



Stanford
Center for International
Development

Working Paper No. 110

**The Peso Crash, the Banking Bailout,
and Financial Market Performance in Mexico**

by

José Antonio Gonzalez-Anaya*

Grecia M. Marrufo**

October 2001



Stanford University
John A. and Cynthia Fry Gunn Building
366 Galvez Street | Stanford, CA | 94305-6015

* Senior Research Associate and Latin American Research Coordinator, Center for Research on Economic Development and Policy Reform, Stanford University

** Post Doctoral Fellow, Center for Research on Economic Development and Policy Reform, Stanford University

The Peso Crash, the Banking Bailout and Financial Market Performance in Mexico

by

José Antonio Gonzalez-Anaya[†] and Grecia M. Marrufo[‡]

Stanford University
Center for Research on Economic Development and Policy Reform
Prepared for the Mexican Credit Conference
October 5-6, 2001

Abstract

This paper examines the development of financial markets in Mexico after 1994 and finds that there has been a reduction in the depth of the traditional financial markets. Lending from commercial banks to the non-financial private sector shrank from 10% of GDP in 1994 to 0.3% in 2000. However, gross domestic investment recovered quickly. Key questions are: where are firms getting financing; are these sources of finance sustainable, and will investment and monetary policies be affected? We find that contrary to the bank vs. market literature, traditional financial markets are complements rather than substitutes. Firms have difficulty issuing bonds without bank credit and issuing stocks without prior bond issues. Trade and suppliers credit are the only substitutes that play a dominant role in financing investment in Mexico.

JEL: E44, E22, G2, O16, O54

[†] Senior Research Associate and Latin American Research Coordinator, Center for Research on Economic Development and Policy Reform, Stanford University.

[‡] Post Doctoral Fellow, Center for Research on Economic Development and Policy Reform, Stanford University.

I. Introduction

Since the mid 1980's, Mexico had been transformed from a closed, protected economy with an interventionist state, to one of the most open and least interventionist economies in Latin America. The reforms in the financial sector were an important component of the structural reform program. Until 1994, the Mexican economic reform was heralded as one of the most impressive in the region. The enthusiasm was justified: Mexico had implemented a successful macroeconomic stabilization program, entered an unprecedented free trade agreement with the United States and Canada, embarked on an ambitious privatization and deregulation program, liberalized the financial sector, and it was devoting the largest share of public spending in its history to health and education.¹ In particular, in the financial sector, the government eliminated directed credits and foreign capital controls, allowed interest rates to be set by the market, adopted financial regulations to promote markets, and abolished restrictive regulations on banking credit. As a result, from 1988 to 1994, the depth of the financial sector, measured as a share of GDP doubled, and fixed capital formation relative to GDP rose from 15% to 20%.

However, since the crisis in 1995, an emerging bottleneck to sustainable growth appears to be the size and nature of private financing and the health of the financial sector broadly defined. Financial sector depth decreased from a high of 100% of GDP in 1994 to close to 70% of GDP in 1999. In particular, the assets of the commercial banking sector fell from 39% in 1995 to 25% in 1999, not much higher than the pre-stabilization levels.

The aftermath of the crisis during the second half of the 1990s constitutes a puzzle. Despite the fact that Mexico's financial sector, and in particular the banking sector, has experienced a pronounced contraction since 1995, gross domestic investment recovered and surpassed the pre-crisis level to reach 24% of GDP. At the same time, economic activity grew on average 5.4% annually from 1996 to 2000. Although the traditional sources of external funds dried up, private enterprises in Mexico continued to find investment funds from other sources. It is not entirely clear why the banking sector has not recovered, or what these alternative sources are, whether they are sustainable, or whether they are financing the most productive investments.

The objective of this paper is to provide an overview of the recent performance of the financial sector and compare it with the international experience. In particular we will describe

¹ See Pedro Aspe (1993) for an excellent exposition of the Mexican structural reform program.

the evolution of different sources of investment funds in Mexico and make international comparisons to determine if there are obvious idiosyncrasies in the origin of investment funds in Mexico. This paper will also determine the shares of investment contributed by bank finance, equity issues, bond issues, internal firm finance and etc., and compare them with similar data from other countries. Although this paper is largely descriptive, it helps to identify the most important sources of external firm finance in Mexico, relative to the rest of the world.

The importance of a well functioning financial sector for growth and development cannot be overstated. A growing body of literature finds that the development of the financial sector has a positive effect on growth.² Using microeconomic evidence in Chile Gallego and Loayza (2000) found that financial developments at a macroeconomic level have had a positive impact on firm performance. The mechanism is well known, that is, the depth of the financial sector affects the size of investment. Perhaps even more importantly, a well functioning financial sector improves the productivity of investments by channeling funds to the most profitable projects. In other words, a well functioning financial sector improves the quantity and quality of firm investment, which in turn translates into economic growth.³ If Mexico is to attain and maintain high rates of growth like those experienced by Chile and the East Asian Tigers, the financial sector will have to be a larger and more efficient intermediary of funds than it is today. East Asian countries invest around 30% of GDP while in Mexico the comparable number is around 20% of GDP. One could argue that part of the difference may be due to a lack of savings. However, given the open capital accounts in Mexico and, as Aspe (1993) argues, changes in the levels of domestic financial intermediation can increase private investment. In fact, Mexican data rejects the Feldstein-Horioka puzzle of correlated savings and investment.

The paper is organized as follows. Section II provides a short historical overview of macroeconomic and financial developments in Mexico. Section III presents an overview of the performance of the financial sector using the criteria proposed by Demirguc-Kunt and Levine (1999). The methodology looks at the size, activity, and efficiency of the most important components of the financial sector.

² See Levine (1997), and Levine, Loayza, and Beck (2000), King and Levine (1993), and Rajan and Zingales (1998), among others, for cross-country evidence. Also see Pedro Aspe (1993) for analysis from a policymaker's perspective.

II. A Brief History of the Financial Sector In Mexico

Although a complete historical review of the financial system is beyond the scope of this paper, a short overview will place the recent developments in a more concrete context.⁴ The modern regulatory and institutional framework of the financial sector goes back to 1925. The law created the *Banco de Mexico* (the Central Bank) and a three-pillar system: commercial banks, auxiliary financial institutions (insurances, bonding, warehouses, and *financieras* which captured long term savings), and development banks. Like most other Latin American countries, the system was heavily and increasingly regulated between the 1930s and the 1970s, consistent with the Import Substitution Industrialization model of development. The Ministry of Finance and the Banco de Mexico primarily used three instruments: the legal reserve requirement, directed credits, and borrowing and lending rates that were set by the authorities and remained fixed for long periods of time. The stock market played a limited role, and monetary policy was carried out through public sector financing and fluctuations in reserve requirements. Despite the degree of financial repression, the system functioned well throughout the period of the *Desarrollo Stabilizador* (Stabilizing Growth) because the public sector relied little on monetary financing.

The 1970s saw a series of limited reforms that, combined with high fiscal and balance of payment deficits, proved disastrous. Banks were allowed to increase their range of operation, which translated into some degree of financial innovation, and new legislation expanded the role of capital and money markets. But the system proved too rigid to function properly in times of moderate and high inflation, and aggravated the external shocks of the credit crunch in the early 1980s. Public sector deficits reduced the government's ability to regulate the quantity of money, a fixed exchange rate with high inflation put pressure on the real exchange rate and the balance of payments, and since interest rates were not market-based there was considerable capital flight. The process culminated in the nationalization of the banks in 1982.

The pendulum began to swing in the direction of liberalization during President De la Madrid's administration and came explicit so in 1988 after the Mexican macroeconomic

³ From the consumer's perspective, the financial sector allows economic agents to smooth out consumption over time and be protected from exogenous shocks.

stabilization program and during the Salinas administration. Aspe (1993) summarizes four key components of the liberalization process:

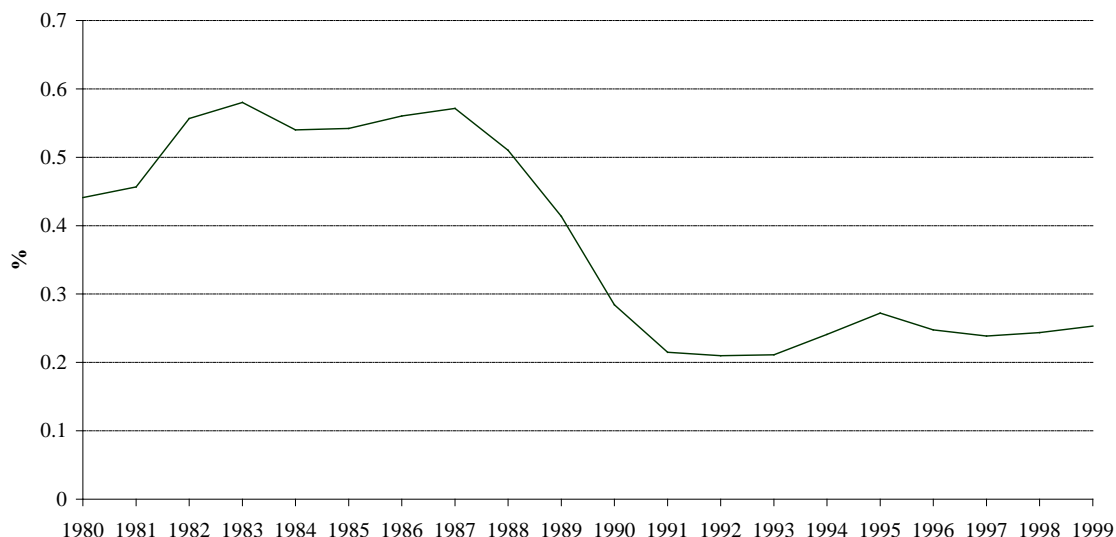
(i) Financial liberalization began soon after public finances were put under control on a permanent basis. This was a key step. It was impossible to implement a financial reform when in 1986, 72% of commercial bank credit flowed to the public sector. Quantitative controls on credits and fixed interest rates were replaced with a money market through the introduction of Mexican Treasury Bills (CETES). They were originally introduced in 1978 but the government set the rates arbitrarily and there was no secondary market. In 1982 participants began to present bids and since the autumn of 1988 the monetary authorities let the yields float freely and moved to a more pragmatic approach of controlling the level of inflation, the exchange rate, and international reserves. Credit quotas to high priority sectors were eliminated in 1988. And by the end of the year, the reserve requirement was eliminated.

The role of development banks changed drastically. During this period, credit allocation was increasingly market-determined, the nature of development banks was changed, and their activity subsided. The share of credit by development banks to the non-financial private sector fell from close to 60% in 1987 to 25%, at the same time when regulations on commercial banking were removed (See Figure 2.1). Moreover, whereas in 1987, NAFIN (the largest development bank) allocated 94% of its total credit to large state owned enterprises, by 1991 the situation was reversed and state owned enterprises received only 6% of NAFIN's credit. The rest of the funds (almost US\$15 billion) were channeled through banks and NGOs to over 300,000 private enterprises.⁵

⁴ For more detailed accounts of the financial system see Pedro Aspe (1993) Chapter 2 and Guillermo Ortiz (1994). For a broader discussion of financial history and liberalization in Mexico and the rest of Latin America see Edwards (1995) and Cardoso (1992).

⁵ See Aspe (1993) for a more extended discussion of the transformation of the development banks.

Figure 2.1
Development Banks Share on Private Sector Credit



Source: Central Bank of Mexico, Economic and Financial Indicators, various issues

(ii) Partly as a result of liberalization and also because of deliberate public policy, financial innovation was promoted. Banks were allowed to diversify instruments offered to the public. Things as simple as interest bearing checking accounts and certificates of deposits with any maturity and yield became possible. The public sector also promoted financial innovation by introducing different instruments that hedge against different types of risk. Restrictions on foreign capital were largely eliminated, not only for foreign direct investment (FDI) but also for portfolio investment in stock and bond markets. The government eliminated restrictions on capital inflows; and abolished limits on commercial borrowing from abroad, foreign investment in Mexican securities, and foreign participation in domestic money markets. Controls on capital outflows were also abolished.

(iii) After the nationalization of the banks, the public sector went through great pains to strengthen the remaining financial intermediaries in private hands. New legislation promoted the creation of financial that which would complement financial activities of the newly nationalized commercial banks. Brokerage houses, insurance companies and other financial operations that did not take deposits and make loans were privatized in 1984.⁶ The most notable new types of

⁶ Gruber & McComb (1999)

financial intermediaries that arose were financial groups that were both investment banks and stockbrokers. Some of these establishments even began to offer some sort of checking accounts. In 1986 several regulations regulating mutual funds capitalization ratios, and investment on variable return instruments and credit institutions were relaxed. The financial liberalization reform included the definition and regulation of the use of privileged information and public disclosure of financial information for publicly trade firms.⁷

The process of liberalization culminated in the initiative to privatize the commercial banks in 1990, less than ten years after their nationalization. The process was complete by 1992.

During and after the privatization of banks, authorities began to put in place modern prudential banking and financial regulations. The key pieces of legislation were: The Banking Law (*Ley de Instituciones de Crédito*), the Insurance Law (*Ley General de Instituciones y Sociedades Mutualistas de Seguros*), the Leasing Law (*Ley Federal de Instituciones de Fianzas*), the Auxiliary Credit Institutions Law (*Ley General de Organizaciones y Actividades Auxiliares del Crédito*), the Stock Market Law (*Ley de Mercado de Valores*), and the Investment Banking Law (*Ley de Sociedades de Inversión*). The new regulatory framework replaced and updated legislation from the middle of the century and set the basis for the creation of autonomous supervisory agencies for various financial activities and a deposit insurance institution called FOBAPROA modeled after the FDIC in the US. Prudential regulation established capital requirements, valuation, and accounting and provisioning practices following the Basil Accords.

In late 1994, authorities recognized that the program was a work-in-progress. But there were no obvious deficiencies and the plan was to continue with the modernization of the regulatory framework.⁸ In hindsight, the process fell short and was interrupted by the crisis in 1995. Some important shortcomings include: (i) All liabilities, including deposit liabilities were implicitly guaranteed by the government. (ii) Banks were not required to present consolidated financial reports until 1995 even though banks were operating under universal banking structure. Without consolidated financial reports, supervising authorities could not assess the soundness in the banking sector because of the difficulties in measuring the level of self-lending within the

⁷ The reforms are contained in the in the new Ley de Mercado de Valores in 1989. The first case of improper use of privileged information was not filed until 1996.

⁸ Guillermo Ortiz “Sesión de Clausura. Palabras del subsecretario de Hacienda y Crédito Público,” en Memoria de la 58a Convención Bancaria, México, Asociación de Banqueros de México A.C. octubre 1994.

financial institutions.⁹ (iii) There was legal ambiguity among the regulatory agencies over the banking sector, and as a result supervision was ineffective. It was not until the creation of the CNVB in 1995 that supervisory powers of two of the institutions involved were combined.¹⁰

Bank privatization produced limited effects on the efficiency and competitiveness of the banking sector. The consensus in studies like Gruben and McComb (1996), Lopez de Silanes and Zamarripa (1995), Gavito and Trigueros (1993) is that the banking sector was highly concentrated at the time of privatization, and did not improve substantially in the subsequent years, until foreign banks were allowed to operate in Mexico under NAFTA. Including the takeover of Banamex, Mexico's largest bank, foreign banks will now probably own the majority of the banking assets.

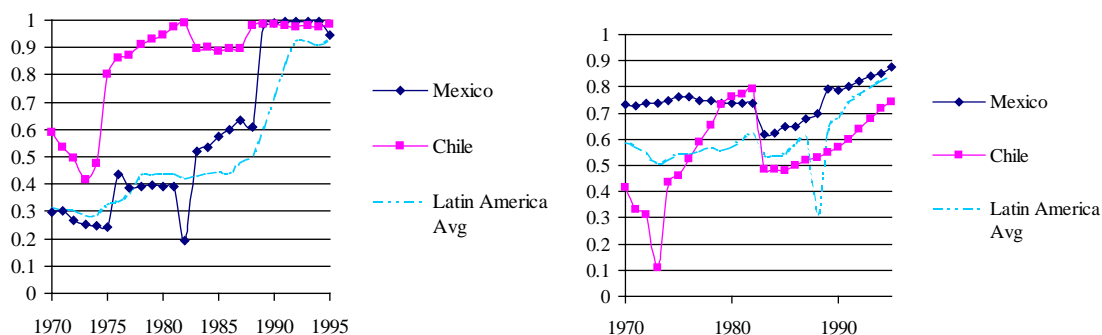
To give an idea of the magnitude and speed of the liberalization efforts implemented between 1989 and 1994, Figures 2.2 and 2.3 compare the financial reform index and the international financial liberalization index of Mexico and other Latin American countries (Source Morley et al (1998)). Indexes are normalized to fluctuate between zero and one, where one corresponds to the least intervened market in Latin America.¹¹ In both cases, Mexico moved from a level below the average Latin America in 1982 to the highest level of financial liberalization in Latin America by the end of 1991. Unfortunately, the numbers are not easily updated and we cannot tell if financial repression has accompanied and caused some of the post-1995 contraction in the financial markets.

⁹ See Lindgren, García and Saal (1996), *Bank Soundness and Macroeconomic Policy*. Washington D.C.: International Monetary Fund

¹⁰ For a detailed analysis of the banking crisis in Mexico see Gil (2001), Mackey (1999), McQuerry (1999), and Serrano (2002).

¹¹ The Financial Reform Index is the average of three sub indexes: controls on banks' lending and borrowing rates and reserves to deposits ratio. The International Financial Reform Index is the average of four sub indexes: sectoral control of foreign investment, limits on profit and interest repatriation, control on external credits by national borrowers, and capital outflows.

Figure 2.2 Financial Reform Index Figure 2.3 International Financial Liberalization



Source: Morley et al (1998)

Since 1995, financial sector policies have focused on managing the effects of the crisis. In order to avert the a systemic crisis, the deposit insurance institution, the FOBAPROA, purchased a large share of overdue loans worth close to US\$100 billion in exchange for government bonds. Unfortunately, it appears the term for these bonds are “too favorable” to give banks any incentive to lend (Serrano (2001)). There was some progress in improving regulation and supervision, but most of the effort was directed at resolving the banking bailout.

A notable step forward was the consolidation of the pension reform. The transformation from a pay-as-you-go to a fully funded system of individual capitalization accounts began in 1993, although resources to financial markets did not begin to flow until 1997. Since then, private institutions are allowed to manage retirement funds and invest them in a variety of financial instruments. As in the rest of Latin America, the motivation was to eliminate a potential fiscal liability and also to increase domestic savings and thus domestic investment. The size of this market is about 5% of GDP, and it has been growing at an average rate of 1.1% of the GDP over the past two years, and the real rate of return has been a respectable 7%. These funds are tightly regulated, in order to finance the transition from pay-as-you-go to individual retirement accounts, pensions fund managers have to invest at least 65% of the funds in government instruments. In addition, in order to increase the resources directed to fund domestic firms, fund managers cannot invest in foreign instruments.

III. Financial Sector Performance

This section describes the performance of the Mexican financial system by focusing on the measures proposed by Beck, Dermiguc-Kunt and Levine (1999), and compares the results with other countries, particularly Argentina, Brazil, and Chile. Mexico's financial sector measures by size, activity and efficiency are in many cases below world average. The primary purpose here is to describe the evolution of different sources of investment funds in Mexico and to make international comparisons to determine if there are obvious idiosyncrasies in financial market performance, structure or in the origins of investment funds in Mexico. This paper determines what percentages of investment comes from bank finance, equity issues, bond issues, internal firm finance and etc. and compare them with similar data from other countries. It analyzes the size, activity, and where possible, the efficiency of the different financial markets.

III.a Financial Sector Size and Depth

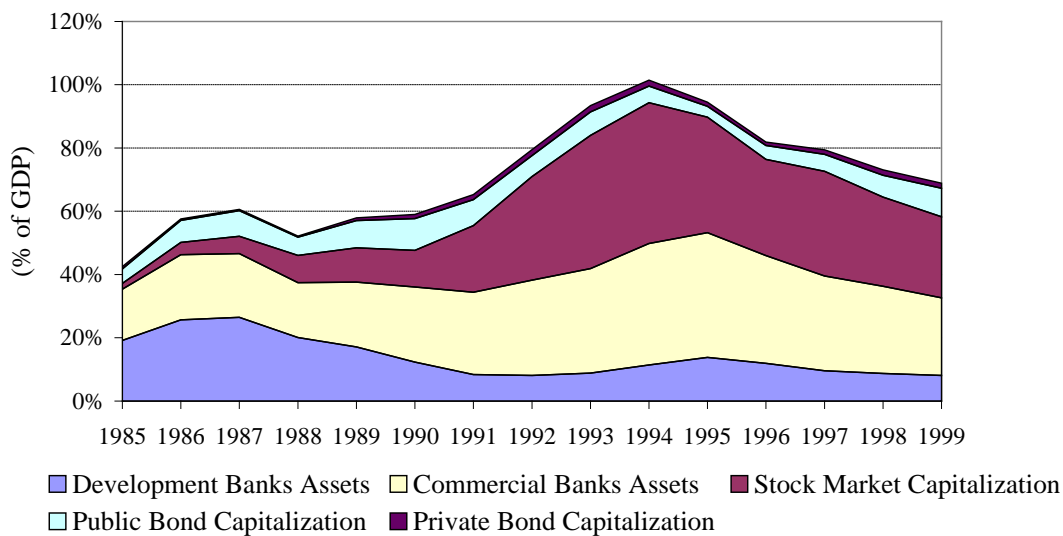
Figure 3.1 presents the evolution of the depth of the financial sector in Mexico from 1985 to 1999 as a percentage of GDP. It measures depth in terms of the capitalization of public and private bonds, and the stock market; and the commercial and development bank assets. This is the broadest measure of financial depth. In general, the more developed a financial market is, the larger it is relative to GDP. The Mexican financial system grew significantly from 40% in 1985 to 100% in 1994 before shrinking to about 70% of GDP. Gallego and Loayza (2000) show that Chile also experienced a similarly spectacular growth that also included a temporary correction during the 1982 debt crisis. On the other hand, some authors have argued that the increase in credit in Mexico was not optimal and that the bubble was bound to burst.¹² However, in this paper, we do not discuss whether or not the growth in the financial markets was sustainable prior to 1994.

Figure 3.1 also presents the contribution of the main financial markets: commercial banks, development banks, the stock market, the private bond market, and the public bond market. There are some interesting observations. First, the increasing depth of the financial

¹² Many of the papers which address the 1995 peso crisis take this view. See Edwards and Naím (1997) for a good compilation of papers about the Mexican crisis.

sector was accompanied by a reduction in the participation of development banks whose share fell from close to 38% in 1986 to less than 10% of GDP in 1999. Public bond capitalization remained roughly constant during this period while the corporate bond market increased albeit from a very small base. Both stock market capitalization and commercial bank assets increased significantly and concurrently from 1985 to 1994 before their continuous shrinkage until 1999. As will be discussed below, this finding corroborates those by Levine (2000) who argues that, rather than substitutes, bank and equity markets appear to be complements in emerging economies.

Figure 3.1
Financial Sector Assets

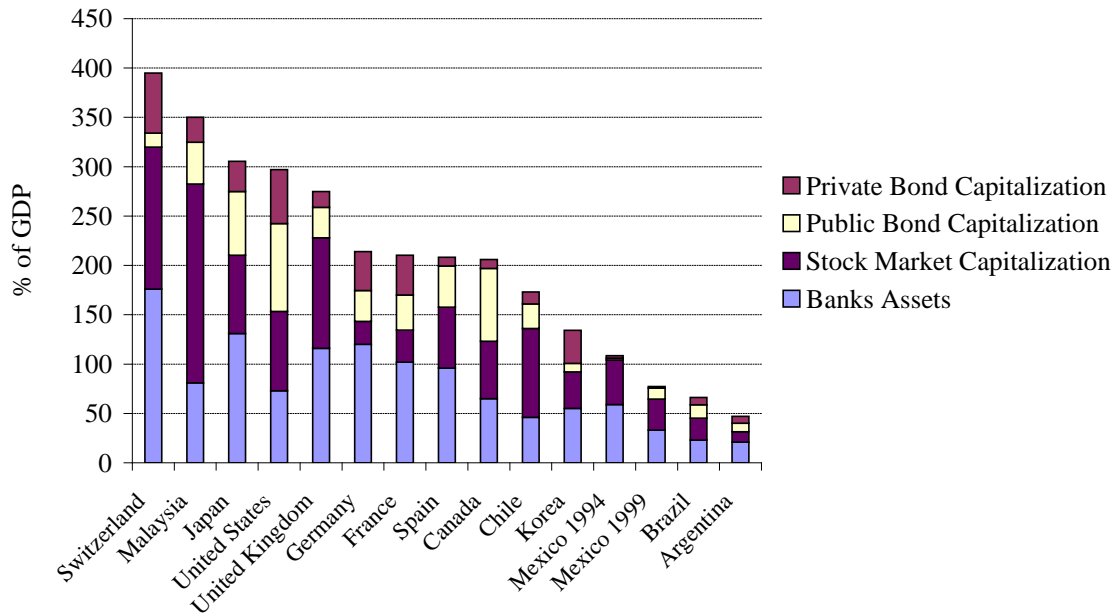


Sources: Bank of Mexico, Economic and Financial Indicators, various issues.

Mexican Stock Exchange, Stock Market Annual Report, various issues

Figure 3.2 compares Mexico's financial depth in 1994 and 1999 with other countries. As of 1997, financial sector depth in Chile was 200% of GDP. Mexico is behind most European nations, Chile, and Korea, but has a relatively larger financial sector than Argentina and Brazil. Similarly, the stock market alone in the U.S. in 1999 was close to 200% of GDP (Mishkin (2000)).

Figure 3.2
Financial Sector Assets



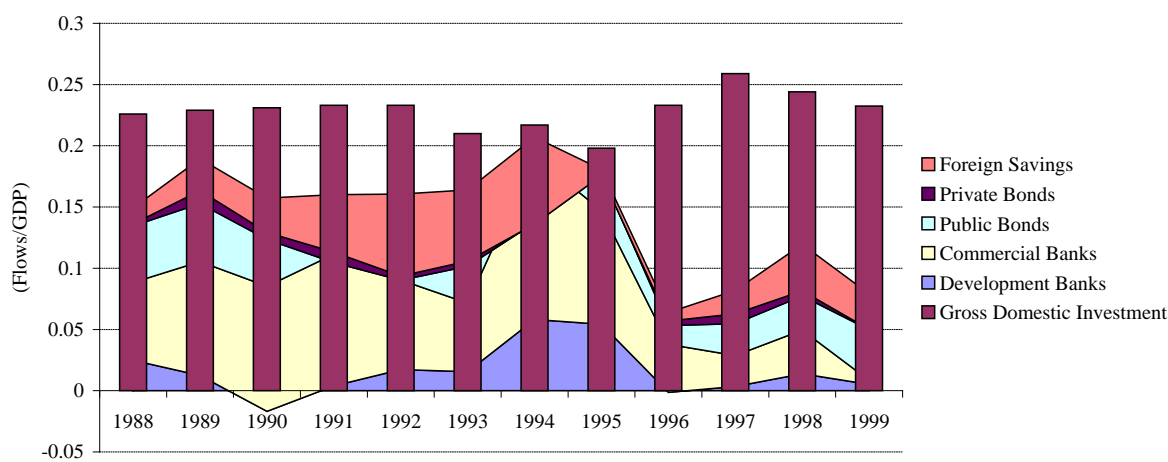
Sources: For Mexico: Bank of Mexico, *Economic and Financial Indicators*, various issues. Mexican Stock Exchange, *Stock Market Annual Report*, various issues
For Other countries, 1990-97 Average from Kunt and Levine(1999)

Figure 3.3 translates the year-end stocks into yearly flows and adds foreign savings (the current account) to determine the annual contributions of each of these sources of funds to gross domestic investment in Mexico.¹³ The gap is usually thought to represent the contribution of retained earnings and trade credit. As in other countries, gross domestic investment exceeds the sum of external sources of investment most years. In other words, an important share of investment is not explained by contributions of the “conventionally defined” financial sector, even in developed countries.¹⁴

¹³ Figure 3.3 does not include the stock market because we lack data on new issues. Given the small number of firms listed on the Stock Exchange, we do not expect that new issues represent a large share of the investment gap. Since capital formation abroad is not included in domestic accounts, foreign savings finance other agent’s capital formation and therefore constitute a source of funding other than internal resources. Whether the financial sector facilitates these flows depends on how the current account deficit is being financed.

¹⁴ Mayer (1990) finds that retentions and trade credit account for more than 50 percent of the sources of finance in United States, Japan, France, United Kingdom, and Germany. In Japan, trade credit alone accounts for 18 percent of the sources of lending.

Figure 3.3
Investment Flows by Source



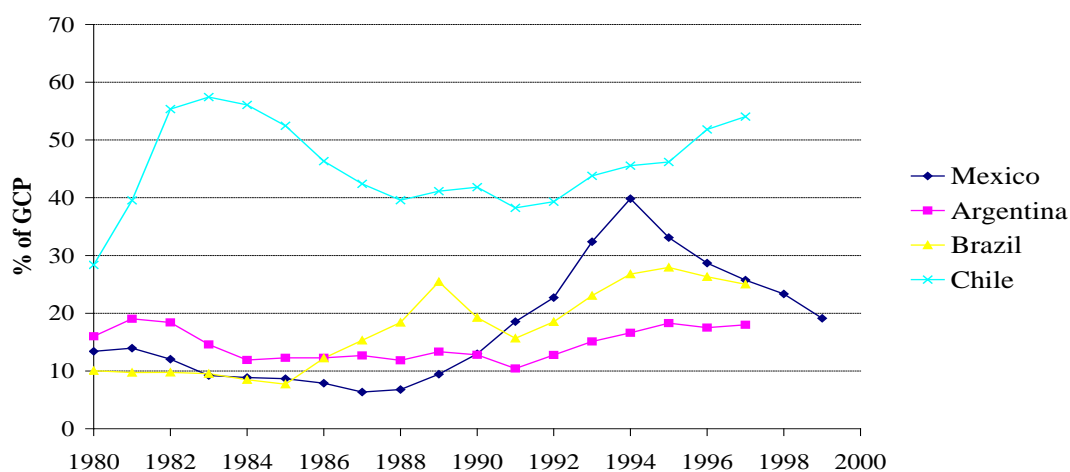
Sources: For Mexico: Bank of Mexico, *Economic and Financial Indicators*, various issues.
Mexican Stock Exchange, *Stock Market Annual Report*, various issues

However, typically this difference between investment and the “traditional sources of finance” is stable but from Figure 3.3 we note that there was a significant change in 1995. Thus, Mexico in the second half of the 1990s presents an interesting puzzle. Since the Peso crisis in 1995, the depth of Mexico’s financial markets has fallen markedly. In particular, the assets of the commercial banking sector fell from 39% of GDP in 1995 to 25% in 1999, not much above the pre-stabilization levels. This meant that commercial bank lending shrank from close to 10% of GDP in 1994 to 0.3% in the year 2000. But despite the fact that Mexico’s financial sector, and in particular the banking sector, has experienced a pronounced contraction relative to GDP since 1995, gross domestic investment recovered relatively quickly and surpassed the pre-crisis level to reach close to 24%. Although the traditional sources of external funds dried up, private enterprises in Mexico continued to find investment funds from other sources. It is not entirely clear what these sources are, whether they are sustainable, or whether these sources are financing the most productive investments. This is a unique phenomenon that does not seem to have been documented in other countries.

III.b The Banking Sector

Figures 3.4 and 3.5 indicate that the role of the commercial banking sector increased considerably following the financial reform in the late 1980s and then experienced a correction after the crisis in 1995. After reaching 40% of GDP in 1994, by 1999, assets of the commercial banks amounted to about 20% of GDP, a proportion lower than the world average of 52.6% and lower than the Latin American average of 27.9%.¹⁵

Figure 3.4
Bank Credit to Non-financial Private Sector



Sources: Beck et al. (1999) and Bank of Mexico, *Economic and Financial Indicators*, various issues

Figure 3.4 shows domestic credit to the non-financial private sector for Argentina, Brazil, Chile, and Mexico from 1980 to 1999 as a percentage of GDP. Private sector credit is a better indication of banks' contribution to private investment, because in Mexico, as in other countries in Latin America, bank credit to the public sector can be substantial. For example, in Mexico in 1986, 72% of commercial bank credit flowed to the public sector.¹⁶ Public finances in Mexico had been solid since 1995 but as Serrano (2001) shows, Mexican banks have increased their share of government securities as a part of the restructuring program.

Chile's banking sector as a share of GDP is much larger than that in Argentina, Brazil, or Mexico. Credit growth after financial reform in Mexico resembles the Chilean experience in the

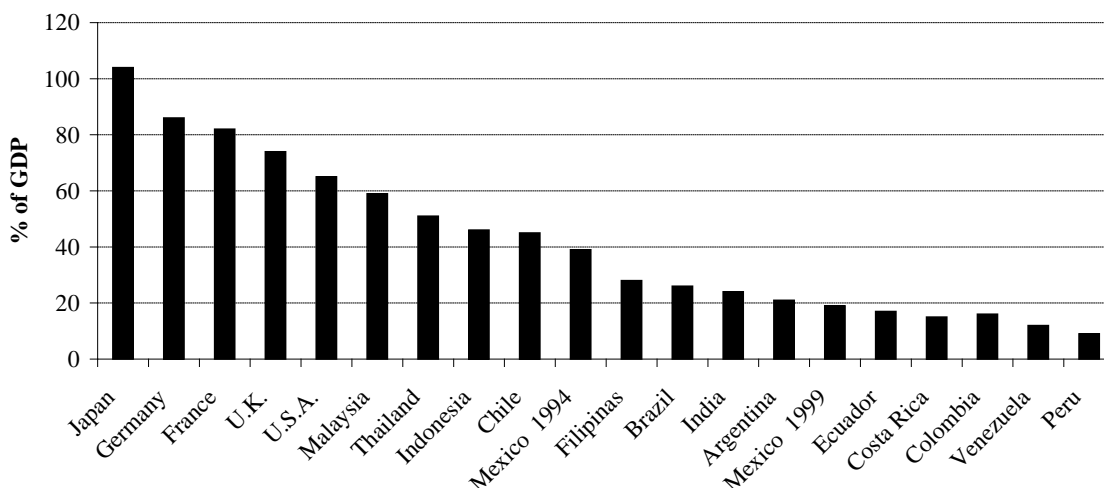
¹⁵ Demirguc-Kunt, and Levine (1999)

¹⁶ See Gelos (1997) as cited in Copelman (2000)

early 1980s.¹⁷ That is, bank credit to the private sector in Chile increased dramatically as a consequence of the liberalization reform that initiated in 1975 and the Chilean credit boom also ended in a banking crisis followed by a massive reduction in credit in the subsequent years.¹⁸ However, bank activity in Chile has recovered steadily since the late 1980s to reach close to 55% of GDP where as Mexico's more precipitous fall has not ended. As a result, the relative size of Mexico's banking sector is now smaller than that of Brazil and slightly larger than that of Argentina. It is interesting that financial liberalization in Argentina and Brazil produced modest results.

To give an idea of what the reduction of bank credit means in terms of financial development, Figure 3.5 compares banking credit to the non-financial private sector as a percentage of the GDP for a selected group of countries. Before the banking crisis in 1995 Mexico was just behind Chile, while in 1999 Mexico is compared to less developed countries like Ecuador and Colombia.

Figure 3.5
Bank Credit to Non-financial Private Sector



Sources: For Mexico: Bank of Mexico, *Economic and Financial Indicators*, various issues.
For Other countries, 1990-97 Average from Kunt and Levine (1999)

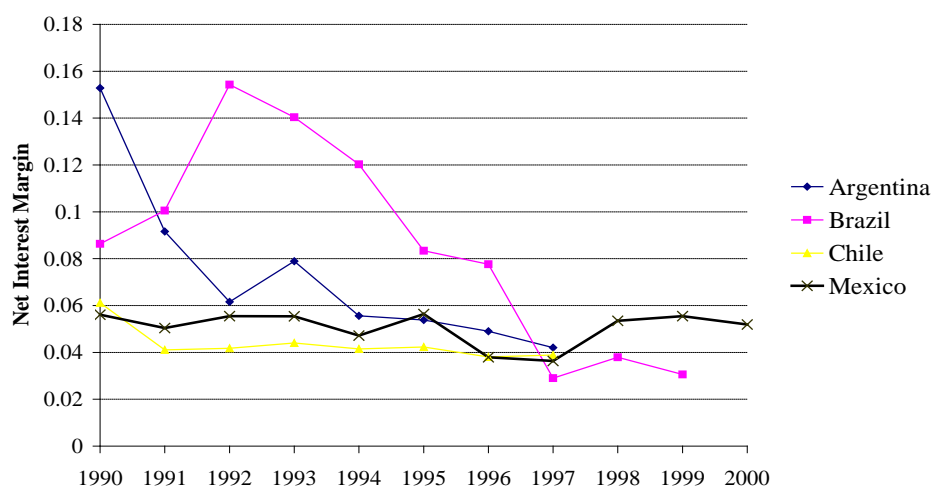
¹⁷Gil Diaz (2000) expresses some concerns on whether this credit boom was sustainable. He mentions other factors, besides liberalization responsible for the observed credit boom. These factor are: poor mechanisms of creditor screening due to low levels human capital in the commercial, and non-transparent capitalization in some commercial banks.

¹⁸ See Norman Loayza (2000) for an analysis of the history of financial system in Chile.

A good indicator of banking efficiency is the interest rate spread. A competitive banking system supported by strong contract enforcement will show low institutional cost. However, it is difficult to construct a good series of deposit and lending rates because there are many deposit and lending rates, and they vary across countries, over time, and the composition of deposits and loans also change. Interest rate spreads measure the institutional cost of channeling resources to firms needing investments. Demircuc-Kunt and Levine (1999) proposed the use of the net interest margin to compare banking sector efficiency across countries. The net interest margin is equal to total interest revenues minus total interest expenditures divided by the value of assets. Higher values of net interest margin indicate a higher spread on deposit and lending rates and therefore lower efficiency. There is also an empirical regularity that as the level of interest rates fall, the spread between the deposit and the lending rates tends to decrease.¹⁹

Figure 3.6 shows the net interest margin for Argentina, Brazil, Chile and Mexico from 1990 to the present. It is surprising that the net interest margin in Mexico did not decrease after bank privatization in 1992. Some have attributed this to a riskier pool of creditors and to the high

Figure 3.6
Net Interest Margin

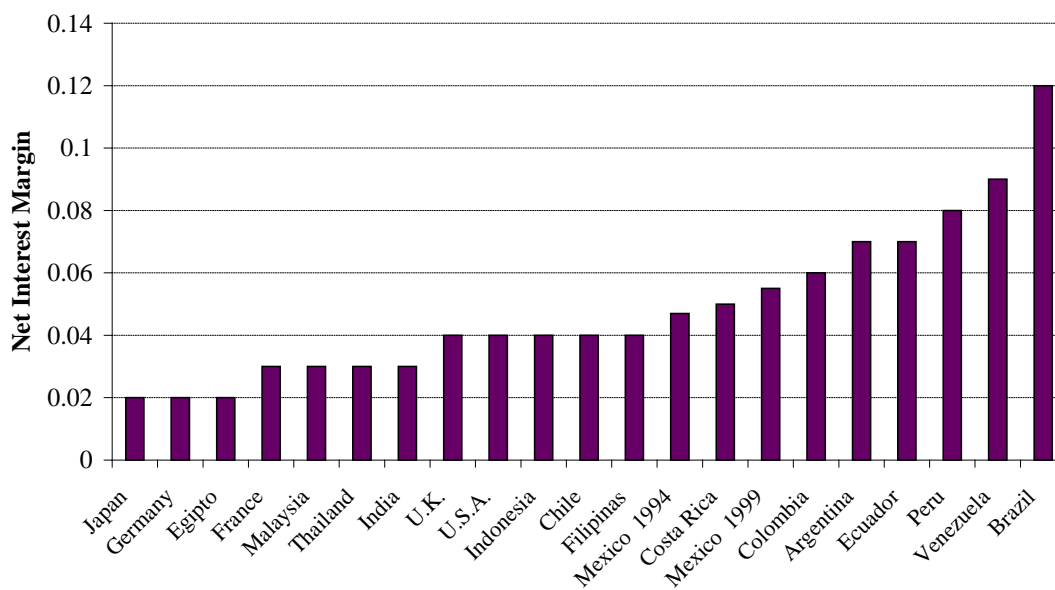


Sources: Beck et al. (1999) and Bank of Mexico, *Economic and Financial Indicators*, various issues; CNBV, *Statistics Reports*, various issues

¹⁹ Although the theory has not been completely worked out, some have argued that higher levels of interest are associated with higher inflation rates, therefore the cost of holding money is higher. Also, higher inflation rates tend to be associated with higher country premiums.

concentration in the sector. After privatization, the three largest banks held about 60% of the total assets in the banking sector.²⁰ Only Argentina and Brazil indicate substantial reductions in the net interest margin. It is unfortunate that data restrictions do not permit us to observe comparable data for the 1980s for all the countries, and from the figure one could conclude that the net interest rate margin has not decreased significantly in Chile since 1990. However, Gallego and Loayza (2000) show that there was in fact a significant decrease in the spread in the early 1980s. Figure 3.7 shows banking efficiency in Mexico is between Costa Rica and Colombia, but ahead of Brazil. Part of the reason is that the inflation level in Mexico is lower than in Brazil and there seems to be some correlation between the level and spread of interest rates.

Figure 3.7
Net Interest Margin



Sources: Bank of Mexico, *Economic and Financial Indicators*, various issues; CNBV, *Statistics Reports*, various issues. For other countries 1990-97 average from Kunt and Levine (1999)

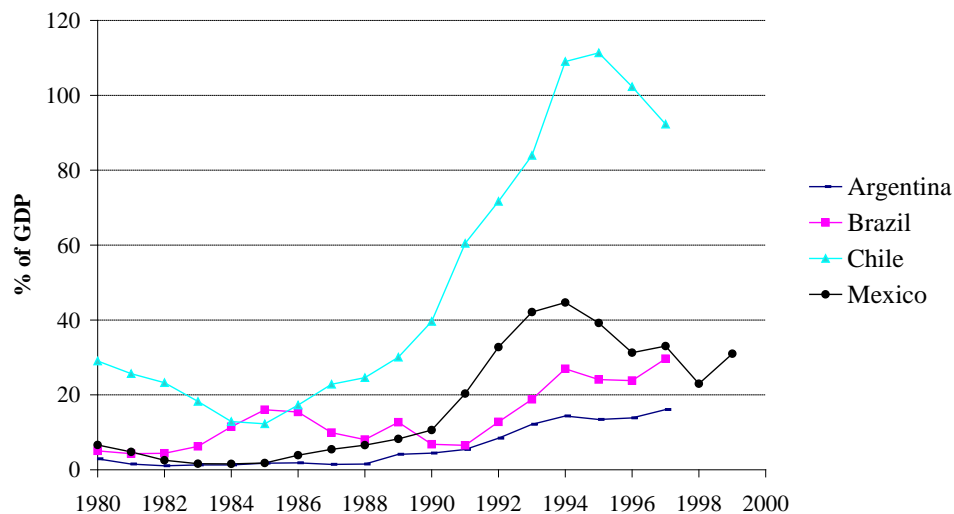
²⁰ A comprehensive study on interest rate spreads during liberalization can be found in Montes Negret and Landa (2000). Using two different measures of interest rate spread, they find that privatization did not reduce the spread significantly.

III.c The Stock Market

Following conventions we assess the size of the stock market by its capitalization relative to GDP. Stock market capitalization does not measure how much firms have invested but it does give an indication of the potential to raise funds for investment through the stock market. Although equity markets do not contribute a large share of private finance in any developing country, they provide information on prices that guide allocation of resources (Mayer (1990)).

Figure 3.8 and 3.9 show that Mexico's stock market experienced a rapid expansion starting in 1985 and reaching close to 45% of GDP in 1994 before shrinking to close to 35% in 1999. The initial expansion was in part due to the financial liberalization but like the increase in banking credit, some authors have argued that the expansion was unsustainable.²¹

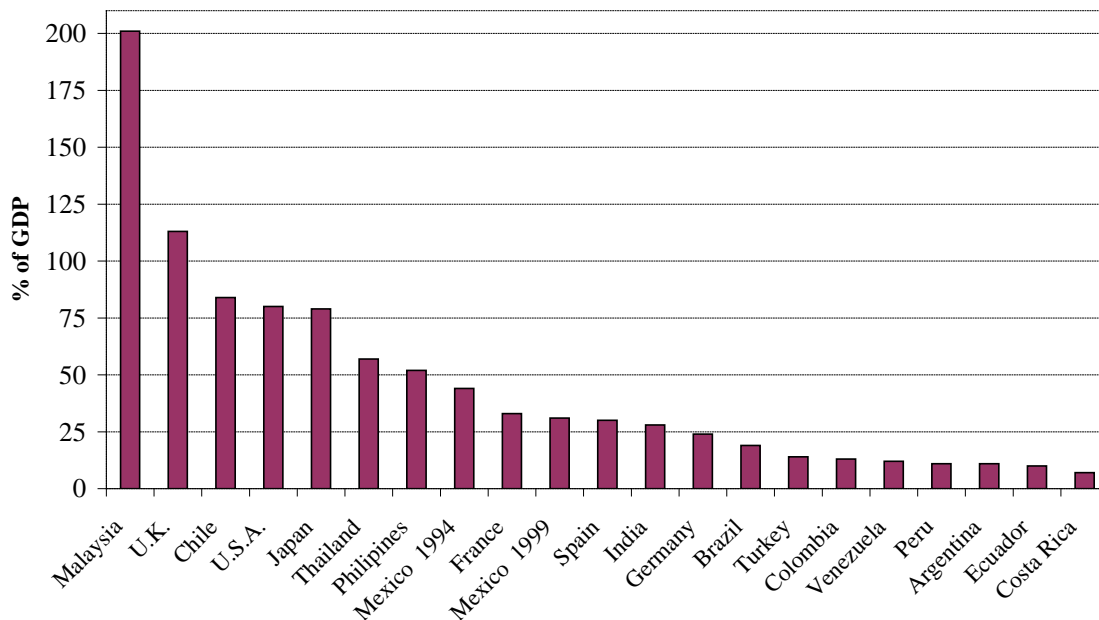
Figure 3.8
Stock Market Capitalization



Sources: Kunt and Levine (1999). Mexican Stock Exchange, *Stock Market Annual Report*, various issues

²¹ See Edwards and Naím (1997) for a good collection of papers about the Mexican crisis and Gil Díaz (2000).

Figure 3.9
Stock Market Capitalization



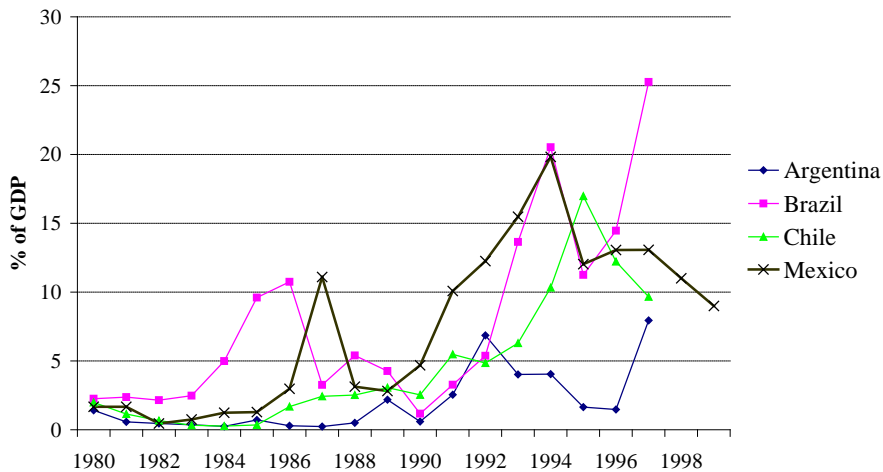
Sources: Beck et al. (1999); Mexican Stock Exchange, *Stock Market Annual Report*, various issues

Figure 3.8 shows the stock market capitalization ratios for Argentina, Brazil Chile and Mexico since 1980 and Figure 3.9 presents a cross section of countries and Mexico’s value in 1994 and 1999. Once again, Chile’s growth after 1985 is spectacular and the size of the stock market relative to GDP continues to be impressive despite a contraction since 1995. Mexico’s stock market appeared to follow an expansion similar to Chile’s, but the contraction since 1995 has reduced the relative size to the level of Brazil and Argentina. The current size of the Mexican stock market is just below the development threshold proposed by Demirguc-Kunt and Levine (1999) of 38.2% for the 1990s. Note that Mexico’s stock market relative to GDP is comparable to France’s, Spain, and Germany. However, these countries have traditionally been categorized as “bank based”; i.e. countries where the banking sector plays a larger role and figure 3.4 corroborates this statement.

Dermiguc-Kunt and Levine (1999) proposed two different measures to compare stock market liquidity across countries: trade volume divided by GDP and the turnover ratio. Total value traded ratio measures equity trading as a share of national output, while turnover ratio equals value of market trading divided by market capitalization. Empirical studies, according to

Pagano (1993) and Levine and Zervos (1997), find a high positive correlation between these two measures. In fact, Figure 3.10 presents a time series for a set of Latin America countries and Figure 3.11 displays a cross section for a wider range of countries. As expected, the value traded increased considerably with the increase in capitalization in the years following the reform of the Ley de Mercado de Valores in 1989 and Ley de Fondos de Inversion in 1990. Similarly, there was a pronounced decrease since the crisis in 1995. It is interesting that the value traded for Chile is not much larger than those for the other countries in the figure. Figure 3.11 shows that Latin American stock markets are not very liquid. If one recalls that the relative size of Mexico's stock market was comparable to some European countries, Figure 3.10 shows that with relatively small stock markets, these European countries have a considerable higher valued traded as a share of GDP. This is an undesirable feature, considering that recent evidence shows strong correlations between value traded and growth, capital accumulation, and productivity, but not stock market capitalization.²² However, as with the rest of the countries in the figure, the value of shares traded abroad, particularly in the United States, is significant. The value traded in United States equals 15% of the GDP, 1.6 times the value traded in Mexico in 1999.

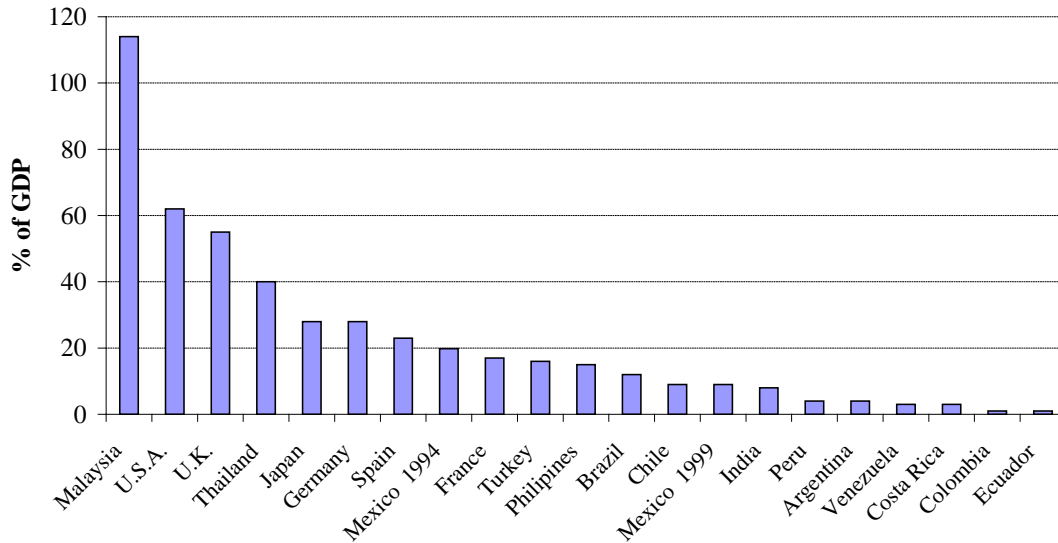
Figure 3.10
Stock Market Value Traded



Sources: Kunt and Levine (1999); Mexican Stock Exchange, *Stock Market Annual Report*, various issues

²²Levine and Zervos (1996)

Figure 3.11
Stock Market Value Traded



Sources: For other countries 1990-97 average from Kunt and Levine(1999)
Mexican Stock Exchange, Stock Market Annual Report, various issues

The current value of the Mexican stock market value traded is just below the development threshold of 15% for the 1990s proposed by Demirguc-Kunt and Levine (1999). Note that although Mexico’s stock market capitalization as a percentage of GDP is comparable to Spain’s and Germany, the activity in the market measured by value trades is considerable lower.

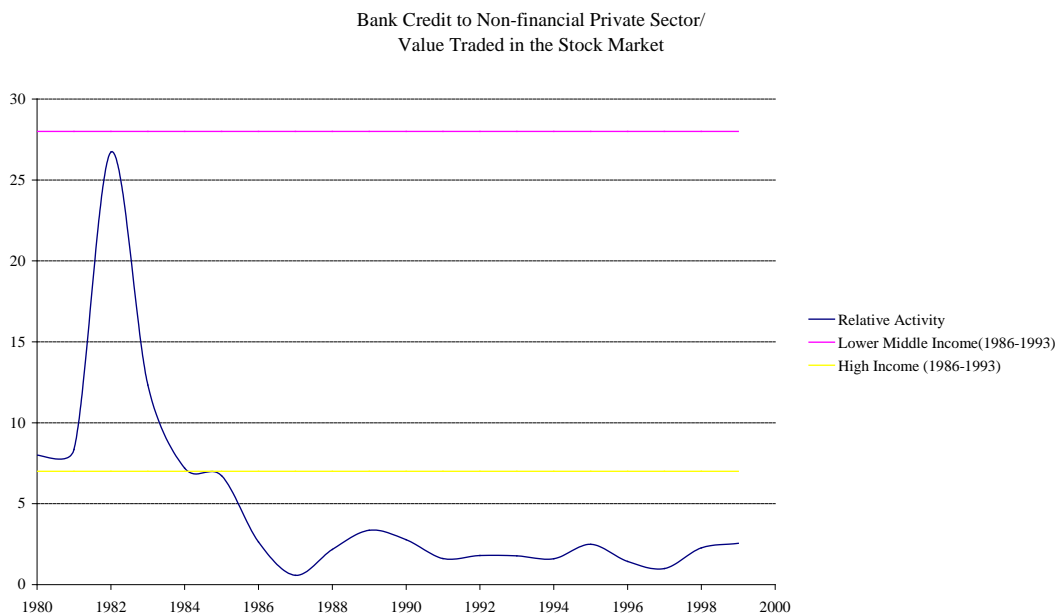
Using the criteria proposed by the same authors to compare the relative development in the main financial markets, one could classify Mexico’s financial sector as “market-based” because the relative size and activity of the stock market is large compared to the banking sector. However, the result is a direct consequence of the serious contraction in banking credit as described in the previous section rather than an indication of an active stock market.

Bank Based or Market Based? A Wrong Question

To analyze whether the Mexican economy is bank or market based, we use the approach and indicators developed by Demirguc-Kunt and Levine (1999). Figure 3.12 shows the relative activity index between the banking sector and the stock market. Relative activity is equal to

bank credit to non-financial private sector divided by the value traded in the stock market. After the debt crisis in 1982, the stock market began to play an increasing role, which lowered the bank credit to value traded ratio to less than five. As we have seen in the previous two sections, the banking sector and the stock market have experienced concurrent expansion and contraction. Thus they are not gross substitutes but gross complements. There is a growing body of literature that finds this result consistent for many emerging economies. The issue appears to be that the stock market is a good source of information and it helps firms and firm owners to achieve an appropriate debt equity ratio. Firms do not distinguish getting finance from a Bank or doing so through issuing equity. Although the ratio has oscillated at a level above the high-income threshold proposed by Demirguc-Kunt and Levine (1999), the previous discussion does not indicate that the stock market has increased but that both of them have experienced a serious contraction.

Figure 3.12



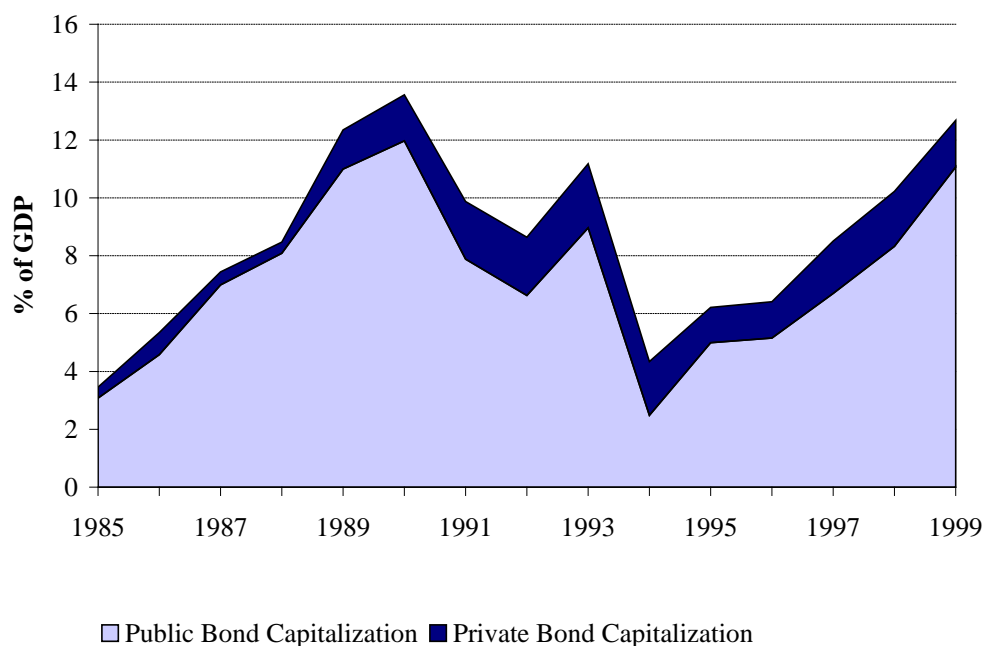
III.d Other Financial Markets

The Domestic Bond Market

Figure 3.12 shows the evolution of the domestic bond market capitalization in Mexico, and Figures 3.13 and 3.14 present cross-country comparisons for the private and public bond markets. Because the motivations and the implications for floating public and private bonds differ significantly, we discuss them separately.

The public bond market performs three main functions. First, it allows the public sector to place non-inflationary government debt. Thus, a large public bond market could imply weaker constraints to public finances. Second, it allows the central bank to conduct monetary policy in an efficient manner through open market operations. And third, it provides a benchmark for credit worthiness and interest rates in a country, thereby facilitating private issuers to price their debt. In this sense, a liquid public bond market is essential for the development of a private bond market. The Mexican public bond market appears to fulfill these three purposes well.

Figure 3.12
Bond Market Capitalization

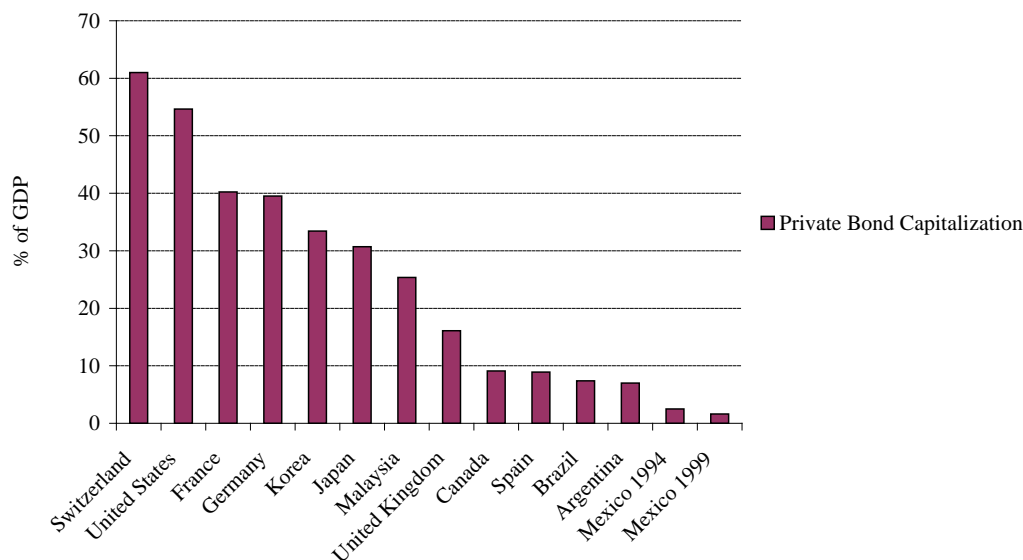


Legend: ■ Public Bond Capitalization ■ Private Bond Capitalization

Sources: Bank of Mexico, *Economic and Financial Indicators*, various issues; Mexican Stock Exchange, *Stock Market Annual Report*, various issues

Figure 3.12 shows that the public bond market in Mexico increased from 4% of GDP in 1985 to 12% of GDP in 1990 as a result of two different events. While the government turned to the bond market to finance its deficits, it became more attractive to hold bonds as the stabilization program succeeded. Between 1990 and 1994 the stock of public bonds in circulation decreased to close to 3% of GDP as a result of solid public finances and the fact that the proceeds from privatization were used to eliminate domestic public debt. Since 1995, the stock of public bonds as a share of GDP has almost returned to its all time high, partly as a result of public finance needs but also largely due to the sterilization of capital inflows.²³ Throughout this time, the public bond market has fulfilled its third purpose wonderfully. Figure 3.14 indicates that only Argentina and Brazil have larger public bond markets and this is probably more by necessity rather than by choice.

Figure 3.13
Private Bond Market Capitalization



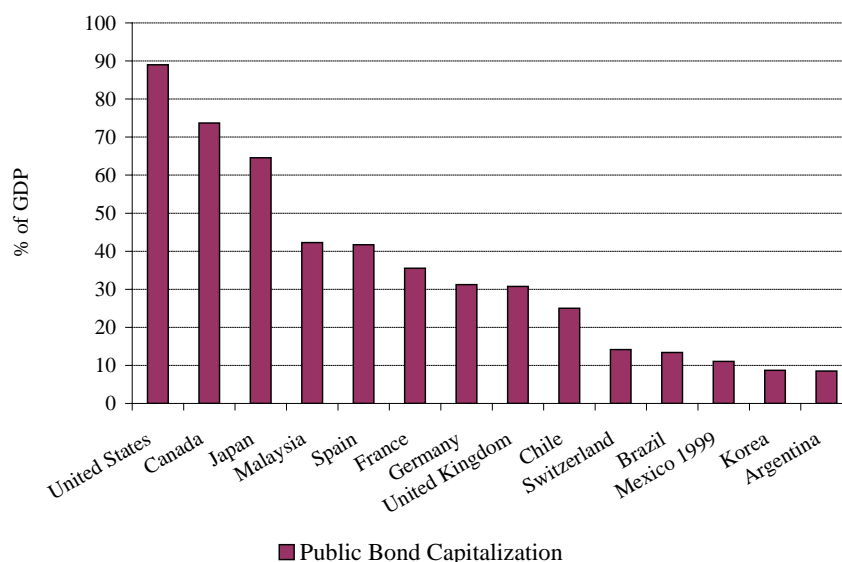
Sources: Mexican Stock Exchange, *Stock Market Annual Report*, various issues;
For other countries 1990-97 average from Kunt and Levine (1999)

Figure 3.13 shows Mexico's private bond capitalization is well below the levels of Argentina and Brazil. Evidence from developed countries suggests that private bonds can be an

²³ The Bank of Mexico has accumulated close to US\$40 billion in reserves from 1995 to the present. See Gonzalez (2001) for an analysis of the resulting appreciation of the peso.

important alternative source of investment. In United States, corporate bond financing represents 9.7% of the gross domestic private fixed capital formation, according to Mayer (1990). It is not clear why the corporate bond market was been stagnant in Mexico. The discussion of pension funds below suggests that it is not an issue of demand for bunds. Navarrete (2001) provides a more complete diagnosis and makes recommendations for improving the performance of the Mexican domestic private bond market. As a final note, anecdotal evidence suggests that like in the case of equities, a number of Mexican firms seem to be issuing a large stock of bonds in the international markets. Therefore, an interesting subject for further research is the performance of the Mexican private bond market abroad.

Figure 3.14
Public Bond Market Capitalization



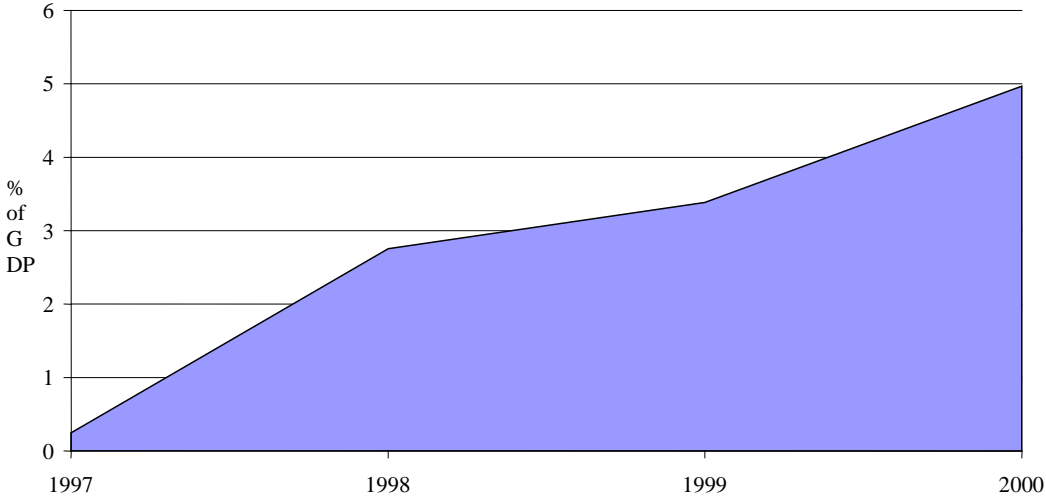
Sources: Bank of Mexico, *Economic and Financial Indicators*, various issues;
For other countries 1990-97 average from Kunt and Levine (1999)

Pension Funds

As mentioned in Section II, while the pension reform began in 1993, funds did not flow to individual capitalization accounts until 1997, which are managed by private pension fund administrators, AFORES. Figure 3.15 shows the evolution of pension assets since 1997. Assets reached 5% of GDP in the year 2000 and the real rates of return have been very high, at 7%. As mentioned before, one of the objectives of privatizing the social security was to increase the domestic savings rate in order to increase domestic private sector investment. As in other

countries in Latin America, regulations prohibit fund managers from investing abroad; and in order to finance the transition, fund managers have to invest at least 65% of their portfolio in government instruments. However, the implementation of the latter restriction has been lax. Pension administrators are currently holding over 90% of their assets in government bonds. Thus the reform of the pension system has created few new resources for the private sector. This indicates that the problem of the domestic corporate bond market and other private financial institutions in Mexico lies, not so much in the lack of funds, but in the lack of “appropriate” instruments. That is, the potential demand for instruments exists but private instruments have not been attractive enough for pension administrators so far.

Figure 3.15
Pensions Funds Capitalization



Source: CONSAR, Statistics Reports, various issues

IV. Conclusions

On the one hand, the depth of the financial reforms is behind the impressive growth of Mexico’s financial sector in the early 1990s. The extent and results of such reforms resemble the Chilean experience in the 1980s. On the other hand, as some scholars have argued, the expansion was not based on fundamentals and that the bubble was bound to burst. The purpose

of this paper is to document the performance of the financial sector in Mexico. We find that the 1995 Mexican crisis has had a lasting detrimental effect on Mexico's formal financial markets. The traditional sources of credit seem to have dried out. In particular, bank credit has shrunk from close to 10% of GDP, or about half of gross domestic investment, to less than 1% of GDP.

The second half of this paper analyzes financial sector performance in Mexico to determine if the correction caused by the 1995 crisis was warranted. We find that by almost all measures of performance, financial intermediation suffered a uniform blow. There was not a correction in the financial structure but a uniform collapse of traditional financial intermediation (bank credit, equity, and bonds) in Mexico.

Surprisingly, economic activity recovered relatively quickly. Even more puzzling is the fact that gross domestic investment surpassed its pre-crisis level as early as 1996. This suggests that the existence of unconventional sources of finance that have evolved to replace the traditional sources of funds. In this sense the paper has raised important questions concerning the nature of these sources of finance and their sustainability.

BIBLIOGRAPHY

Barth, Marvin and Ramey, Valerie, 2000. "The Cost Channel of monetary Transmission," NBER Working Paper 7675.

Berger, Allen and Udell, Gregory, 1998. "The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle," *Journal of Banking and Finance*, 22: 613-673.

Bernanke, B and Gertler, M, 1995. "Inside the Black Box: The Credit Channel of Monetary Policy Transmission," *Journal of Economic Perspectives*, Vol. 9(4).

Copelman, Martina, 2000. "Financial Structure and Economic Activity in Mexico." Presented at the conference "Financial Structures and Economic Development" World Bank Feb 10-11, 2000.

Dermiguc-Kunt and R. Levine, 1999. "Bank-based and Market-based Financial Systems: cross-country comparisons." Manuscript. The World Bank.

Gallego F., and Loayza N., 2000. "Financial Structure in Chile: Macroeconomic Developments and Microeconomic Effects." Presented at the conference "Financial Structures and Economic Development" World Bank Feb 10-11, 2000.

Gelos, Gaston and Werner, Alejandro, 1999. "Financial Liberalization, Credit Constraints and Collateral: Investment in the Mexican Manufacturing Sector." IMF Working Paper 99/25.

Gil Diaz, Francisco, 2000. "The China Syndrome or the Tequila Crisis." Working Paper #77, Center for Research on Economic Development and Policy Reform, Stanford University

King, R., and Levine, R., 1993. "Finance and Growth: Schumpeter Might Be Right." *Quarterly Journal of Economics* 108, August:717-37

---- 2000. "Finance, Entrepreneurship, and Growth." Paper presented at the conference "How do national policies affect growth" World Bank, February 2000.

Johnson, Simon, McMillan, John, and Woodruff, Christopher, 2000. "Property Rights and Finance." Working paper, UCSD.

Levine., R., 1997. "Financial Development and Economic Growth: Views and Agenda." *Journal of Economic Literature* 32(2)

La Porta, Rafael, Lopez-de-Silanes, Florencio, Shleifer, Andrei, and Vishny, Robert, 1997. "Legal Determinants of Finance" *Journal of Finance*, Vol LII, No 3, July 1997.

McQuerry, Elizabeth, 1999. "The Banking Sector Rescue in Mexico." *Economic Review*. Federal Reserve Bank of Atlanta. Third Quarter 1999

Montes-Negret Fernando and Luis Landa, "Interest Rate Spreads in Mexico during Liberalization." World Bank working paper.

Ortiz, Guillermo, 1994. "Reforma Financiera y Desincorporacion Bancaria." *Fondo de Cultura Economica*.

Peterson, Mitchell A. and Rajan, Raghuram G., 1997. "Trade Credit: Theories and Evidence," *Review of Financial Studies*, Fall 1997, 10, 661-692.

Rajan, Raghuram and Zingales, Luigi, 1998. "Financial Dependence and Growth." *American Economic Review*, Vol 88(3), pp 559-586

United States Federal Reserve, 1994. *Codebook for the 1993 National Survey of Small Business Finances*, Washington, DC.

Woodruff, Christopher and Zenteno, Rene, 2000. "The Birth and Growth of Firms in Mexico."

Project proposal funded by UC-Mexus/CONACYT