. (Del Angel Mobarak, 2002).

As a legal matter, Mexico possessed at least three different types of banks from 1941 to 1982. There were commercial banks, which handled most retail banking operations as well as made short-term loans to business enterprises. There were investment banks (*financieras*), which made long term loans to businesses, as well as held equity positions in those firms. Finally, there were government-run development banks, the first of which had been founded in the 1930s, which make long term loans to business enterprises, collateralized by shares in those firms. As Table 3 demonstrates, as early as the 1940s, the development banks were as an important a source of credit as the commercial banks, with other private financial entities (of which investment banks were the most important) accounting for but a small fraction of total credit. By the 1950s, the commercial banks began to stagnate, with other private banks and development banks providing progressively larger amounts of credit. By the early 1970s, the investment banks were the most important source of credit, followed by development banks, with commercial banks a distant third.

As a practical matter, however, all three types of banks worked together to finance Mexico's largest industrial and commercial enterprises. Indeed, as Del Angel Mobarak (2002) has shown, Mexico's industrial conglomerates typically owned both a commercial bank and an investment bank, and the portfolios of these banks tended to be composed of shares held in the enterprises that were part of the conglomerates. The commercial and investment banks were, in essence, the treasury divisions of the conglomerates: they had little relationship to the impersonal

credit intermediaries of economic theory. As a result, in 1974, the Mexican government gave up the legal fiction that the commercial and investment banks were independent of one another, and allowed them to merge into enterprises that were called multi-banks.

In theory, government development banks existed in order to make up for an inadequate private banking system. For example, Nacional Financiera, SA (National Credit Bank, NAFINSA, founded in 1934) was supposed to provide credit to small and mid-sized manufacturers. As a practical matter, however, NAFINSA (along with other government development banks) tended to allocate most of its credit to the very same industrial conglomerates that received financing from private banks. The political pressure to lend to large firms, which tended to have large, unionized, and politically influential labor forces, simply outweighed whatever original mandate the banks may have had. (Cárdenas 2000: 190).

This system of government and private banks coaxed a significant amount of deposits into the banking system. Table 4 presents data on total deposits and credits, as enumerated by Mexico's central bank to the International Monetary Fund. In 1948, deposits amounted to 16 percent of GDP (roughly three times their 1910 level). Deposits then climbed throughout the 1950s and 1960s, hitting 40 percent of GDP by 1969. In the late 1970s the size of Mexico's deposit base contracted, falling back to 27 percent of GDP in 1980.

The evidence amassed by Del Angel Mobarak (2002), reproduced in Table 5, does not indicate that this decline in the deposit base was caused by reckless lending by bankers. The ratio of non-performing loans in the commercial banks was more or less constant from 1943 to 1977 at 4 to 6 percent (the ratio dropped considerably in 1980 to 2 percent). Data on the rate of return on equity is also not consistent with reckless lending. Indeed, rates of return in the late 1970s

were astronomically high: 25 percent in 1975, 30 percent in 1977, and 55 percent in 1980. Indeed, all of the evidence points to a stable banking system. Rather, the evidence indicates that what drove down deposit rates in the late 1970s was financial repression.¹

What kept bank insiders from making imprudent loans to their own enterprises? There are two answers that one might advance. The first is that a combination of government regulation and cross-monitoring by bank directors discouraged reckless behavior. As Table 4 demonstrates, Mexico's central bank appears to have forced banks to retain very high proportions of their deposit base as reserves. (In effect, much bank lending was forced lending to the government). In addition, as Del Angel Mobarak (2002) has demonstrated, Mexico's commercial and investment banks were governed by a complex network of interlocking directors. Information about imprudent behavior would have been transmitted quickly throughout the entrepreneurial community, tarnishing the reputation of directors and managers.

A second explanation would focus on the impact of government-run development banks on the allocation of risk in the banking industry. In the first place, the development banks served as second tier lenders, repurchasing loans made by commercial banks through special programs designed to channel credit to sectors the government deemed crucial. In fact, the credit law of 1941 actually required private banks to allocate 60 percent of their loans to such directed credit programs (Del Angel Mobarak 2002). These directed credit programs represented a guarantee by

¹ The central bank established interest rate ceilings and raised bank reserve requirements. By the late 1970s, the ratio of bank reserves to private credit was on the order of 50 percent. As a result, private credit collapsed even more quickly than the deposit base, resulting in a substantial gap between deposits and private sector credits in the late 1970s that was on the order of ten percent of GDP. (See Table 4).

the government to the private banks: all of the default risk was born by the development bank, but the private bank earned income from originating and servicing the loan.

In the second place, the lending practices of the development banks allowed industrial and commercial conglomerates to fund risky enterprises from government-owned banks, rather than from the private banks that were under their control. Nacional Financiera, the largest development bank, typically took a minority shareholder position in companies to which it extended credit. If the firm performed well, Nacional Financiera's stake would, over time, become purely nominal. If the firm performed badly, however, Nacional Financiera typically bought out the other shareholders. This policy of bailouts encouraged moral hazard: knowing that they would be bailed out, manufacturers undertook enterprises of doubtful profitability. (Cardenas 2000: 195).

Ultimately, the Mexican government came to own a wide range of commercial and industrial enterprises, including sugar refiners, steel mills, airlines, and hotels. This meant that the group that bore the downside risk of imprudent lending were not depositors in the private banks, but taxpayers who came to own enterprises of dubious value.

This banking experiment came to an end in much the same way as that of Porfirian Mexico: the banks were expropriated by the government. In the late 1970s the Mexican government began to fund expenditures by borrowing from foreign banks, rather than by increasing taxation. It rationalized this strategy by assuming that the price of oil would continue to rise indefinitely and that interest rates in the United States would remain constant. In early 1982, both assumptions were undermined: the price of oil dropped and the U.S. Federal Reserve raised interest rates. By the summer of that year the situation had become desperate: the government therefore expropriated the dollar accounts held by Mexicans and foreigners in the country's banks

(converting them into pesos at an exchange rate about one-third below the market rate), and it instituted capital controls. Both actions only increased capital flight, further reducing the stock of dollars that could be used to meet debt payments. On August 20, the government suspended payment of its international debts. The moratorium on the foreign debt made it clear that a major devaluation was inevitable, and thus individuals and business enterprises converted their liquid assets into dollars and moved them to U.S. banks. Thinking that control of the banking system was the key to stanching the flow of dollars out of Mexico, the government expropriated the banks on September 1, 1982.

Experiment Three: Unlimited Deposit Insurance, 1991-96

During the 1980s, Mexico's banks were essentially run as vehicles to finance government budget deficits. As Table 6 demonstrates, from 1983 to 1987, bank deposits were typically twice the level of private sector lending, which averaged only 13 percent of GDP. The other half of the deposit base was invested in government bonds. In order to encourage deposits, which could then be invested in Treasury bonds, the Mexican government instituted deposit insurance in 1986, creating the Fund for the Protection of Bank Savings, known by its Spanish acronym, FOBAPROA. FOBAPROA was a trust fund, funded by premiums paid by banks, and was supposed to cover deposits only up to the amount of FOBAPROA's reserves. As we shall see, however, in the process of the privatization of Mexico's banks in 1991, the FOBAPROA trust fund was converted into a central bank program to provide unlimited deposit insurance. Ultimately, it became a mechanism for the government to organize a costly bank rescue that not only protected depositors, but also protected debtors and some shareholders as well.

In 1991 the government of Carlos Salinas de Gortari (1988-94) sought to privatize Mexico's moribund banking system (along with a broad range of other state-run enterprises). The purpose of this privatization program was largely fiscal. Fiscal success, however, also had crucial political implications. Salinas needed to balance the federal budget, and at the same time find revenue sources to fund social programs that would help the PRI win the 1994 presidential election. As had been the case for most of Mexico's history, raising tax rates was both politically and practically difficult. The auction of state-owned firms was therefore an attractive option: their sale would not only reduce the drain that these (perennially unprofitable) firms put on the annual budget, but it would also provide a one-time windfall.

The fiscal incentives of the government, however, set off a chain of events that were not foreseen at the time that the banks were privatized. The 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 end result were lending strategies that, at the very least, were reckless.

These institutions that undermined prudent behavior by bank insiders 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 had to fund the deposit insurance system when the banks became insolvent)—had no active voice in the game as it was being played.

The first step in aligning the incentives of the bankers with the government was that the government 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 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, through limits on their capital investment and market share, the provisions governing banking in the 1994 NAFTA agreement severely limited the participation of foreign banks in Mexico.

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. In particular, a very lax definition of non-performing assets led to overvaluations of many banks. The government then auctioned the banks sequentially, increasing competition for the banks in the later rounds of bidding. As Haber (2005) has demonstrated, 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: each additional round of bidding pushed up the bid-to-book ratio by .30.

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. 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).

Readers may wonder why bankers were willing to pay a substantial premium for the banks at auction. The reason was that much of the money that they were putting at risk was not their own. 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 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, sometimes with the help of loans from the very banks being purchased (Unal and Navarro 1999; Mackey 1999, 55, 61, 141, 216). This meant that bank insiders did not have strong incentives to monitor each other, because they actually had little capital at risk.

This set of arrangements implied that Mexico's regulators would have to be vigilant monitors of the banks. The problem was that Mexico's regulators 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, 97).

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 only insured up to the available resources in FOBAPROA. As a practical matter, however, FOBAPROA had the ability to borrow from the central bank. (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. Its 1993, 1994, 1995 statements did not, however, actually list amounts. Instead, the Banco de México stated that FOBAPROA would provide a blanket guarantee of virtually all bank liabilities (deposits, loans, and credits, including those from other banks), with the exception of subordinated debt. That is, deposit insurance was unlimited—and even included loans made by banks to one another (Mackey 1999, 55). Precisely because there was unlimited deposit insurance, bank depositors did not 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.

Inadequate monitoring produced exactly the outcome that would be predicted by economic theory: bank credit in Mexico grew at a prodigious rate. As Table 7 demonstrates, total real bank lending nearly 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 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 7, column 4). 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. The rapid growth in lending was not matched by an equally rapid growth in deposits. As Table 6 demonstrates, in 1992, 1993, and 1994, 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).

Even more rapid than the growth in lending, was the growth of non-performing loans. Table 8 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 been 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 8 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.

The situation was even worse, however, than these figures demonstrate. 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 percent.

Even had there been no peso crisis of 1994-95, the Mexican banking system would have collapsed. (Gonzalez-Hermosillo, Pazarbasioglu, and Billings, 1997) The government’s mishandling of the exchange rate merely hastened the banking system’s demise. (Krueger and Tornell, 1999). 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. 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, 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 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 government responded with a bailout of the banking system—the particulars of which warrant some discussion. First, 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.

Second, 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 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. 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).

Third, the government moved to protect borrowers. 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, 82-86).

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. 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. 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.

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). Thus, the percentage of bank loan portfolios composed of FOBAPROA bonds grew from 9 percent in 1995, to 20 percent in 1996, 29 percent in 1997 and 1998, and finally topped out at 35 percent in 1999 (see Table 8). 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). This puts Mexico's bank bailout in the mid-range of LDC bank rescues (Keefer 2004).

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 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. 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.

Post 1996 Reforms:

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 engaged in a series of reforms to the institutions that encourage prudent behavior by bankers. These included changes in accounting standards, lending rules, deposit insurance, and foreign bank ownership.

First, insider lending has been made more difficult. Banks are required to publish consolidated accounts that include the operations of their subsidiaries. They 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. (Mackey 1999: 141).

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 regulations introduced that establish 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).

Fourth, as of January 1, 1997, stricter 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).

Fifth, the rules governing deposit insurance have been reformed. Unlike its predecessor (FOBAPROA), IPAB does not provide unlimited insurance. Deposit insurance, as of January 1, 2005, is limited to 400,000 UDIS (roughly \$100,000 at the current rate of exchange) and covers bank deposits only.

The government also lifted the restrictions on foreign ownership of Mexican banks. Restrictions on foreign bank acquisitions of Mexican banks were eased in February 1995, when foreign banks were permitted to purchase Mexican banks with market shares of six percent or less. 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. As of December 2004, the share of Mexican bank assets under foreign control was 83 percent.

The net effect of these reforms, as Haber and Musacchio (2005) have demonstrated, is that Mexico's banks follow extremely prudent lending practices. Indeed, Mexico's bankers are so prudent that they have dramatically reduced the amount of credit that they provide to firms and households. As Table 6 indicates, lending by the banking system has declined monotonically since 1997: the ratio of loans to GDP in 2004 was only 14 percent, about what it was when the Mexican government ran the banks. The banks invest the balance of their deposit base (equal to an additional 17 percent of GDP, above and beyond what they allocate to private credit) in government securities.

Lessons and Implications

Are there any general lessons that we may extract from the history of Mexico's various experiments in banking regulation?

The first is that unlimited deposit insurance requires strong corporate governance and strong regulation. When neither is present, the result is reckless behavior. In the Mexican case, this occasioned a banking bailout that still weighs heavily on the economy.

The second is that even if there is no formal deposit insurance system, the existence of government run development banks may create an implicit system. Mexico's experience from the 1940s to the 1980s suggests, but is by no means conclusive, that private banks were able to shift much of their riskiest loans onto the development banks. This protected depositors and shareholders, but it came at a cost to taxpayers, who wound up owning enterprises of dubious value.

The third is that there was at least one banking experiment in Mexico, that which took place between 1884 and 1911, in which there was no deposit insurance of any kind, and in which the resulting banking system was stable. The key to this system appears to have been two-fold: strong institutions of corporate governance, and limits on competition among banks imposed by regulators. This banking system had a distinct disadvantage: it allowed banks to earn monopoly profits by limiting competition. Nevertheless, even when it was hit by a financial crisis it neither resulted in losses to depositors nor required a taxpayer financed bailout. Moreover, by the standards of Mexico today, this banking system was of remarkable size: the ratio of bank assets to GDP in Mexico in 1910 was 32 percent, compared to 33 percent in 2004.

The fourth is that researchers tend to assume that the only threat to depositors is imprudent lending by bank insiders. Mexican history suggests that this assumption may not be reasonable. In both of the cases in which depositors lost all or some of their wealth (1913-1916, and 1982), the cause was not imprudent bankers but imprudent governments. This highlights one of the findings of much recent research on bank regulation: the institutions required to create a stable banking system include the institutions that limit the authority and discretion of public officials. (Haber 2004, Barth, Caprio, and Levine, 2005).

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Table 1

The Mexican Banking Industry, 1897-1913

| Year | Number of Banks ¹ | Average Equity Ratio ² | Total Assets (millions of nominal pesos) | Deposits as % of Assets | Deposits as % of GDP | Assets as Percent GDP | Bank of Issue Assets as % of Total Assets | Bank of Issue Rate of Return on Book Equity | |
|------|---------------------------------|---|--|-------------------------------|----------------------------|-----------------------------|--|--|-----------------------|
| | | | | | | | | Weighted Average ³ | Unweighted Average |
| 1897 | 10 | 32% | 147 | 2% | 0% | 12% | 93% | | |
| 1898 | 16 | 32% | 175 | 3% | 0% | 15% | 94% | | |
| 1899 | 18 | 31% | 211 | 2% | 0% | 18% | 90% | | |
| 1900 | 20 | 31% | 259 | 5% | 1% | 20% | 90% | | |
| 1901 | 24 | 35% | 264 | 4% | 1% | 15% | 87% | 10% | 10% |
| 1902 | 25 | 31% | 317 | 5% | 1% | 19% | 88% | 14% | 13% |
| 1903 | 31 | 31% | 380 | 4% | 1% | 20% | 86% | 1% | 0% |
| 1904 | 32 | 30% | 435 | 3% | 1% | 24% | 88% | 4% | 7% |
| 1905 | 32 | 28% | 535 | 6% | 2% | 24% | 87% | 40% | 29% |
| 1906 | 32 | 32% | 629 | 9% | 3% | 28% | 88% | 23% | 13% |
| 1907 | 34 | 30% | 724 | 9% | 3% | 31% | 83% | 4% | 6% |
| 1908 | 34 | 31% | 757 | 9% | 3% | 31% | 81% | 0% | 4% |
| 1909 | 32 | 26% | 917 | 16% | 6% | 35% | 80% | 14% | 9% |
| 1910 | 32 | 24% | 1,005 | 16% | 5% | 32% | 80% | 4% | 3% |
| 1911 | 33 | 22% | 1,119 | 13% | | | 81% | 20% | 14% |
| 1912 | 34 | 23% | 1,086 | 15% | | | 78% | 11% | 10% |
| 1913 | 28 | 21% | 1,105 | 15% | | | 77% | | |

1. Includes banks of issue, mortgage banks, and investment banks (bancos refaccionarios).

1913 figure does not include 6 banks that did not report because of the revolution.

2. Weighted by assets.

3. Weighted by market capitalization.

Source: Number of banks, book equity, assets, and deposits calculated from Secretaria del Estado y del Despacho de Hacienda y Credito Publico y Comercio, Anuario de Estadística Fiscal, 1912-1913 (Mexico: Tipografía de la Oficina Impresora de Estampillas, 1914). Bank of issue rates of return from Maurer and Haber (2005). GDP from Instituto Nacional de Estadística Geografía e Informática (1994), p. 401.

Table 2

The Mexican Banking Industry During the 1920s

| Year | Total Assets (millions of <u>nominal pesos</u>) | Ratio of Assets <u>to GDP</u> | Average Equity <u>Ratio</u> |
|------|--|-------------------------------------|-----------------------------------|
| 1921 | 285 | 5% | 35% |
| 1922 | 149 | 3% | 34% |
| 1923 | 141 | 3% | 64% |
| 1924 | 206 | 4% | 63% |
| 1925 | 225 | 4% | 51% |
| 1926 | 417 | 8% | 52% |
| 1927 | 515 | 10% | 52% |
| 1928 | 521 | 10% | 38% |
| 1929 | 577 | 12% | 36% |

Source: Assets and equity from Haber, Razo, and Maurer 2003, chap 4.
GDP from Instituto Nacional de Estadística Geografía e Informática (1994), p. 401.

Table 3
The Extension of Credit, by Source, 1940-78

| Year | <u>Commercial Banks as % of GDP</u> | <u>Other Private Banks as % of GDP</u> | <u>Total Private as % of GDP</u> | <u>Government Banks as % of GDP</u> | <u>System Total as % of GDP</u> |
|------|---|--|--|---|---|
| 1940 | 4% | 1% | 5% | 3% | 8% |
| 1941 | 5% | 1% | 6% | 4% | 10% |
| 1942 | 6% | 1% | 7% | 4% | 11% |
| 1943 | 6% | 2% | 8% | 4% | 12% |
| 1944 | 5% | 2% | 7% | 4% | 10% |
| 1945 | 5% | 2% | 8% | 4% | 12% |
| 1946 | 4% | 2% | 6% | 4% | 11% |
| 1947 | 4% | 3% | 7% | 5% | 12% |
| 1948 | 5% | 3% | 7% | 6% | 13% |
| 1949 | 5% | 2% | 7% | 6% | 13% |
| 1950 | 5% | 2% | 7% | 6% | 14% |
| 1951 | 5% | 2% | 7% | 7% | 14% |
| 1952 | 5% | 2% | 7% | 6% | 14% |
| 1953 | 5% | 2% | 8% | 8% | 16% |
| 1954 | 5% | 2% | 8% | 9% | 16% |
| 1955 | 5% | 2% | 8% | 7% | 14% |
| 1956 | 5% | 3% | 8% | 6% | 14% |
| 1957 | 5% | 3% | 8% | 6% | 14% |
| 1958 | 5% | 3% | 7% | 7% | 14% |
| 1959 | 5% | 4% | 9% | 8% | 17% |
| 1960 | 5% | 4% | 9% | 10% | 19% |
| 1961 | 5% | 5% | 10% | 12% | 21% |
| 1962 | 5% | 5% | 10% | 13% | 23% |
| 1963 | 5% | 5% | 11% | 13% | 23% |
| 1964 | 5% | 6% | 11% | 12% | 23% |
| 1965 | 6% | 7% | 12% | 11% | 23% |
| 1966 | 5% | 8% | 13% | 11% | 24% |
| 1967 | 6% | 9% | 14% | 12% | 26% |
| 1968 | 6% | 10% | 15% | 11% | 27% |
| 1969 | 6% | 11% | 17% | 12% | 29% |
| 1970 | 6% | 13% | 19% | 12% | 31% |
| 1971 | 6% | 13% | 19% | 13% | 32% |
| 1972 | 6% | 13% | 19% | 2% | 21% |
| 1973 | 5% | 12% | 17% | 12% | 29% |
| 1974 | 5% | 10% | 15% | 12% | 27% |
| 1975 | 5% | 10% | 15% | 12% | 27% |
| 1976 | 5% | 9% | 14% | 16% | 30% |
| 1977 | 5% | 8% | 13% | 17% | 30% |
| 1978 | 7% | 7% | 13% | 15% | 28% |

Source: Del Angel (2002), p. 45.

Table 4

Deposits, Credit, and Financial Repression, 1948-82

| Year | Banking System Deposits as % GDP ¹ | Total Bank Claims on Private Sector as % GDP | Deposits Minus Credits as % GDP | Reserve Ratio (Deposits divided by Reserves) |
|------|--|---|------------------------------------|--|
| 1948 | 16% | 15% | 1% | 26% |
| 1949 | 17% | 16% | 0% | 24% |
| 1950 | 16% | 16% | 0% | 35% |
| 1951 | 17% | 16% | 2% | 25% |
| 1952 | 17% | 15% | 2% | 23% |
| 1953 | 19% | 17% | 2% | 22% |
| 1954 | 20% | 19% | 1% | 18% |
| 1955 | 19% | 16% | 3% | 18% |
| 1956 | 18% | 16% | 1% | 18% |
| 1957 | 18% | 16% | 2% | 15% |
| 1958 | 18% | 16% | 2% | 15% |
| 1959 | 20% | 19% | 1% | 15% |
| 1960 | 22% | 22% | 0% | 12% |
| 1961 | 24% | 24% | 0% | 10% |
| 1962 | 26% | 26% | 0% | 11% |
| 1963 | 28% | 26% | 2% | 12% |
| 1964 | 30% | 27% | 2% | 10% |
| 1965 | 30% | 26% | 4% | 9% |
| 1966 | 32% | 27% | 5% | 10% |
| 1967 | 36% | 29% | 6% | 10% |
| 1968 | 38% | 30% | 7% | 11% |
| 1969 | 40% | 33% | 7% | 11% |
| 1970 | 40% | 33% | 7% | 10% |
| 1971 | 42% | 34% | 7% | 11% |
| 1972 | 41% | 34% | 8% | 22% |
| 1973 | 40% | 32% | 8% | 24% |
| 1974 | 37% | 29% | 8% | 30% |
| 1975 | 38% | 29% | 9% | 33% |
| 1976 | 42% | 32% | 10% | 14% |
| 1977 | 25% | 17% | 8% | 48% |
| 1978 | 27% | 19% | 8% | 43% |
| 1979 | 28% | 20% | 8% | 44% |
| 1980 | 27% | 19% | 8% | 45% |
| 1981 | 30% | 19% | 10% | 44% |
| 1982 | 30% | 15% | 14% | 58% |

1. Demand deposits, time deposits, money market instruments, and government deposits

Source: International Monetary Fund, International Financial Statistics.

Table 5

Commercial Bank Non-Performing Loans and Returns on Equity, 1940-80

| Year | <u>Non-Performing Loans</u> <u>(as % Total Loans)</u> | <u>Return on</u> <u>Equity</u> |
|------|--|-----------------------------------|
| 1940 | 13% | 3% |
| 1943 | 4% | 10% |
| 1945 | 6% | 15% |
| 1947 | 8% | 17% |
| 1950 | 4% | 20% |
| 1952 | 4% | 19% |
| 1955 | 4% | 16% |
| 1957 | 5% | 18% |
| 1960 | 5% | 23% |
| 1962 | 5% | 19% |
| 1965 | 3% | 30% |
| 1968 | 4% | 24% |
| 1970 | 4% | 20% |
| 1972 | 6% | 19% |
| 1975 | 5% | 25% |
| 1977 | 5% | 30% |
| 1980 | 2% | 55% |

Source: Del Angel Mobarak (2002), p. 57.

Table 6

Bank Deposits and Credits, 1982-2004

| | Banking System Deposits <u>as % GDP¹</u> | Total Bank Claims on Private Sector <u>as % GDP</u> | Deposits Minus Credits <u>as % GDP</u> |
|------|--|--|--|
| 1983 | 27% | 13% | 14% |
| 1984 | 28% | 14% | 14% |
| 1985 | 25% | 13% | 12% |
| 1986 | 28% | 13% | 15% |
| 1987 | 27% | 13% | 14% |
| 1988 | 18% | 11% | 7% |
| 1989 | 19% | 16% | 4% |
| 1990 | 21% | 17% | 4% |
| 1991 | 24% | 21% | 3% |
| 1992 | 25% | 28% | -3% |
| 1993 | 27% | 32% | -4% |
| 1994 | 29% | 39% | -9% |
| 1995 | 31% | 29% | 2% |
| 1996 | 29% | 19% | 10% |
| 1997 | 41% | 25% | 15% |
| 1998 | 38% | 23% | 16% |
| 1999 | 38% | 19% | 18% |
| 2000 | 30% | 17% | 13% |
| 2001 | 35% | 15% | 20% |
| 2002 | 34% | 17% | 17% |
| 2003 | 32% | 15% | 17% |
| 2004 | 32% | 14% | 17% |

1. Demand deposits, time deposits, money market instruments, and government deposits

Source: International Monetary Fund, International Financial Statistics.

Table 7**Mexican Bank Lending, By Category**

(Balances at Year End, in Millions of Real--December 2000--Pesos)

| <u>Year</u> | <u>Commercial¹</u> | <u>Consumer</u> | <u>Housing</u> | <u>Renewed, Restructured, or Rediscounted⁴</u> | <u>SOFOL</u> | <u>Government²</u> | <u>Fobaproa and IPAB³</u> | <u>Total Private Lending⁵</u> | <u>Total Lending</u> |
|-------------|-------------------------------|-----------------|----------------|---|--------------|-------------------------------|--|--|--------------------------|
| 1991 | 776,386 | 91,312 | 114,805 | 112,256 | | | | 1,094,759 | 1,094,759 |
| 1992 | 961,879 | 127,757 | 178,439 | 148,728 | | | | 1,416,803 | 1,416,803 |
| 1993 | 1,181,744 | 118,880 | 248,808 | 187,766 | | | | 1,737,197 | 1,737,197 |
| 1994 | 1,423,325 | 109,387 | 299,437 | 244,066 | | | | 2,076,215 | 2,076,215 |
| 1995 | 801,937 | 51,617 | 192,304 | 339,796 | | 957 | 156,237 | 1,385,654 | 1,542,849 |
| 1996 | 513,686 | 27,745 | 80,338 | 364,298 | | 18,587 | 273,760 | 986,068 | 1,278,415 |
| 1997 | 405,675 | 39,415 | 173,251 | | 12,297 | 88,181 | 340,212 | 630,637 | 1,059,030 |
| 1998 | 388,886 | 32,400 | 178,847 | | 16,388 | 92,705 | 346,423 | 616,520 | 1,055,648 |
| 1999 | 312,687 | 35,238 | 147,583 | | 17,899 | 91,707 | 377,561 | 513,407 | 982,675 |
| 2000 | 318,320 | 40,596 | 131,224 | | 13,809 | 153,331 | 290,161 | 503,950 | 947,442 |
| 2001 | 288,685 | 54,548 | 119,868 | | 16,542 | 147,977 | 258,939 | 479,643 | 886,559 |
| 2002 | 296,116 | 71,837 | 114,223 | | 23,658 | 188,042 | 216,169 | 505,834 | 910,045 |
| 2003 | 275,532 | 99,609 | 100,128 | | 22,056 | 179,940 | 179,538 | 497,324 | 856,802 |
| 2004 | 316,272 | 140,240 | 102,307 | | 35,660 | 136,512 | 156,757 | 594,479 | 887,749 |

1. 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.

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. 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.

5. Includes Commercial, Consumer, Housing, and SOFOL loans.

Source: Aggregates created by the author from the loan portfolios published in Comisión Nacional Bancaria, *Banca Múltiple, 1982-1993*; and Comisión Nacional Bancaria y de Valores, *Boletín Estadístico de Banca Múltiple, 1993-2004*.

Deflated using wholesale price index from the Banco de Mexico web page: <http://www.banxico.org>

Table 8**Non Performing Loans (At Year End)**

| <u>Year</u> | <u>Declared Non-Performing (NPL) as Percent of Total Loans</u> | <u>Declared NPL Plus Rediscounts as % of Total</u> | <u>Declared NPL Plus Rediscounts Plus Renewed and Restructured as % of Total</u> | <u>FOBAPROA or IPAB as Percent of Total</u> | <u>Declared NPL Plus Rediscounts, Restructured and FOBAPROA-IPAB as % of Total Loans</u> |
|-------------|--|--|--|---|--|
| 1991 | 3.6% | 13.5% | 13.5% | 0% | 13.5% |
| 1992 | 4.7% | 14.7% | 14.7% | 0% | 14.7% |
| 1993 | 6.0% | 16.2% | 16.2% | 0% | 16.2% |
| 1994 | 6.1% | 17.1% | 17.1% | 0% | 17.1% |
| 1995 | 6.2% | 13.3% | 26.8% | 9% | 36.3% |
| 1996 | 5.7% | 10.8% | 32.5% | 20% | 52.6% |
| 1997 | 10.2% | 10.2% | 10.2% | 29% | 39.0% |
| 1998 | 10.2% | 10.2% | 10.2% | 29% | 39.7% |
| 1999 | 8.2% | 8.2% | 8.2% | 35% | 43.5% |
| 2000 | 5.5% | 5.5% | 5.5% | 29% | 34.4% |
| 2001 | 4.9% | 4.9% | 4.9% | 28% | 32.7% |
| 2002 | 4.4% | 4.4% | 4.4% | 23% | 27.1% |
| 2003 | 3.2% | 3.2% | 3.2% | 21% | 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*, 1993-2004.