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**Foreign Banks and the Mexican Economy,
1997-2004**

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In 1997 Mexico's banking laws were reformed, allowing foreign firms, for the first time since the 1880s, to own banks without restriction.¹ The goal of this legislation was to lower the costs of recapitalizing the country's banks, which had collapsed during the 1995-96 banking crisis and had been rescued by a series of government-financed restructurings.² The reform set off a wave of mergers and acquisitions that put all of Mexico's large commercial banks in the hands of Spanish, Canadian, British, and U.S. firms. At the time that these reforms went into effect in early 1997, foreign banks controlled 16 percent of Mexican bank assets. By June 2004, foreign-owned banks accounted for 82 percent of bank assets. (See Table 1 and Graph 1).

What effects did the purchase of Mexico's banks by foreign firms have on their efficiency, lending strategies, and financial performance? The answer to this question is of consequence to academics, policy makers, and the Mexican public. For example, it is widely agreed that, since 1997, Mexico's banks have reduced the amount of credit they provide to households and business enterprises in both absolute and relative terms. Adjusted for inflation, real non-government lending is 22 percent less today than in 1997 (and less than half of its 1994 level). What is not clear, however, is whether this outcome was the product of foreign bank entry or was the product of some other factor. Similar questions have been posed about the impact of foreign ownership on interest rate spreads, administrative efficiency, and profit margins.

¹ Until the 1997 reform, foreign ownership had either been entirely prohibited or had been subject to strict limits (Maurer 2002; Del Angel Mobarak 2002; Murillo 2002).

² For a discussion of the collapse and bailout, see Haber 2004.

This paper addresses these questions by employing multivariate regression techniques on a panel data set that we have built. Our data set covers the period March 1997 to June 2004 and includes the financial data that banks were required to report to Mexico's National Banking Commission (the Comisión Nacional Bancaria y de Valores, known by its Spanish acronym, CNBV) each quarter. The detailed nature of the data allow us to control for various characteristics of banks, as well as for the performance of the macro-economy. We break ownership down into three categories: domestically-owned banks, foreign de novo banks (subsidiaries, branches, or representation offices of foreign banks), and foreign mergers and acquisitions (Mexican banks purchased by a foreign bank, henceforth denoted as a Foreign MA bank).³

The focus of our analysis is the Foreign MA banks. We wish to know whether there are systematic differences between them and domestically-owned banks. We note that our panel procedures allow us to answer this question by comparing Foreign MA banks to domestic banks in two dimensions simultaneously: those same banks before they switched to foreign ownership; and the set of banks that were domestically owned throughout the entire period under study.

³ We discriminate between the foreign de novo and Foreign MA banks because they operate in different markets and produce different products. Foreign de novo banks tend to be small in size (they typically account for only two to six percent of total banking system assets) and tend to specialize in corporate lending or investment banking. Indeed, their client lists tend to be a few dozen very large firms. Foreign MA banks, on the other hand, are Mexican retail banks that have been purchased by foreign banking firms. They offer a broad range of financial services for consumers and businesses, and also engage in investment banking operations. We truncate the panel by removing all Foreign de Novo banks. Inasmuch as these banks disappear from the panel at the time that their parent firms purchase a Mexican bank (which are then coded as Foreign MA), leaving the Foreign de Novo banks in the data set comes at a cost to the model because they decrease the panel's balance. We note that our results are not materially affected, however, by separately coding the Foreign de Novo banks and including them in the regressions.

The analysis we present contains some surprising answers to these questions. The evidence indicates that both domestically-owned and Foreign MA banks have become increasingly risk averse. They have allocated progressively less of their assets to loans for private consumption and investment. Instead, they tend to invest in direct loans to government entities and to holding government and corporate securities. Within this general context of risk aversion, we also find, however, that Foreign MA banks tend to be even more risk averse than domestic banks. Holding other factors constant, Foreign MA banks allocate less of their assets to loans for private consumption and investment than do domestic banks. They also screen loans more intensively than domestic banks. As a consequence of their aversion to risk, Foreign MA banks charge lower interest rate spreads (the difference between the interest rate they pay for deposits and charge for loans--the net interest margin) than domestic banks. That is, the evidence suggests that they seek to attract the borrowers with low probability of default by offering lower interest rates.

One would normally associate such a strategy of risk aversion with lower profitability. One would therefore expect (relatively more risk averse) Foreign MA banks to have lower returns on equity than (relatively risk neutral) domestic banks. We do find that there is some return to risk. Nevertheless, we also find that whatever payoff banks obtain from assuming more risk does not translate into a statistically significant difference between the rate of return on equity earned by Foreign MA and domestic banks. Our results on rates of return, we hasten to note, are not the consequence of lower administrative costs in Foreign MA banks. We find, in fact, that Foreign MA banks have the same administrative costs as domestic banks. The evidence suggests, instead, that the

strategy of Foreign MA banks of investing in corporate and government securities, direct loans to government, and FOBAPROA-IPAB bailout bonds is economically rational. From the point of view of bank stockholders, the cost of risk aversion appear to be negligible.

The reason for these surprising outcomes may be rooted in the difficulty that banks have in navigating Mexico's property rights environment. For most of Mexico's history, bankers relied on informal mechanisms to assess credit risks. Essentially, banks lent primarily to members of well established business networks, who essentially pledged their reputations as collateral. Many of these borrowers were, in fact, family members of banks directors—or were the directors themselves. (Maurer and Haber 2004; Del Angel Mobarak 2002). Mexico then expropriated the private banking system in 1982, and then privatized those expropriated banks in 1991. The new owners inherited banks that did not have well developed internal systems of credit analysis. Indeed, they were virtually non-existent (Mackey 1999:56). They could also not draw on private credit bureaus: the first bureaus were not founded until 1993, and it was not until 1995 that rules were established governing their operation. (Mackey 1999: 25). Thus, while private credit bureaus now exist, they do not provide the broad range or quality of information on potential borrowers that is available in developed economies. (Negrin 2000). This creates a problem for all banks in Mexico, but it puts foreign banks at a particular disadvantage: they are less able to draw upon informal mechanisms to assess credit risks than their domestically-owned competitors.⁴

Misjudging the risk that a borrower will default in Mexico is not costless. Bankruptcy procedures in Mexico are cumbersome in the extreme. Not only does the

⁴ Mexico is thus an example of a more general phenomenon explored by Lenisk and Hermes 2004.

country have few bankruptcy judges, the bankruptcy law requires judges to pass resolutions on each and every objection presented by debtors. Debtors can therefore raise long strings objections, and thus forestall the recovery of collateral for years. (Mackey 1999: 101). A series of reforms beginning in 2000, which replaced liens with trusts (in which the bank is both the trustee and beneficiary), has helped streamline the repossession of consumer durables and houses. (Caloca González ND). Nevertheless, these reforms have not mitigated all of the problems of contract enforcement. For example, debtors can frustrate a bank's attempt to repossess a house by "leasing" the house to a family member, who is then protected by Mexico's favorable renters laws. In addition, court orders to repossess homes are often not enforced by the police—either because of corruption or because the act of repossession will produce a public demonstration. In short, the enforcement of contract rights in Mexico remains, by the standards of developed economies, difficult.⁵

Foreign MA banks have, therefore chosen a strategy that is rational under the circumstances: allocate assets toward the holding of securities; avoid loan markets with poor transparency; and price credit so as to attract the borrowers with the lowest probability of default. This strategy has, however, come at the cost of reduced lending for private investment and consumption.

⁵ As a consequence, some lenders engage in costly monitoring and enforcement mechanisms. For example, non-bank financial entities that specialize in housing loans (known by the Spanish acronym, SOFOL) send agents directly to the homes of debtors in arrears immediately after a payment is missed. If they think that there is a high probability that the debtor will be unable to make the payment, they will then pay the debtor to vacate the house, rather than go through the lengthy legal process of foreclosure and repossession.

We wish to be clear that we are not arguing that Mexico would have been better off had it not allowed foreign bank entry. Foreign banks played a crucial role in recapitalizing a number of large Mexican banks in the aftermath of the 1995-96 financial crisis. We would also stress that the evidence does not indicate that domestically-owned banks would have continued to follow their 1991-95 lending strategies in the absence of foreign entry. The evidence suggests, in fact, that both Foreign MA and domestically-owned banks have become more risk averse. Mexico's banks were reducing the amount of private credit they granted even before they were purchased by foreign banks. Within this general context of aversion to risk, however, Foreign MA banks appear to be even more risk averse than domestic banks.

We are arguing, however, that allowing foreign entry is not a panacea for a fragile banking system. Mexico's banking system from 1991 to 1995 was fragile because of two characteristics of its institutional environment. First, given the rules governing the privatization of the banks in 1991, as well as the rules governing deposit insurance, the owners of Mexico's banks had weak incentives to behave prudently. Second, it was extraordinarily difficult for bankers to enforce their contract rights once their imprudent loans became non-performing. (Haber 2004) Foreign entry, along with a series of accounting and regulatory reforms, largely mitigated the problem of imprudent behavior.

The second problem—weak property rights—largely remains. Policy makers in Mexico have begun to reform the institutions governing property rights—particularly by taking the adjudication of collateral recovery out of the bankruptcy courts. Nevertheless, property rights systems are composed of numerous, mutually reinforcing institutions. Some of these can be reformed by legislative or administrative acts. Others (for example,

judicial and police corruption) are not so easily reformed. Still other classes of property rights institutions are largely informal—such as the reluctance of the police to enforce a court-ordered repossession, because they fear a demonstration by the entire neighborhood. Thus, Mexico now has prudent bankers, but prudent bankers, in the context of weak property rights, make few loans.

METHODS

This paper builds upon a broad literature on the relationship between banking market structure, foreign bank entry, and bank performance.⁶ We draw, in particular, on the methods developed by Martinez Peria and Mody (2004) in their study of the impact of foreign ownership and market concentration on interest rate spreads in Latin American banks.

We build upon and go beyond the extant literature in three ways. First, most studies of the impact of foreign bank entry lump all foreign banks together.⁷ This is problematic, because there are actually two different types of foreign banks operating in most countries: representation offices or small subsidiary operations of foreign banks that specialize in making large corporate loans or providing investment banking services; and foreign-owned commercial banks that provide a broad range of consumer, small business, and housing loans, as well as engaging in investment banking. The former tend to have

⁶ For representative works on the impact of foreign bank entry, see: Barajas, Steiner, and Salazar 2000; Barth, Caprio, and Levine 2000; Berger, DeYoung, Ganay and Udell 2000; Claessens, Demirgüç-Kunt, and Huizinga 2001; Clark, Cull, Martinez Peria, and Sanchez 2004; Demirgüç-Kunt and Huizinga 1998; Demirgüç-Kunt, Laeven, and Levine 2004; Denizer 1999; Lenisk and Hermes. 2004; Levine 2002; Martinez Peria and Mody 2004; Mian 2003; Sturm and Williams 2004.

⁷ Martinez Peria and Mody (2004) is a notable exception.

client lists made up of a few dozen blue-chip corporations and tend not to compete directly with domestically-owned banks in retail markets. The latter have millions of clients, and compete directly with domestically-owned banks in retail markets. We therefore truncate our data set, removing those foreign banks that are engaged in boutique banking.

Second, the detailed nature of our data set means that we can estimate regressions with more precision than is generally the case in the literature. We can, in particular, control for the allocation of assets among different types of loans, as well as between loans and investments in securities.

Third, the detailed nature of the data allows us to address a range of questions that are usually not examined in the literature. Most studies focus on two issues: the impact of foreign entry on administrative efficiency and interest rate spreads (net interest margins). Some studies also address bank rates of return. We are able to explore these issues, and, in addition, explore the impact of foreign entry on capitalization, borrower screening, and portfolio allocation.

Phases of Foreign Bank Entry: Methodological Implications

There were three phases of foreign entry into the Mexican market, and these have implications for how we construct and code the data set. In the first phase, which took place from 1991 to 1995, foreign banks set up representation offices or subsidiaries in Mexico. These operations tended to specialize in investment banking or corporate lending, and their client lists were typically just a few dozen very large firms. Following Martinez Peria and Mody we code these banks as “Foreign de Novo.” We exclude them

from our analysis because they produced different products and competed in different markets from domestic banks.⁸ Indeed, they were also quite small, typically accounting for only three or four percent of total bank assets in Mexico during this initial period of foreign entry.

In the second phase of foreign bank entry, which largely took place during 1996, some Foreign de Novo banks purchased small domestic banks and established themselves as retail lenders. To cite two examples, the Banco de Bilbao y Vizcaya (BBV) purchased the Banco Mercantil Probusa and the Banco de Santander purchased the Banco Mexicano. The impact of these mergers was fairly limited, as the acquired banks tended to be of very modest size. As late as December 1996, the combined market share of these Foreign MA banks was only four percent. Nevertheless, these Foreign MA banks operated in the same markets as domestically owned banks. We include these Foreign MA banks in our analysis.

The third phase of foreign entry took place from 1997 to 2004, when changes in regulations allowed Mexico's largest banks to be acquired by foreign banks. These mergers and acquisitions include the purchase of Banco Confia by Citibank in 1998, the purchase of Inverlat by Scotiabank in 2000, the purchase of Banca Serfin by the Banco de Santander in 2000, the purchase of Bancomer by the Banco de Bilbao y Vizcaya in 2000, the purchase of Banamex by Citibank in 2002, and the purchase of Banco Bital by HSBC in 2002.

⁸ We note that the addition of these banks to our data set, and the addition of a dummy variable to control for their different characteristics, does not have a material effect on the regression results.

In an ideal world, we would begin our analysis prior to the entry of any Foreign MA bank—which is to say 1996 or before. Instead, we begin our analysis in March 1997, and do so for two reasons. First, the macroeconomic instability of 1995-96, coupled to widespread debtor defaults and ensuing bank interventions by the government, means that we would not expect stable relationships among variables across the periods 1995-96 and 1997-2004. Second, as a consequence of the insolvency of many banks in 1995-96, the government carried out a reform of bank accounting standards that went into effect in March 1997. It is therefore difficult to link 1995-96 accounting categories with those from 1997-2004.

Nevertheless, our data set captures the period in which the greatest changes in Mexican bank ownership occurred. At the beginning of the period under study (March 1997), only three of Mexico's 19 reporting banks were Foreign MA (GE Capital Bank, Banco Bilbao Vizcaya, and Santander Mexicano).⁹ These three banks accounted for only 14.2 percent of bank assets (Foreign de Novo banks accounted for an additional 1.4 percent). At the end of the period under study, seven of Mexico's 19 reporting banks were Foreign MA (GE Capital Bank, Santander Mexicano, Santander Serfin, Bital, Banamex, BBV Bancomer, ScotiaBank Inverlat). These seven banks controlled 75.5 percent of bank assets. Foreign de Novo banks accounted for an additional 6.2 percent of assets. (see Table 1 and Graph 1).

⁹ These figures exclude Foreign de Novo banks.

Variables:

We capture differences in ownership with a dummy variable. Foreign MA takes on a value of 0 if a bank is domestically owned, and takes on a value of 1 if that bank is acquired or merged with a foreign bank. That is, it captures the impact of the change in ownership, from domestic to foreign.¹⁰

One might think that the Foreign MA dummy might be picking up changes in the competitive structure of the banking market caused by consolidation. We therefore experimented with two variables to capture the impact of market consolidation: *Market Share* (the share of the loan market controlled by each bank), and *Concentration* (the Herfindahl-Hirschman Index). The *Concentration* variable never produced statistically significant results, nor did its introduction alter the sign and significance of other variables.¹¹ We therefore do not report the results on *Concentration*. Our *Market Share* variable did, at times, produce statistically significant results, but its introduction had

¹⁰Our coding rule was as follows. Foreign MA was coded as 1 if a foreign bank purchased a controlling interest in a domestic Mexican bank. This usually meant the merger of a small Foreign de Novo bank with a larger domestic bank. At this point, the foreign de novo bank almost always ceases to exist as an independent reporting unit. The domestic bank continues to exist as a reporting unit, and we code it as Foreign MA. We note that some of our observations include multiple mergers. For example, Citibank purchased Banco Confia in 1998 and then Banamex in 2002. Our coding rules were as follows. Prior to 1998 Citibank is coded as a Foreign de Novo bank and Confia is coded as a domestic bank. After the acquisition, the merged bank is coded as a Foreign MA bank (Confia ceased to exist as a reporting unit, but Citibank continued to exist). Prior to its purchase by Citibank in 2002, Banamex was coded as a domestic bank. After its merger was announced, we changed its coding to Foreign MA. A short while later, once Citibank had been administratively integrated into Banamex, Citibank ceased to exist as an independent reporting unit.

¹¹ We obtain this result because there is very little variation on the concentration variable. Mexico had an extraordinarily concentrated banking system in 1997 and continued to have one in 2004. In point of fact, Mexico has had an extraordinarily concentrated banking system since the nineteenth century.

little material impact on the coefficient for *Foreign MA*. That is, our results were always robust to controls for changes in the competitive structure of the market.

One might also think that changes in the macroeconomy might be driving the results we obtain on *Foreign MA*. We therefore include three macroeconomic variables. *Industrial Output Growth* measures quarterly changes in industrial production, capturing changes in the business cycle.¹² *Money Market Rate* (the short term money market interest rate) is included to control for the impact of the cost of funds faced by banks. It also controls for “crowding out” effects caused by potential increases in demand for finance by government. *Inflation* is included because changes in the inflation rate potentially affect bank strategies (particularly the term structure of loans) and bank profit margins (particularly if deposit interest rates and loan interest rates do not adjust to changes in inflation at identical speeds).

One might argue that our results on *Foreign MA* are picking up time effects that are independent of foreign ownership and independent of changes in the macroeconomy. For example, Foreign MA banks came to control an increasing proportion of the market for banking services *over time*. One might therefore think that this put domestic banks under increasing competitive pressure, which might have affected their lending strategies and pricing (with concomitant effects on their profit margins and rates of return). That is, there may have been spillover effects from the entry of Foreign MA banks. We therefore introduce a variable, in additional specifications, for *Time*. We note that it never has a material effect on the coefficient on Foreign MA.

¹² Ideally, we would employ the growth in GDP rather than industrial output. The IMF, however, reports quarterly GDP figures one quarter after it reports industrial output. Using GDP would therefore force us to drop our observations for June 2004. We note that the substitution of industrial output for GDP does not materially affect our results.

Depending on the left hand side variable of interest, we also introduce variables that control for the characteristics of banks that are independent of their ownership. *Equity* is the share of owner's equity (paid in capital plus reserves) to total assets. The lower the equity ratio, the more highly leveraged is the bank. *Liquidity* is the ratio of liquid to total assets, where liquid assets are cash and deposit balances in other banks (including the central bank). High liquidity ratios represent a cost imposed on banks (either by themselves or by regulators) because the bank could earn a higher return if it did not hold these assets in cash. *Administrative Cost* is the ratio of administrative expenses (including payrolls) to total assets.

Depending on the left hand side variable of interest, we include variables to control for the term structure and riskiness of a bank's portfolio. We control for the composition of bank assets with four variables: *Housing Loans over Assets*, *Commercial Loans over Assets*, *Consumer Loans over Assets*, and *FOBAPROA over Assets*. The first three variables are the ratios of each of those types of loans to a bank's total assets. *Fobaproa over Assets* is the percent of a bank's assets that is comprised of promissory notes issued by the government's deposit insurance agencies (FOBAPROA and IPAB). These promissory notes were swapped for non-performing (or otherwise weak) loans during the bailout of Mexico's banks. The omitted categories are corporate and government securities held by banks, inter-bank loans, and direct loans to government entities. Thus, our portfolio variables simultaneously control for the distribution of assets between loans and investments in securities, and for the distribution of loans by type. One might argue that these variables measure risk ex ante (they capture how banks chose to invest their assets, given what the bank perceives to be the relative risks and returns

associated with those investments), not the risk faced by banks ex post. In some specifications we therefore measure default risk ex post by including the ratio of non-performing loans to total loans (*NPL*).

Finally, in order to control for the possibility that outliers might drive our regression results we cull those cases in which the value of the dependent variable falls in either the top or bottom one percent of the distribution.

Table 2 contains a description of the variables used in our analysis. Table 3 presents the means and standard deviations of each variable.

SOURCES

We obtained, and put into machine readable form, balance sheets, income statements, and loan portfolios on a quarterly basis for every bank from March 1997 to June 2004. This data was gathered by Mexico's CNBV for the purpose of regulating the banks, and was then published in the CNBV's Boletín Estadístico de Banca Múltiple. The most recent quarters of data were available from the CNBV's website.¹³ For some reporting periods, some of the data was published by the CNBV in cumulative form (each quarter's data was the sum of that quarter's activity, plus the activity of the previous quarter). Undoing these cumulative totals was, after identifying the cases, a straightforward process. Some of the data for some reporting periods was also published

¹³ WWW.CNBV.gob.mx. The CNBV website includes data from 1998 to 2004. Readers who may wish to replicate or extend our results should be cautioned not to rely on the website alone, because the CNBV deletes historical data for banks that later merged with other banks or otherwise exited the market. Simply downloading the 1998-2004 data from the CNBV website will produce a truncated sample of surviving, merged banks.

by the CNBV in deflated form (where the data had been first run through a price index). After identifying the cases, un-deflating the data was a straightforward process.

We identified banks by ownership type (foreign and domestic) from information on bank mergers and acquisitions compiled by Mexico's Comisión Nacional para la Protección y Defensa de los Usuarios de Servicios Financieros (CONDUSEF), and posted to their website.¹⁴ We used the same source to also identify those banks that had been subject to mergers and acquisitions (both by other domestic banks and by foreign banks). This allowed us to properly code reporting banks over time.

EMPIRICAL RESULTS:

Bank Capitalization:

The principal reason why the Mexican government liberalized the laws governing foreign entry was to recapitalize the banking system in the aftermath of the 1995-96 banking system collapse and bailout. We therefore begin our analysis by considering whether foreign bank entry accomplished this goal.

As a first pass at the question, we graph the equity ratios of the two largest banks in Mexico (Bancomer and Banamex, which jointly account for roughly half of all assets). Both banks were acquired by foreign banks (BBV purchased Bancomer in 2000, Citibank

¹⁴ The URL for this site has changed over time. Its current location is: <http://sipres.condusef.gob.mx/home/SQLsectoresSHCP.asp?ID=40> .

purchased Banamex in 2002). We also graph the unweighted average equity ratio for all banks (domestically owned and Foreign MA). (See Graph 2).¹⁵

The graphed data indicate that foreign entry raised the equity ratios of acquired banks. The mean equity ratio increased monotonically from 1998 (when it was 12 percent) to 2004 (when it was 16 percent). That is, the period associated with increased foreign participation in the market is associated with higher equity ratios. In the case of Bancomer, there is a clear connection between being acquired and increased capitalization: its ratio hovered at around eight percent before 2000; and then climbed to 12 percent thereafter. In the case of Banamex, however, the data are less clear cut: Banamex appears to have been recapitalized prior to being acquired by Citibank in the fourth quarter of 2002. Its equity ratio displays no clear trend thereafter.

It is one thing to show that equity ratios have increased over time. It is another to demonstrate that foreign banks are better capitalized than domestically owned banks. We therefore estimate an OLS regression on the pooled data set in which the dependent variable is bank equity ratios. We control for the aforementioned macroeconomic variables (Inflation, Money Market Interest Rate, and Industrial Output Growth). The results are presented in Table 4.

The results are, at first glance, somewhat surprising: the coefficient on Foreign MA in specification 1 is negative and is statistically significant at the one percent level. The coefficient of $-.0364$ indicates that, holding all else equal, Foreign MA banks have

¹⁵ In the calculation of equity ratios, assets are typically weighted by risk. The data at our disposal do not, however, allow us to compute risk-weighted assets at low cost. We therefore compute the equity ratio as owner's equity over total assets.

equity ratios 3.6 percentage points below those of domestically-owned banks. This result is robust to the addition of a time trend (specifications 2 and 3).

The most straightforward explanation for this result is that foreign banks tended to acquire Mexican banks with very low equity ratios. That is, the domestic banks that were acquired by foreign banks were precisely the banks that needed infusions of capital. A glance at Graph 2 confirms this interpretation: the unweighted mean equity ratio is consistently above that of Bancomer and Banamex. This is most especially the case during those quarters when they were still domestically owned. Even after foreign acquisition, however, they continued to be less well capitalized than the average bank. This pattern holds for other Foreign MA banks, such as Serfin and Bital, that we do not graph here. In fact, the equity ratios of these two banks are even lower than those of Banamex and Bancomer.

Bank Strategies:

Credit Allocation:

There is no doubt that Mexican banks have constrained credit since the financial system collapse of 1995-96. As Table 5 and Graph 3 demonstrate, the proportion of assets that banks have allocated to credit for households and private business enterprises steadily declined from 49 percent in the fourth quarter of 1997 to 29 percent in the second quarter of 2004. This decrease is not just relative to the stock of bank assets, it is an absolute decrease in real terms (see Table 5 and Graph 3). In point of fact, the stock of bank lending to households and business enterprises, adjusted for inflation, fell by 22

percent from the fourth quarter of 1997 to the second quarter of 2004.¹⁶ The decline is even more pronounced if we compare 2004 data to the levels of bank lending before the 1995-96 banking crisis. (See Graph 4).

Is the retreat from private credit markets the product of foreign bank entry, or is it caused by some other factor? As a first pass in answering this question we graph the share of assets in Banamex and Bancomer that are dedicated to loans to private firms and households (see Graph 5). We also present the unweighted mean of the private lending ratio for all Mexican banks.

Banamex and Bancomer have been steadily retreating from private credit markets. The ratio of private loans to assets in Banamex fell from 57 percent in mid 1997 to 27 percent in June 2004. The ratio of private loans to assets in Bancomer fell from 58 percent to 29 percent over the same period.¹⁷ These declines in lending have been much more rapid than those of the average bank (the trend for the unweighted mean is fairly flat). We hasten to note, however, that these declines began well before Banamex and Bancomer were acquired by foreign banks (though the decline continued apace after their

¹⁶ These data understate the degree to which lending has declined. Our data are stocks of loans, not flows. Inasmuch as many types of loans, particularly those for housing, automobiles, and other consumer durables, have multi-year terms, the stock of loans is serially correlated. The implication is that the flow of new loans for private purposes has declined more dramatically than the data we present here.

¹⁷ The increases in private lending indicated in Graph 5 from the first to the third quarters of 1997 are not the product of new lending. Rather, they are the product of changes in accounting standards that forced banks to treat “restructured” loans (which they had been carrying in a separate category) as either a performing or as a past due loan. Some “restructured” loans were therefore transferred to the housing loan category. Other “restructured” loans were transferred to FOBAPROA, or were simply written off.

acquisition). The same pattern of decline in lending holds for the two other large foreign MA banks (Serfin and Bital) whose data are not included in Graph 5.

One might argue that the decline in the ratio of private loans to assets in Mexico's biggest banks is a consequence of changes in the macroeconomy that might have made credit extension more risky. One might also argue that the decline in private lending is the consequence of the fact that until 1999 Mexico's largest banks (which later became Foreign MA banks) were able to transfer many of their weakest loans to the government's deposit insurance agencies (FOBAPROA, and its successor IPAB). When we graph the data on FOBAPROA-IPAB promissory notes as a percentage of bank assets we find that banks were, in fact, swapping the loans for these promissory notes through 1999. (See Graph 6). The share of Banamex and Bancomer assets composed of FOBAPROA-IPAB bonds jumped from less than 15 percent in 1997 to more than 25 percent by 1999.¹⁸ Thus, the declines in private lending prior to 2000 might be driven by FOBAPROA-IPAB swaps.

¹⁸ Even though the proportion of their assets comprised of these promissory notes declined after 1999, Banamex and Bancomer continued to hold relatively more of their assets in FOBAPROA-IPAB notes than the average bank. This pattern holds for other large Foreign MA banks (Bital and Serfin) as well. The pattern stands up to regression analysis as well, which indicates that, controlling for changes in the macroeconomy, Foreign MA banks have 13 percentage points more of their assets in the form of FOBAPROA-IPAB bonds. The cause for this difference lies in the fact that foreign firms tended to purchase Mexican banks that had large proportions of their assets in FOBAPROA-IPAB bonds. This is consistent with the fact that foreign firms tended to purchase undercapitalized banks: banks that needed capital infusions were precisely those banks that had large amounts of unrecoverable loans that were swapped for FOBAPROA-IPAB bonds. It is also broadly consistent with the argument made by González (2003), that the large number of FOBAPROA-IPAB bonds in the portfolios of the largest banks provides a disincentive for those banks to expand lending (they earn a steady and predictable rate of return from these promissory notes).

We therefore estimate an OLS regression on private lending as a percentage of assets. Because the stock of private loans will be directly affected by the stock of loans that were transferred to FOBAPROA and IPAB, we control for the proportion of banks assets that are FOBAPROA or IPAB bonds. We also control for changes in the macroeconomy (with the aforementioned Inflation, Money Market Interest Rate, and Industrial Output variables). The results are reported in Table 6.

We find that banks have been reducing the amount of credit they extend (as a percentage of their assets) over time. The coefficient on Time in Specification 1 is negative, statistically significant at the five percent level, and of large magnitude. The coefficient on Time of $-.0057$ indicates that, all else being equal, banks have been reducing the share of their assets that they extend as loans by 0.57 percentage points *per quarter*. Over 29 quarters the effect is huge—a 16.5 percentage point drop in lending.

We also find that the reduction in lending is not associated with government borrowing “crowding out” private lending. If that were the case, then we would expect to find an inverse relationship between the money market interest rate and private lending (increased government borrowing would bid up the yield on government bonds, which would, in turn, bid up the money market rate). We find, however, that there is a positive (but small) effect on money market rates on lending.

We also find that Foreign MA banks have reduced the share of their assets that they allocate to private lending even more than domestic banks. In specification 2, the Foreign MA dummy is negative, significant at the one percent level, and of large magnitude. All else being equal, Foreign MA banks allocate 4.6 percentage points less of their assets to private loans than do domestically-owned banks. Moreover, this result is

robust to the addition of a time trend (specification 3). That is, the overall trend for the industry is to make fewer loans to households and business enterprises, and Foreign MA banks make fewer loans still.

These results are also robust to the addition of other control variables. We introduce controls for market share, the cash assets ratio, and the equity ratio. None of these variables, individually or together, had any material effect on the Foreign MA coefficient. (The joint impact of these variables can be seen in specification 4).

Borrower Screening:

If Foreign MA banks are more risk averse than domestically owned banks, then it should logically follow that they subject borrowers to more intense screening. We cannot directly observe the process of borrower screening, but we can observe its outcome: a bank that screens borrowers more closely will have a lower ratio of non-performing to total loans.

As was the case with the data on bank portfolio allocation, we need to separate out the decline in non-performing loans that came from swapping some of them for FOBAPROA-IPAB promissory notes from the effect of being purchased by a foreign bank. We therefore estimate an OLS regression on the ratio of non-performing loans in which we control for the ratio of assets comprised of FOBAPROA-IPAB bonds. We also control for the distribution of loans among different categories (because different types of loans have different default rates). Finally, we control for changes in the macroeconomy, because increases in non-performing loans might simply be driven by increases in inflation (many loans are variable rate), downturns in the business cycle, or decisions by

the central bank to raise interest rates. We therefore introduce our three macroeconomic variables (Inflation, Money Market Interest Rate, Industrial Output Growth).

The results are presented in Table 7. The estimated coefficients on the control variables have the signs that one would expect. FOBAPROA is negatively correlated with non-performing loans, because the more FOBAPROA-IPAB bonds a bank has in its portfolio, the fewer loans it has that can be defaulted on. Mortgage loans are notoriously subject to default in Mexico (in March 2004, 7.6 percent of all housing loans made by commercial banks were past due). Not surprisingly, the coefficient on Housing is positive, of huge magnitude, and significant at the one percent level.

Specification 1 includes the Foreign MA dummy. The coefficient on Foreign MA is negative, significant at the one percent level, and of large magnitude. All else being the same, Foreign MA banks have a ratio of non-performing to total loans that is 2.54 percentage points below that of domestic banks. This result is robust to the addition of a time trend (see specifications 2 and 3). It is also robust to a series of additional variables that control for other bank characteristics, such as the equity ratio (banks with lower equity ratios tend to take more risks, because stockholders have less capital at risk), the cash-assets ratio (banks which hold lots of their assets in cash have lower default rates, because they make fewer loans), and bank market shares (banks with large branch networks can redirect credit from regions with locally high default rates to regions that have healthier local economies). We introduce these variables individually and simultaneously, but report only the simultaneous results. (Specification 4). They do not have a material effect on the Foreign MA coefficient. In sum, regardless of how we

specify the regression, the result holds that Foreign MA banks screen borrowers more intensively.

Bank Performance:

Interest Rate Spreads

In an efficient market, risk averse banks charge lower interest rates. They allocate their portfolios to categories of loans that have low rates of default (which tend, therefore, to carry lower interest rates), and within loan categories, they offer lower interest rates to the borrowers with the lowest probability of default.

This generates two testable implications. First, (relatively more risk averse) Foreign MA banks should charge lower interest rate spreads than (relatively risk neutral) domestic banks. Second, because the difference in spreads is caused by risk aversion, we should expect that the introduction of controls that proxy risk aversion via the choice of loan portfolio should reduce the estimated interest rate differentials between Foreign MA and domestic banks.

We therefore estimate an OLS regression on net interest margins. Following Martinez Peria and Mody, our specifications include the factors that banks take into account when they choose the interest rate spread. Thus, we control for changes in the macroeconomy with variables for inflation, industrial output growth, and the short-term money market rate. We control for bank equity ratios, because the more highly leveraged a bank the weaker are its incentives to make loans that are low risk (and that therefore have lower interest rates). We also control for the bank liquidity ratio (the ratio of cash to assets), because banks that hold more cash charge higher interest rates in order to

compensate for the fact that the portfolio allocated to cash earns no income. Finally, we control for administrative costs, because banks price these costs into the spread they charge borrowers. We present the results in Table 8. We note that these control variables have the signs that one would expect from theory.¹⁹

Specification includes a dummy variable for Foreign MA. As predicted, Foreign MA banks charge lower net interest margins than domestically-owned banks. The coefficient of $-.0042$ indicates that, all things being the same, Foreign MA banks charge spreads that are 0.42 percentage points below that of domestic banks. This result is significant at the one percent level of confidence.

One might imagine that controlling for ex post default risk would shrink the difference in spreads charged by Foreign MA and domestic banks. We therefore add a variable for the ratio of non-performing to total loans (NPL) in specification 2. We find, surprisingly, that the coefficient on Foreign MA grows in magnitude. We also find that the coefficient on NPL has the wrong sign. It implies that banks that assume more risk are not being compensated for assuming that risk. In the context of the increase in the size of the Foreign MA coefficient, the negative coefficient on NPL in specification 2 suggests that most of the mismatch between risk and returns is taking place in domestic banks. This interpretation is consistent with the results in Table 7, where we demonstrated that Foreign MA banks had lower NPL ratios than domestic banks, even when we controlled for how banks allocated their loan portfolios.

One might also imagine that the introduction of controls for portfolio allocation would reduce the estimated coefficient on Foreign MA. That is, if much of the difference

¹⁹ Our results on Foreign MA are not sensitive to dropping the equity and liquidity variables.

in interest rate spreads between Foreign MA and domestic banks is the product of how they allocate their portfolios to balance risks and returns, then controlling for portfolio allocation should drive down the estimated difference between the two types of banks. In specification 3 we therefore add our four portfolio variables (Consumer, Housing, Commercial and Fobaproa). We find that their inclusion has the predicted effects. First, the coefficient on Foreign MA decreases in magnitude (from -.0042 in specification 1 to -.0028 in specification 3).²⁰ Second, the goodness of fit of the regression improves markedly. The R^2 increases from .27 to .39 and the F statistic increases four-fold. Nevertheless, the regression indicates that even when we control for portfolio allocation, there is still a significant difference between the interest rate spreads charged by Foreign MA and domestic banks. This result suggests that Foreign MA banks charge lower interest rate spreads in order to attract borrowers with lower probabilities of default.

In specifications 4 and 5 we experiment with the addition of the Time variable in order to determine if there is a time trend and in order to test for the robustness of the Foreign MA coefficient. We find, surprisingly, that controlling for changes in bank capitalization, changes in the macroeconomy, and changes in how banks allocate their portfolios, interest rate spreads have neither risen nor fallen. We also find that the estimated differences between Foreign MA and domestic banks are robust to the addition of the time trend. In short, no matter how we specify the regression, Foreign MA banks charge lower interest spreads than domestic banks.

We note, in fact, that these patterns in the data can be seen in the graphed raw data. In Graph 7 we present the unweighted mean net interest margin for all banks, as

²⁰ A T-test confirms that these coefficients are statistically different from one another.

well as the observations for Banamex and Bancomer. The graph indicates that, since their purchase by foreign banks, Banamex and Bancomer have been charging lower margins than the mean bank. We note that graphed interest spreads of Serfin and Bitel, two other large Foreign MA banks (whose data is not graphed here) follow the same pattern as Banamex and Bancomer.

Rate of Return on Equity

Is the risk aversion of Foreign MA banks in Mexico economically rational? There are two testable implications of this question. In an efficient market, we would expect that banks that are willing to bear higher risks should earn higher returns than banks that are relatively risk averse. Thus, as a logical corollary, we should expect that Foreign MA banks (which we know are relatively risk averse) should earn lower returns than domestic banks (which we know to be relatively risk neutral). Second, we should expect that when we control for the riskiness of bank loan portfolios, the differences in rates of return among bank types should become smaller in magnitude and/or become less statistically significant.

In order to test these hypotheses we estimate an OLS regression on the rate of return on equity. (See Table 9). In specification 1 we introduce the aforementioned Inflation, Money Market Interest Rate, and Industrial Output Growth variables in order to control for changes in the macroeconomy. We also introduce a variable for Time. We find that banks have become progressively more profitable. The coefficient of .0022 implies that, controlling for changes in the macroeconomy, bank rates of return have increased by 0.22 percentage points *per quarter*. The cumulative effect is non-trivial: all other things being the same, *quarterly* rates of return in 2004 are 6.38 percentage points

higher in the second quarter of 2004 than in the first quarter of 1997 (0.22 times 29). On an annualized basis, this implies that banks in 2004 earn rates of return more than 20 percentage points above their 1997 levels.

In specification 2 we substitute the Foreign MA dummy for Time. We should expect the coefficient on Foreign MA to be negative (more risk averse banks should have lower rates of return). We find, however, that the coefficient on Foreign MA is not statistically significant.

In specification 3 we include both the Foreign MA dummy and Time. We find that the (non-) result we obtained on Foreign MA is robust to the addition of a time variable. We also find that the time variable retains its magnitude and significance. That is, the overall trend is for banks to become more profitable, and Foreign MA banks are neither more nor less profitable than domestic banks. In sum, we can reject the first hypothesis. Foreign banks do not earn lower rates of return than domestic banks, even though Foreign MA banks are willing to bear less risk than domestic banks. We note that this result is consistent with the result we obtained in our net interest margin regressions (Table 8, specification 2): banks that assume greater risks are not compensated for those risks.

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

should earn lower rates of return) and statistically significant. We therefore add our portfolio variables in specification 4.

The results are striking in three senses. First, the coefficient on housing is positive and highly significant. It implies that there is a positive return to holding (relatively risky) housing loans. Second, the coefficient on FOBAPROA is also positive and significant. It implies that there is also a return to holding relatively low risk FOBAPROA-IPAB promissory notes. This result is consistent with the argument made by González (2003) that the FOBAPROA bailout created disincentives for banks to lend. Third, the coefficient on Foreign MA remains statistically insignificant. The regression detects no differences in the rates of return of Foreign MA and domestic banks.

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

Administrative Efficiency:

One might argue that there is no puzzle as to why Foreign MA banks can have the same rate of return as domestic banks even though they are more risk averse: Foreign MA banks are more administratively efficient than domestic banks.

This explanation has one problem: it is not consistent with the evidence. In Table 10 we estimate a series of regressions on the ratio of administrative costs to total assets. In all regression specifications we control for changes in the macroeconomy. We also control for the liquidity ratio (on the assumption that banks that hold more of their assets as cash or bank deposits have lower administrative costs).²¹

Specification 1, which includes the dummy variable for Foreign MA, indicates that Foreign MA banks do not have lower administrative costs—they have higher administrative costs.

Perhaps this result is driven by the fact that Foreign MA banks allocate their portfolios toward assets that incur higher administrative costs? We therefore include the portfolio variables in specification 2. We find that some types of loans are more expensive to administer than others: consumer lending appears to be responsible for higher administrative costs. We also find, however, that the addition of these variables does not change the sign of the Foreign MA coefficient, though it does eliminate its statistical significance. In short, we can reject the hypothesis that Foreign MA banks have lower administrative costs than domestic banks.

²¹ Our regression results were not sensitive to the addition of the liquidity variable. Experiments in which we dropped the variable had no material effect on the other coefficients.

Perhaps it is the case that Foreign MA banks have pushed domestic banks to become more efficient? Thus, both types of banks have simultaneously become more efficient. This is, in fact, the result that researchers usually find in cross-national banking studies.

In order to test this hypothesis we drop the Foreign MA dummy and introduce a Time variable (specification 3). We find that there has been an increase in administrative efficiency over time. The coefficient of $-.0003$ implies that, all else being equal, there has been an increase in administrative efficiency of $.03$ percentage points per quarter. Over the 29 quarters from March 1997 to June 2004, the cumulative effect of 0.87 percentage points is not trivial (compared to a sample mean of 1.0).

In specification 4 we therefore add both the Time and Foreign MA variables. We find that the coefficient on Time is robust to the Foreign MA dummy, but that the Foreign MA dummy remains insignificant. In short, all banks are becoming more efficient over time, but Foreign MA banks are not becoming more efficient at a faster rate than domestic banks.

In sum, we cannot rely on a story about the greater administrative efficiency of Foreign MA banks to solve the puzzle of how risk averse Foreign MA banks can earn the same returns on equity as domestic banks.²² The evidence suggests, instead, that banks

²² One might be tempted to argue that our results are driven by the fact that Foreign MA banks devote more resources to borrower screening than domestic banks. We therefore estimated another specification of the administrative cost regression in which we added a variable for the ratio of non-performing to total loans. The addition of this variable had no material affect on our regression results. One might also argue that our results are driven by diseconomies of scale—that is, Foreign MA banks are large beyond the optimal scale for the Mexican market. We therefore estimated another specification of the administrative cost regression in which we added a variable for market share. This coefficient entered as negative (as market shares increase, administrative costs fall,

that are not risk averse receive no payoff from that strategy. From the point of view of bank stockholders, a strategy of risk aversion is economically rational.

CONCLUSIONS AND IMPLICATIONS:

In recent years, governments around the world have been opening up their banking systems to foreign competition, by removing the legal barriers that prevented foreign firms from acquiring domestic banks. Academics and policymakers have therefore been exploring the impact of foreign bank entry on the efficiency and profitability of banking systems.

The consensus view in the extant literature is that foreign entry has a positive effect on the efficiency of banking systems because it increases the contestability of markets. Most studies conclude that foreign entry reduces administrative costs and lowers net interest margins. Foreign entry therefore drives down bank rates of return.²³

Nevertheless, as Clarke, Cull, Martinez Peria, and Sánchez (2003) note, the literature on the impact of foreign bank entry in developing economies is still in its early stages. Indeed, much of what we know from cross-country studies is from developed economies. As yet, there are very few detailed case studies of developing economies.

This is particularly crucial, because the extant cross country literature suggests that the

indicating scale economies in banking) and significant at the five percent level. Nevertheless, it had no material impact on the coefficient for Foreign MA. See specification 4.

²³ Claessens, Demirguç-Kunt, and Huizinga, 2001; Levine, 1996; Lensink and Hermes 2004; Berger, DeYoung, Genay and Udell, 2000; Clarke, Cull, Martinez Peria, and Sánchez 2003; Martinez Peria and Mody 2004; Sturm and Williams, 2004; Barajas, Steiner and Salazar 2000; Denizer 1999; Clarke, Cull, D'Amato, Molinari 1999; Clarke, Cull, Martinez Peria, and Sánchez 2003 .

impact of foreign entry varies with the level of economic development (Lenisk and Hermes 2004).

Our case study of Mexico from 1997 to 2004 suggests that one of the major differences between developed and underdeveloped economies is the cost of enforcing contracts. Our findings indicate that, in an environment in which it is difficult to assess risk ex ante and enforce contracts ex post, foreign banks are likely to be risk averse. In the Mexican case, this means that they prefer to hold securities and make loans to government, rather than extend credit to firms and households. It also means that they screen borrowers more intensively, and seek out borrowers with lower probabilities of default by offering lower interest rates. Our analysis of the Mexican case also indicates that these strategies, from the point of view of bank stockholders, are economically rational: (risk averse) foreign banks do not earn lower returns on equity than (risk neutral) domestically owned banks.

Our results have two implications. The first concerns the need for more case studies of foreign bank entry in developing economies. The second concerns the problems that face Mexico because of the lack of bank credit. As a number of analysts have pointed out (González 2003; Tornell, Westermann, and Martínez 2003), Mexico's economic performance over the past decade has been sluggish because of the unavailability of credit. Our analysis indicates that foreign bank entry, in and of itself, is not a sufficient solution to this problem. Foreign bank entry in Mexico has increased the administrative efficiency of the banking system. It cannot, however, solve the problem of the high cost of enforcing contracts.

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Table 1
Percent of Bank Assets Under Foreign Ownership in Mexico, 1997-2004

Year	Quarter	Total Bank Assets¹	Share of Foreign MA	Share of ForeignDeNovo	Total Foreign
1997	1	824,688	14.2%	1.4%	15.6%
	2	812,798	12.8%	1.5%	14.4%
	3	824,732	13.9%	1.7%	15.6%
	4	880,823	7.4%	3.8%	11.1%
1998	1	992,504	12.1%	4.1%	16.2%
	2	1,037,168	12.3%	4.3%	16.6%
	3	1,120,161	12.5%	5.0%	17.5%
	4	1,166,850	18.0%	2.1%	20.1%
1999	1	1,200,045	17.7%	1.9%	19.6%
	2	1,203,949	17.5%	2.0%	19.5%
	3	1,227,333	18.3%	2.1%	20.4%
	4	1,292,862	17.5%	1.9%	19.4%
2000	1	1,250,310	18.6%	1.9%	20.5%
	2	1,278,367	18.9%	2.4%	21.4%
	3	1,306,763	28.0%	2.0%	30.1%
	4	1,400,503	54.4%	2.6%	57.0%
2001	1	1,413,395	51.8%	6.6%	58.4%
	2	1,426,794	52.6%	6.1%	58.7%
	3	1,504,221	53.1%	6.2%	59.3%
	4	1,524,175	49.4%	5.1%	54.5%
2002	1	1,548,493	46.6%	5.1%	51.7%
	2	1,584,825	47.5%	5.7%	53.2%
	3	1,614,094	46.1%	5.8%	51.9%
	4	1,676,743	78.0%	3.9%	81.9%
2003	1	1,744,361	76.6%	5.1%	81.7%
	2	1,710,488	76.9%	3.9%	80.8%
	3	1,788,432	75.4%	6.3%	81.7%
	4	1,855,125	76.5%	5.7%	82.1%
2004	1	1,929,977	75.5%	6.5%	82.0%
	2	1,971,384	75.5%	6.2%	82.0%

1. Millions of current pesos.

**Graph 1:
Percent of Mexican Bank Assets Controlled by Foreign Banks**

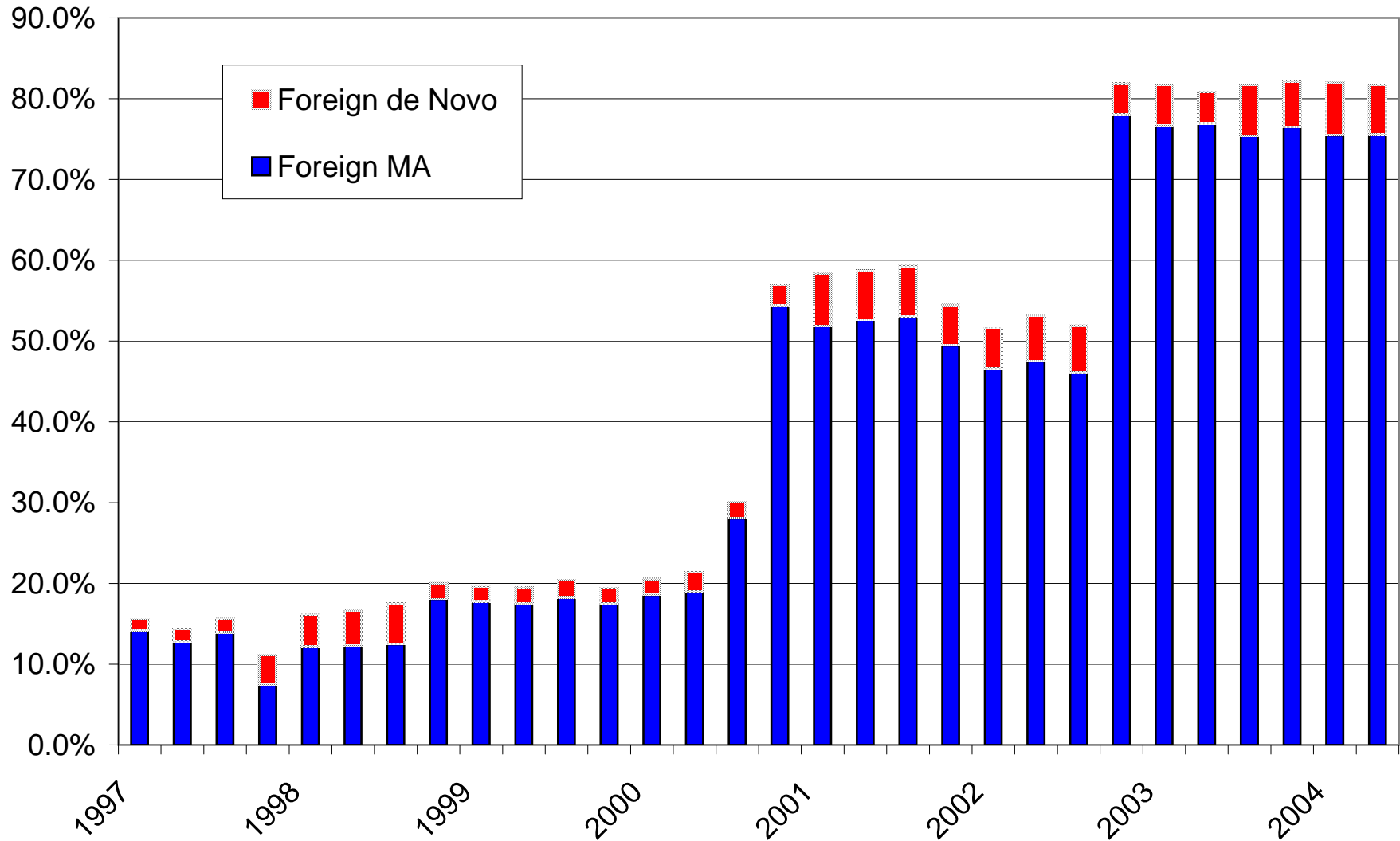


Table 2
Variable Definitions

Macro Controls	
Money Market Rate	Money Market Rate from IMF International Financial Statistics (IFS).
Inflation	Rate of Growth of CPI calculated year over year. CPI from IFS
Industrial Output Growth	Rate of growth of Industrial Output calculated year over year. [(Industrial Production in qtr X, year Y – Industrial Production in qtr X, Year Y-1)/ Industrial Production in qtr X, Year Y-1]. Industrial
Bank Variables	
Mktshare Loans	Loans of reporting bank divided by total loans of all banks.
Cash over Assets	Cash plus deposits in other banks, divided by assets.
Loans over Assets	Loans divided by assets.
Equity Ratio	Stockholder's equity divided by assets.
NPL over Loans	Declared value of non-performing loans, divided by total loans.
Fobaproa over Assets	Value of FOBAPROA-IPAB promissory notes divided by assets.
Housing Loans over Assets	Housing loans divided by assets.
Commercial Loans over Assets	Commercial loans divided by assets.
Consumer Loans over Assets	Consumer loans divided by assets.
Private Lending over Assets	Value of Housing Loans + Commercial Loans + Consumer Loans, divided by assets.
Deposits	Short & long term deposits, including interbank deposits
Interest over Loans	(Interest Income on Loans + Commissions and fee charges to get loans), divided by total loans.
Interest over Deposits	(Interest Paid on Deposits + Commissions paid by a bank to get a deposit from another bank), divided by deposits.
NIM (Net Interest Margins)	Interest rate spread, calculated as Interest over loans minus interest over deposits.
Admncost over Assets	Operational costs (administrative costs plus payroll) divided by assets.
ROE (Return on Equity)	Net Earnings divided by equity.
Time	Quarter number, which runs from 1 in 1997Q1 to 30 in 2004Q2
Foreign MA	Dummy for Foreign Merger and Acquisition Banks (a domestically owned bank that has been purchased by a foreign bank. Dummy is coded as 1 in the quarter when the merger goes through, not the quarter when the merger is announced.
Foreign de Novo	A representation office, subsidiary, or branch of a large foreign bank in Mexico. We cull Foreign de Novo banks from the data set.

Table 3
Summary Statistics for Mexican Bank Data Set, 1997-2004

Variable	Obs	Mean	Std. Dev	Min	Max
Macro Controls					
Money Market Rate	586	16.37	8.26	5.11	36.37
Inflation	586	0.1092	0.0619	0.0397	0.2550
Industrial Output Growth	586	0.0314	0.0452	-0.0471	0.1178
Bank Variables					
Market Share Loans	582	0.0505	0.0742	0.0000	0.2981
Cash over Assets	582	0.1408	0.0785	0.0001	0.5273
Loans over Assets	582	0.6449	0.1689	0.0214	1.0980
Equity Ratio	582	0.1558	0.1359	0.0320	0.9404
NPL over Loans	582	0.0477	0.0642	0.0000	0.4894
Private Lending over Assets	569	0.4370	0.2186	0.0057	0.9852
Commercial Loans over Assets	569	0.3745	0.2454	0.0000	0.8814
Consumer Loans over Assets	569	0.0256	0.0639	0.0000	0.6982
Housing Loans over Assets	569	0.0369	0.0475	0.0000	0.2064
Fobaproa ove Assets	569	0.1281	0.1943	0.0000	0.9090
Government Loans over Assets	569	0.0624	0.1032	0.0000	0.5900
NIM	557	0.0151	0.0290	-0.1070	0.4886
Admincost over Assets	581	0.01	0.01	0.0017	0.10
ROE	581	0.0106	0.0891	-1.5567	0.2540

The sample is restricted to domestic and Foreign MA banks, Foreign de Novo banks are culled.

Data for all dependent variables and controls are missing for Quadrum 2001.

The only data available for Quadrum 2001 is Financial Income and Expense.

**Graph 2:
Equity Ratios of Mexican Banks, 1997-2004**

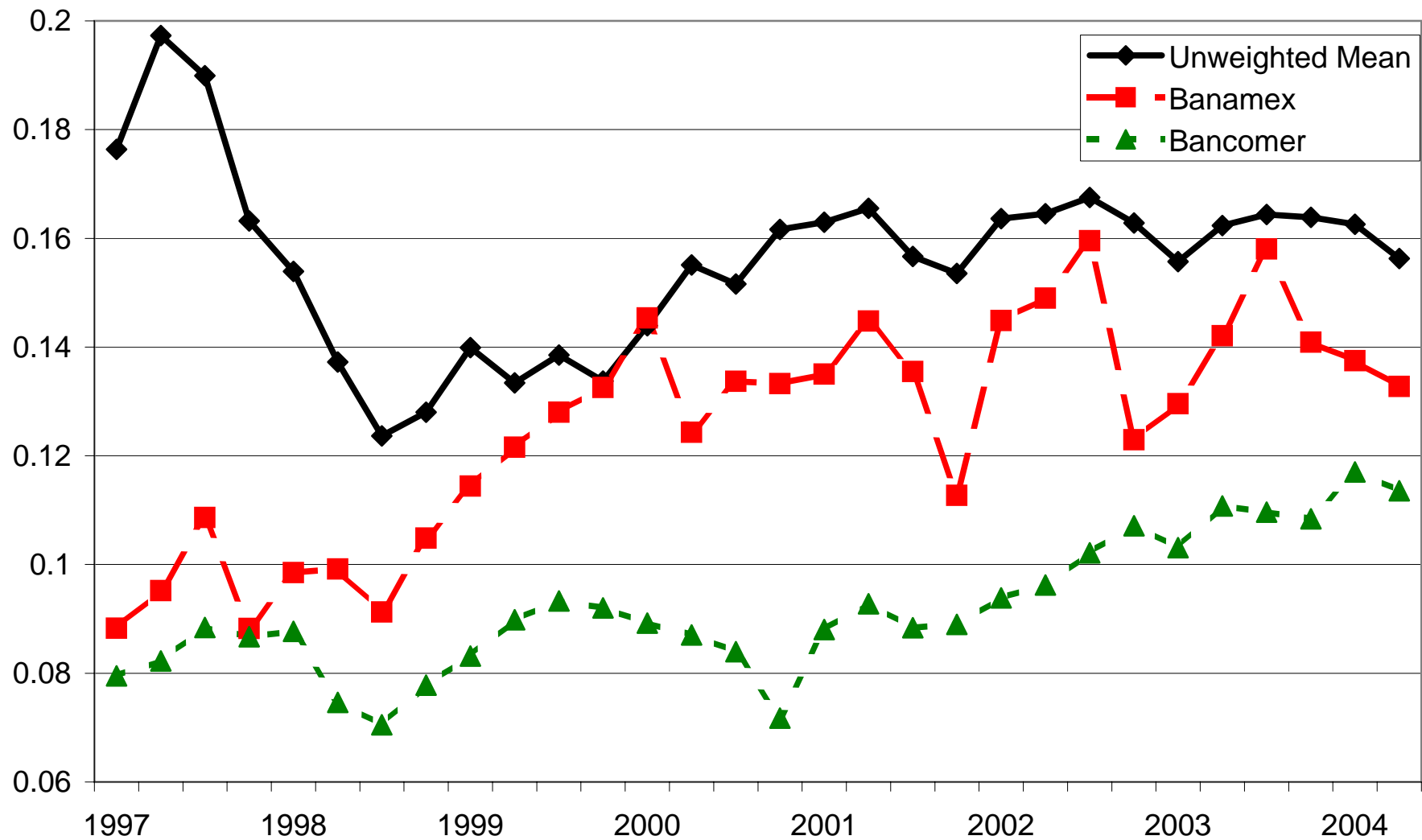


Table 4
Equity Ratio Regressions

	1	2	(3)
Money_Market_Rate	-0.0005 (1.45)	-0.0008 (2.92)***	-0.0008 (2.67)**
Inflation	-0.0696 (1.41)	-0.2006 (2.78)***	-0.2005 (2.69)**
Industrial_Output_Growth	-0.0091 (0.18)	-0.0256 (0.52)	-0.0353 (0.71)
Time		-0.0017 (2.50)**	-0.0014 (1.92)*
Foreign_MA	-0.0364 (3.56)***		-0.0357 (3.46)***
Constant	0.1762 (26.34)***	0.2135 (11.73)***	0.2166 (11.94)***
Observations	572	572	572
R-squared	0.02	0.00	0.02
F	5.45	11.36	11.92

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

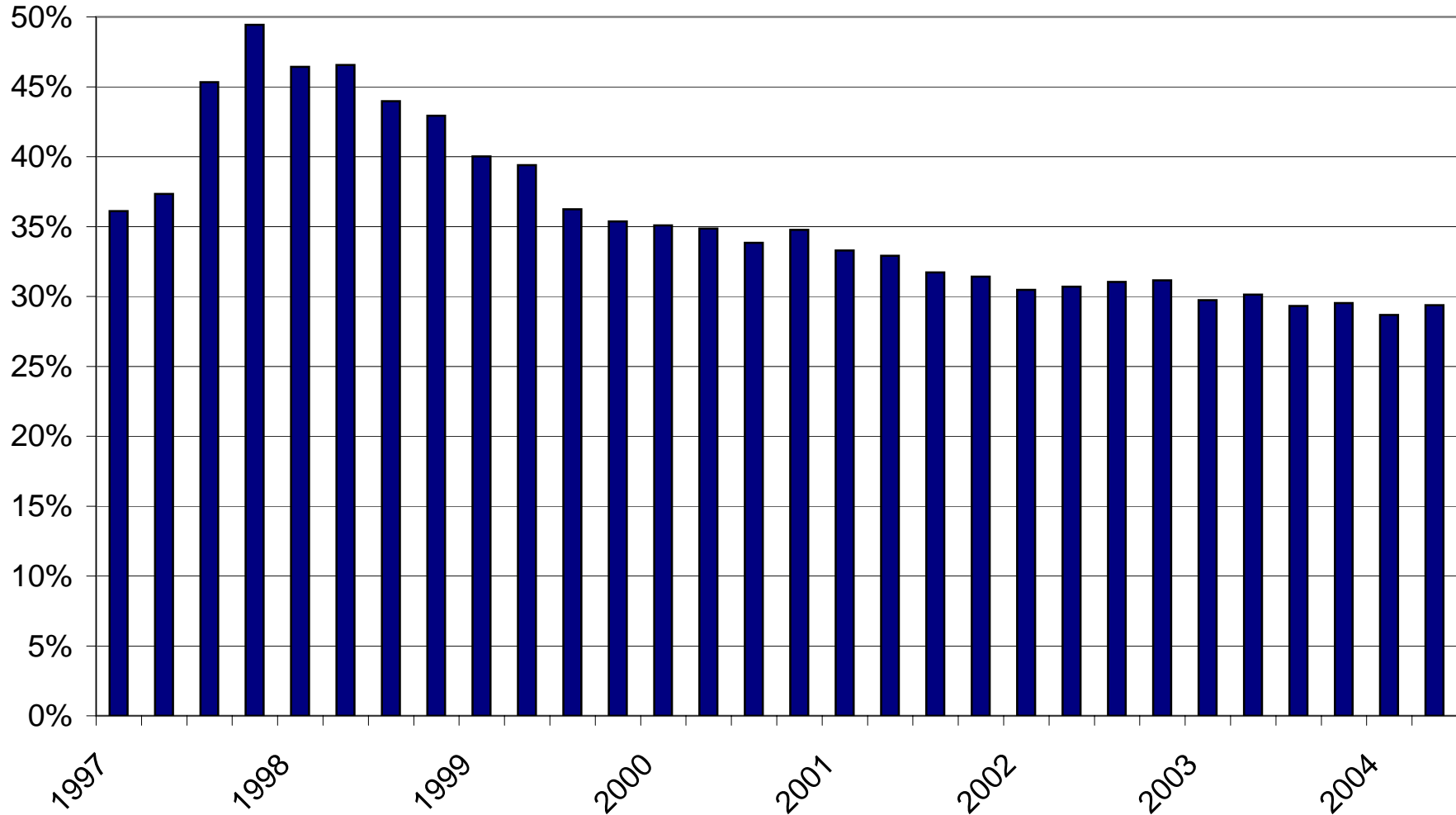
Table 5
Real Bank Lending in Mexico, 1997-2004
(In Millions of Pesos)

Year	Qtr	Total Bank Assets	Real Bank Assets	Total Loans	Real Loans	Housing, Commercial and Consumer Loans	Real Housing, Commercial and Consumer Loans	Housing, Commercial, and Consumer Loans as % of Assets
1997	1	824,688	1,550,549	596,836	1,122,149	297,779	559,873	36%
	2	812,798	1,477,872	612,304	1,113,323	303,433	551,718	37%
	3	824,732	1,458,680	628,698	1,111,960	373,893	661,294	45%
	4	880,823	1,509,997	745,552	1,278,102	435,437	746,471	49%
1998	1	992,504	1,618,515	781,218	1,273,962	460,781	751,413	46%
	2	1,037,168	1,638,029	812,949	1,283,913	482,924	762,696	47%
	3	1,120,161	1,713,656	844,946	1,292,623	492,579	753,562	44%
	4	1,166,850	1,701,476	880,560	1,284,014	500,854	730,335	43%
1999	1	1,200,045	1,650,053	874,234	1,202,064	480,230	660,313	40%
	2	1,203,949	1,613,091	897,960	1,203,117	474,259	635,428	39%
	3	1,227,333	1,612,012	885,365	1,162,863	444,814	584,231	36%
	4	1,292,862	1,658,092	906,505	1,162,591	457,147	586,290	35%
2000	1	1,250,310	1,555,107	895,369	1,113,640	438,606	545,528	35%
	2	1,278,367	1,563,590	899,738	1,100,483	445,662	545,096	35%
	3	1,306,763	1,574,117	898,184	1,081,946	442,188	532,657	34%
	4	1,400,503	1,649,133	941,170	1,108,256	486,855	573,286	35%
2001	1	1,413,395	1,635,953	927,971	1,074,092	470,620	544,725	33%
	2	1,426,794	1,632,932	907,579	1,038,703	469,700	537,561	33%
	3	1,504,221	1,709,837	916,709	1,042,017	477,042	542,251	32%
	4	1,524,175	1,705,765	917,026	1,026,280	478,867	535,919	31%
2002	1	1,548,493	1,711,202	951,894	1,051,915	471,999	521,595	30%
	2	1,584,825	1,731,113	951,373	1,039,190	486,397	531,294	31%
	3	1,614,094	1,743,237	955,755	1,032,225	500,985	541,069	31%
	4	1,676,743	1,781,274	986,671	1,048,182	522,477	555,049	31%
2003	1	1,742,536	1,826,256	980,025	1,027,110	518,237	543,135	30%
	2	1,710,488	1,783,828	961,796	1,003,034	515,403	537,502	30%
	3	1,788,432	1,855,977	964,566	1,000,996	524,514	544,324	29%
	4	1,855,125	1,895,450	987,411	1,008,874	547,729	559,635	30%
2004	1	1,929,977	1,938,889	997,756	1,002,364	553,274	555,829	29%
	2	1,971,384	1,971,384	1,016,904	1,016,904	578,952	578,952	29%

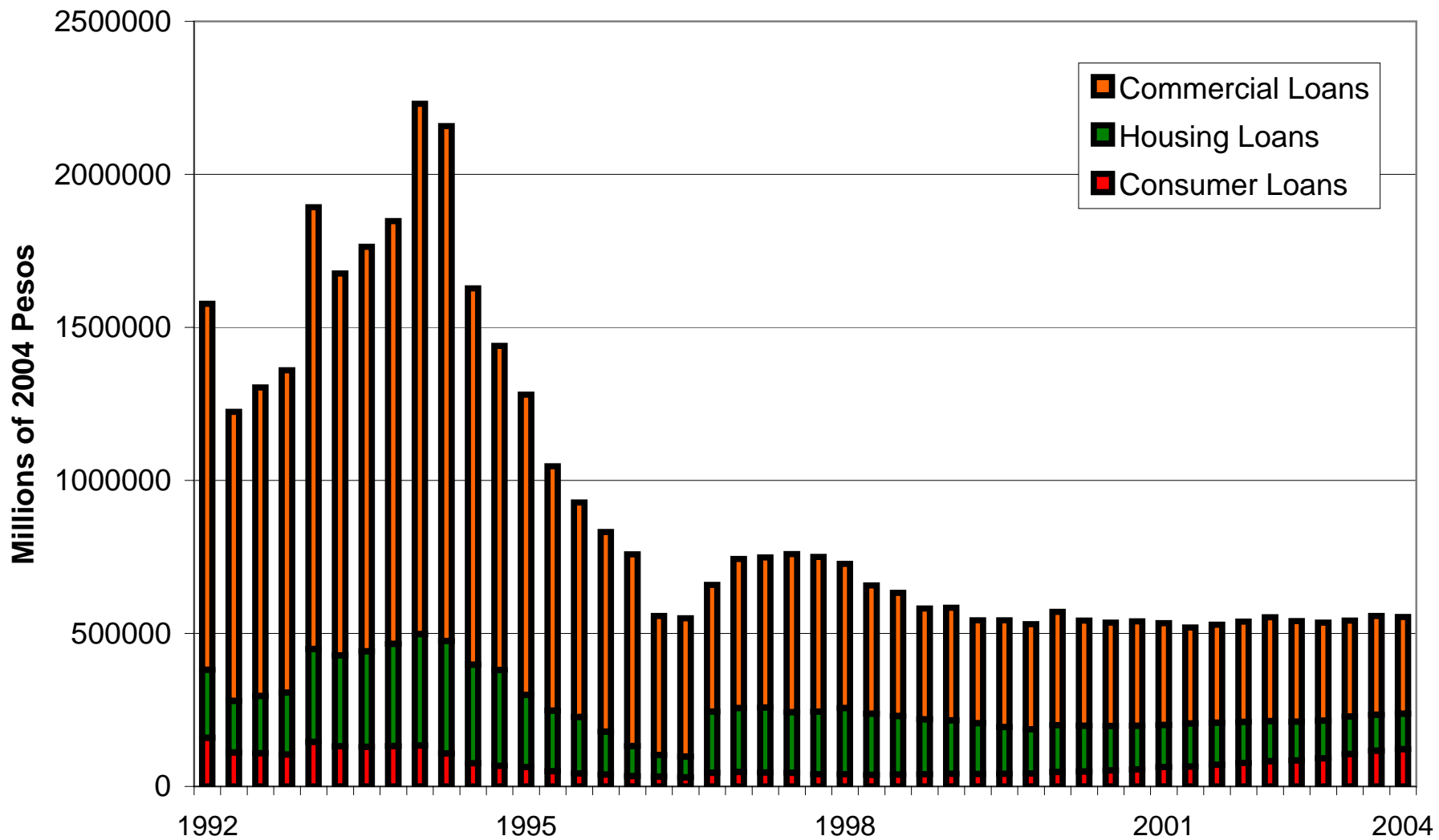
**Deflated to 2004-Q2 pesos

* Price index is from the IMF International Financial Statistics database.

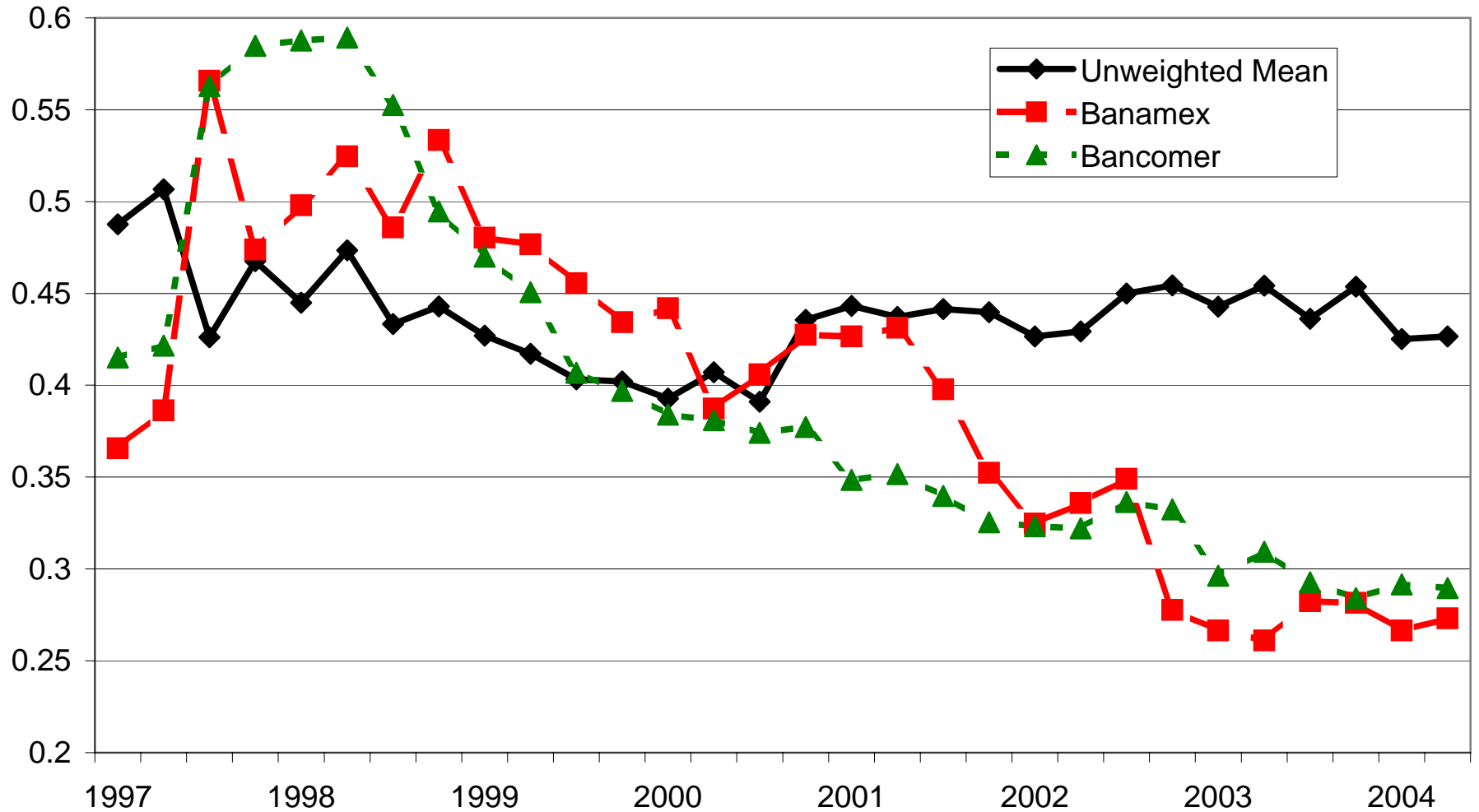
Graph 3
Loans to Firms and Households as % of Assets, 1997-2004



**Graph 4:
Real Lending to Households and Firms, 1992-2004**



**Graph 5:
Loans for Private Investment and Consumption, as % of Assets**



**Graph 6:
FOBAPROA-IPAB Notes as Percent of Assets**

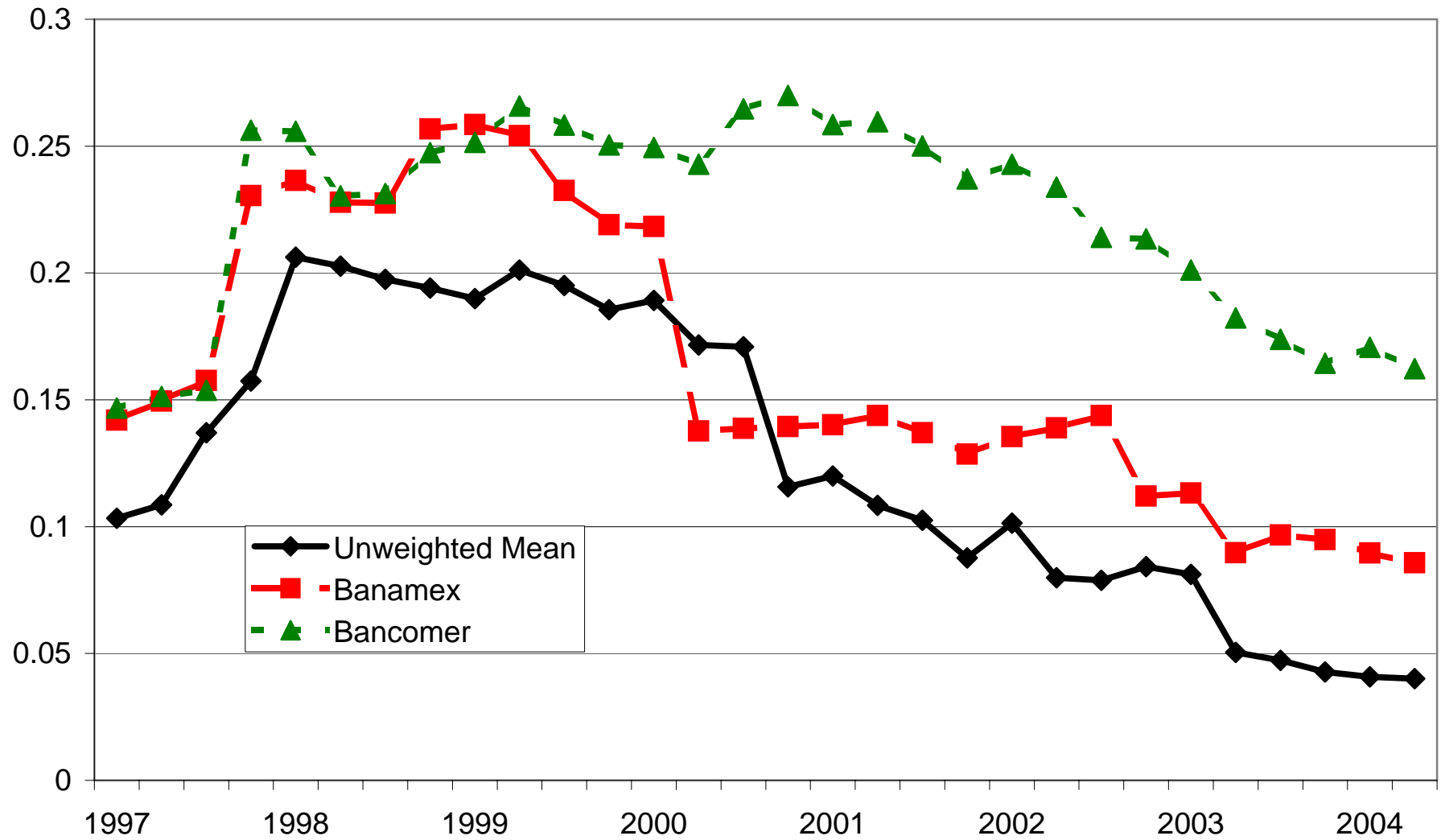


Table 6**Private Lending Regressions**

Dependent Variable is Housing, Consumer, and Commercial Loans Divided by Assets

	(1)	(2)	(3)	(4)
Money_Market_Rate	0.0009 (1.78)*	0.0016 (2.55)**	0.0007 (1.40)	0.0018 (2.98)***
Inflation	-0.2204 (1.76)*	0.3167 (2.45)**	-0.1846 (1.58)	0.2363 (1.97)*
Industrial_Output_Growth	-0.1433 (1.78)*	-0.0654 (0.54)	-0.1636 (1.97)*	-0.1288 (1.07)
FobaproaLoans_over_Assets	-0.6500 (20.26)***	-0.6120 (20.85)***	-0.6193 (20.58)***	-0.5347 (16.21)***
Time	-0.0057 (5.90)***		-0.0052 (5.42)***	
Foreign_MA		-0.0460 (3.49)***	-0.0427 (3.29)***	-0.0445 (2.99)***
Mktshare_Loans				-0.1088 (1.12)
Equity_Ratio				0.2116 (1.84)*
Cash_over_Assets				-0.1460 (1.44)
Constant	0.6188 (22.78)***	0.4640 (45.15)***	0.6170 (22.44)***	0.4562 (12.93)***
Observations	559	559	559	559
R-squared	0.31	0.31	0.31	0.33
F	104.81	163.25	149.61	562.76

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

Table 7**Non-Performing Loan Regressions**

Dependent Variable is Non-Performing Loans divided by Total Loans

	1	2	3	4
Money_Market_Rate	-0.0004 (1.17)	-0.0002 (0.66)	-0.0004 (1.08)	-0.0005 (1.31)
Inflation	0.1897 (2.69)**	0.1602 (2.35)**	0.1928 (2.71)**	0.2387 (3.17)***
Industrial_Output_Growth	-0.0935 (2.29)**	-0.0810 (1.92)*	-0.0929 (2.19)**	-0.0924 (2.04)*
ConsumerLoans_over_Assets	-0.0601 (2.80)***	-0.0591 (2.74)**	-0.0604 (2.72)**	-0.0338 (1.77)*
HousingLoans_over_Assets	0.7447 (18.31)***	0.7382 (18.52)***	0.7448 (18.30)***	1.0004 (10.91)***
CommercialLoans_over_Assets	-0.0411 (3.11)***	-0.0349 (2.57)**	-0.0411 (3.11)***	-0.0517 (3.54)***
FobaproaLoans_over_Assets	-0.0619 (4.91)***	-0.0729 (5.05)***	-0.0618 (4.89)***	-0.0362 (2.97)***
Time		-0.0003 (0.79)	0.0000 (0.08)	0.0003 (-0.65)
Foreign_MA	-0.0254 (7.68)***		-0.0254 (7.65)***	-0.0242 (9.19)***
Cash_over_Assets				0.0373 (1.79)*
Equity_Ratio				0.1085 (2.73)**
Mktshare_Loans				-0.2166 (3.50)***
Constant	0.0370 (5.10)***	0.0357 (2.51)**	0.0360 (2.65)**	0.0092 (0.68)
Observations	559	559	559	559
R-squared	0.44	0.41	0.44	0.55
F	83.59	84.35	77.92	89.70

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

Table 8
Net Interest Margin Regressions

	1	2	3	4	5
Money_Market_Rate	0.0004 (3.21)***	0.0004 (3.14)***	0.0006 (5.03)***	0.0007 (5.85)***	0.0007 (5.97)***
Inflation	-0.0720 (3.09)***	-0.0679 (2.79)***	-0.0746 (3.53)***	-0.0502 (1.58)	-0.0465 (1.51)
Industrial_Output_Growth	-0.0058 (0.28)	-0.0094 (0.45)	0.0066 (0.37)	0.0122 (0.70)	0.0113 (0.65)
Cash_over_Assets	0.0036 (0.34)	0.0049 (0.50)	0.0066 (0.70)	0.0056 (0.59)	0.0064 (0.67)
Equity_Ratio	-0.0161 (2.44)**	-0.0117 (1.63)	-0.0178 (3.04)***	-0.0182 (3.14)***	-0.0177 (3.05)***
ConsumerLoans_over_Assets			0.0933 (2.82)***	0.0889 (2.69)**	0.0895 (2.69)**
HousingLoans_over_Assets			-0.0442 (3.85)***	-0.0436 (3.78)***	-0.0431 (3.72)***
CommercialLoans_over_Assets			0.0045 (1.16)	0.0055 (1.40)	0.0049 (1.26)
FobaproaLoans_over_Assets			-0.0036 (1.26)	-0.0044 (1.61)	-0.0028 (0.99)
Admincost_over_Assets	0.8327 (3.73)***	0.8074 (3.58)***	0.5720 (3.21)***	0.5684 (3.15)***	0.5874 (3.29)***
Time				0.0003 (1.49)	0.0003 (1.81)*
Foreign_MA	-0.0042 (3.96)***	-0.0047 (4.31)***	-0.0028 (3.05)***		-0.0030 (3.48)***
Mktshare_Loans					
NPL_over_Loans		-0.0368 (4.14)***			
Constant	0.0063 (1.91)*	0.0074 (2.29)**	0.0048 (1.78)*	-0.0038 (0.66)	-0.0043 (0.77)
Observations	547	547	537	537	537
R-squared	0.27	0.30	0.39	0.39	0.39
F	8.85	14.10	36.30	49.73	52.60

Functional form is OLS. Observations are quarterly, March 1997 - June 2004. Data missing for Q4 1997. The 5 highest and lowest values of the dependent variable were dropped. The sample is restricted to Foreign MA and Domestic Banks, no Foreign De Novo banks. Robust t statistics in parantheses; * significant at 10%; ** significant at 5%; *** significant at 1%. (Standard errors clustered at the quarterly level).

**Graph 7:
Net Interest Margins, 1997-2004**

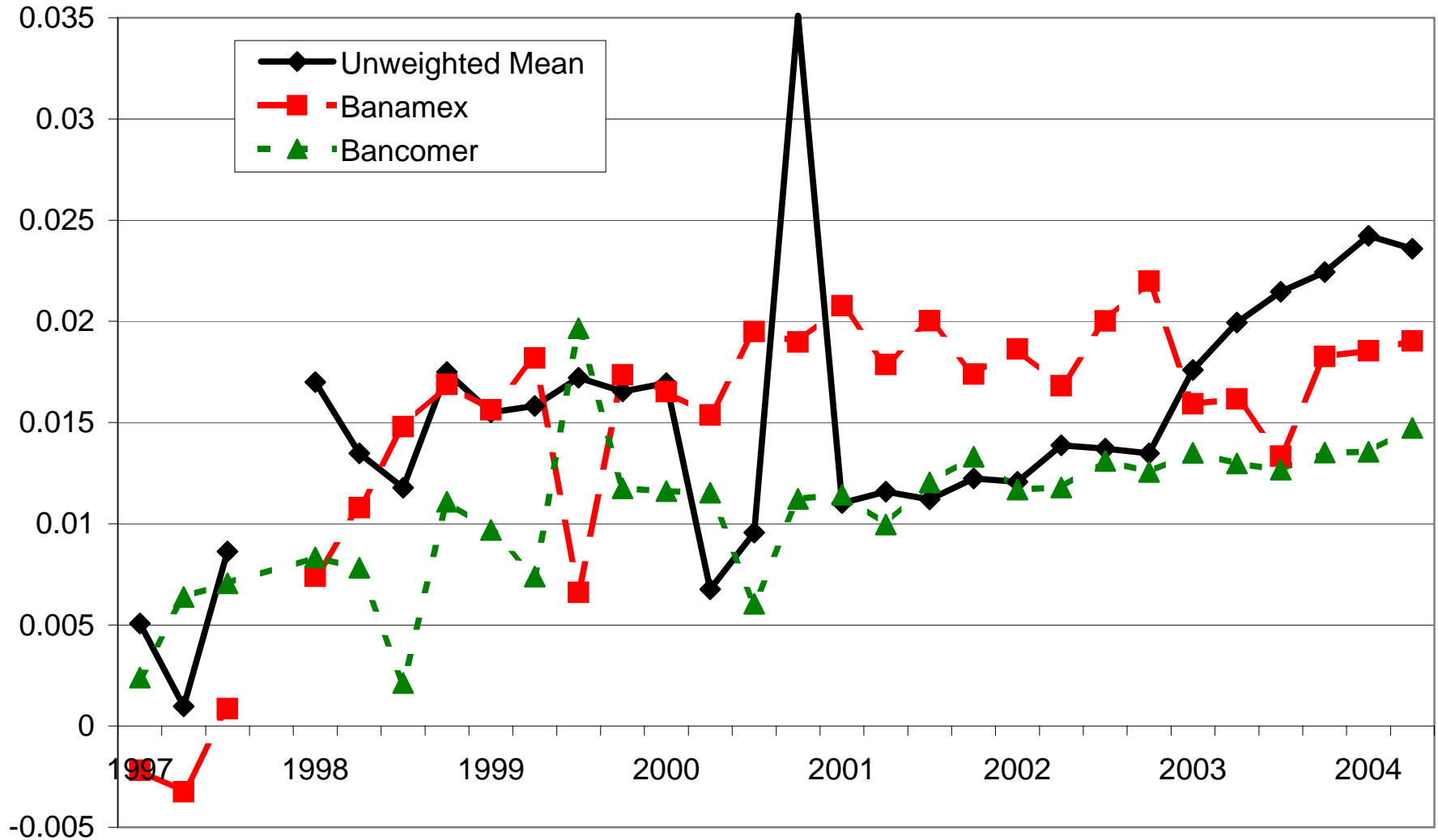


Table 9
Rate of Return on Equity Regressions

	(1)	(2)	(3)	(4)	(5)
Money_Market_Rate	0.0008 (1.83)*	0.0004 (0.74)	0.0008 (1.82)*	0.0003 (0.50)	0.0004 (0.78)
Inflation	0.1437 (1.54)	-0.0665 (0.92)	0.1438 (1.54)	-0.0792 (1.31)	-0.0741 (1.01)
Industrial_Output_Growth	-0.0927 (1.60)	-0.1357 (1.99)*	-0.0927 (1.60)	-0.1463 (2.36)**	-0.1278 (1.84)*
Time	0.0022 (4.86)***		0.0022 (4.88)***		
Foreign_MA		0.0007 (0.17)	-0.0003 (0.07)	-0.0054 (1.22)	0.0021 (0.49)
ConsumerLoans_over_Assets				0.0015 (0.03)	
HousingLoans_over_Assets				0.1750 (3.97)***	
CommercialLoans_over_Assets				-0.0089 (0.63)	
FobaproaLoans_over_Assets				0.0298 (2.26)**	
NPL_over_Loans					0.0726 (3.14)***
Constant	-0.0445 (3.00)***	0.0200 (4.57)***	-0.0445 (2.99)***	0.0194 (2.18)**	0.0164 (3.30)***
Observations	571	571	571	558	571
R-squared	0.05	0.03	0.05	0.12	0.04
F	13.34	4.34	10.86	10.68	9.30

Table 10**Administrative Cost Regressions**

Dependent Variable is Administrative Costs over Assets

	1	2	3	4
Money_Market_Rate	-0.0000 (0.55)	0.0001 (0.99)	0.0000 (0.36)	0.0000 (0.42)
Inflation	0.0109 (1.71)*	0.0213 (2.44)**	-0.0029 (0.29)	-0.0039 (0.38)
Industrial_Output_Growth	0.0142 (2.75)**	0.0110 (1.60)	0.0056 (1.19)	0.0061 (1.23)
Liquidity	0.0108 (1.71)*	0.0151 (2.93)***	0.0154 (3.02)***	0.0151 (2.89)***
ConsumerLoans_over_Assets		0.0913 (4.23)***	0.0951 (4.17)***	0.0945 (4.09)***
HousingLoans_over_Assets		-0.0201 (2.48)**	-0.0211 (2.47)**	-0.0211 (2.48)**
CommercialLoans_over_Assets		0.0019 (1.15)	0.0014 (0.77)	0.0015 (0.85)
FobaproaLoans_over_Assets		0.0011 (0.55)	0.0008 (0.48)	0.0004 (0.22)
Time			-0.0003 (2.77)***	-0.0003 (3.04)***
Foreign_MA	0.0016 (2.48)**	0.0006 (0.63)		0.0008 (0.79)
Mktshare_Loans				
NPL_over_Loans				
Constant	0.0104 (8.55)***	0.0054 (3.94)***	0.0131 (4.64)***	0.0131 (4.68)***
Observations	571	558	558	558
R-squared	0.03	0.31	0.31	0.32
F	4.37	15.57	10.24	15.51

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