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Foreign bank participation and outreach: Evidence from Mexico

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ABSTRACT

Recently, developing countries have witnessed a sharp increase in foreign bank participation. We examine the impact on banking outreach using newly gathered data for Mexico, where foreign bank participation rose from 2% to 83% of assets during 1997–2005. Country-, bank-, and bank-municipality-level estimations show a decline in the number of deposit and loan accounts. While country- and bank-level estimations indicate an increase in the share of municipalities with bank branches and in the likelihood of bank presence, bank-municipality regressions show that only rich and urban municipalities benefited. Overall, the evidence is consistent with a decline in outreach.

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1. Introduction

During the 1990s, many developing countries embraced financial globalization and, in particular, welcomed foreign banks into their banking sectors. According to data compiled by Micco et al. (2006), the average level of foreign bank participation among developing countries (as measured by the share of assets held by foreign banks) rose from 18% to 33% between 1995 and 2002.¹ The increase in foreign bank share has been especially strong in the transition countries of Central and Eastern Europe and Latin America (Fig. 1). In particular, by 2002, foreign bank participation exceeded 70% in countries such as Estonia (73%), Lithuania (91%), Mexico (82%), Paraguay (83%), Peru (86%), Slovakia (82%), and Uruguay (94%). Arguably, nowhere has the increase in foreign bank participation been more dramatic than in the case of Mexico. Between 1995 and 2002, the share of assets held by foreign banks rose from 2% to almost 82%. Mostly, the increase in foreign bank participation in Mexico resulted from

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¹ Their sample covers 104 developing countries across all regions.

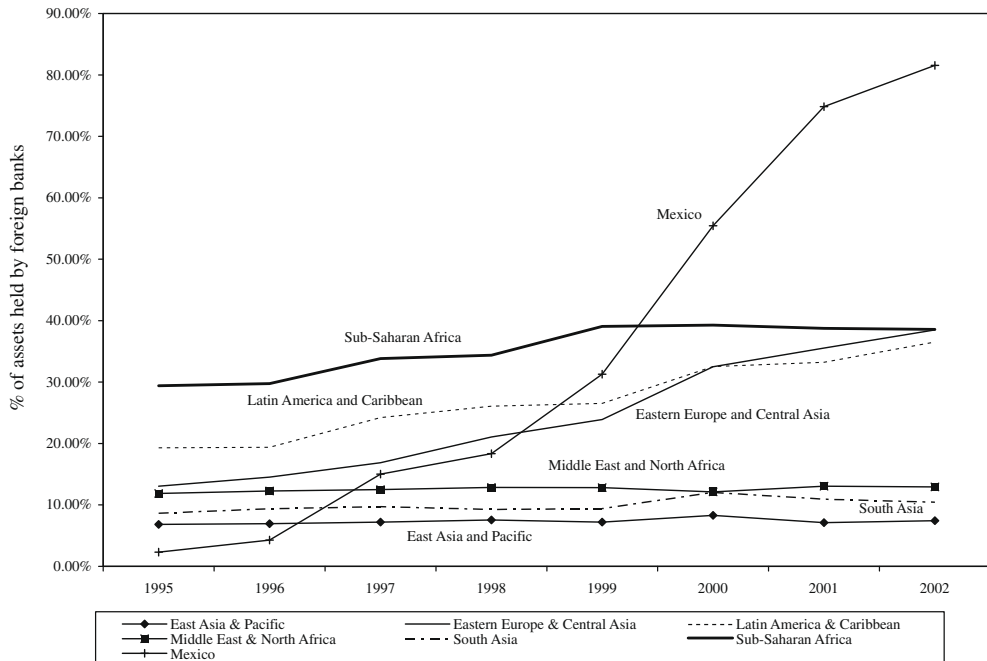


Fig. 1. Foreign bank participation across regions (% of banking system assets held by foreign banks).

foreign acquisitions of domestic banks, as opposed to de novo foreign bank entry. By 2005, foreign bank participation was close to 83% of assets and five of the top six banks in the system had been acquired by foreigners.

While few would dispute the potential benefits that foreign banks can bring in terms of innovation in technologies, products, and risk management, greater access to capital, and improvements in human capital, in recent years, some have worried about the possible adverse consequences on banking sector outreach – the extent to which the banking sector caters to a large percentage of the population throughout the host country. For example, Joseph Stiglitz has argued that foreign banks are often uninterested in providing services to clients other than the largest (often multinational) firms and richest individuals in the country (see [Stiglitz, 2005](#)). At the same time, policy makers in developing countries are increasingly recognizing the importance of banking sector outreach. In a speech to the Bankers' Association in 2006, the president of Mexico's Central Bank, Guillermo Ortiz Martinez, emphasized that greater outreach can have important consequences on the economic growth of the country and the welfare of its population ([Ortiz Martinez, 2006](#)).

In light of the economic importance of banking sector outreach and given concerns that foreign banks can adversely affect it, this study examines how banking sector outreach changed in Mexico during a period of drastic increase in foreign bank presence, driven by foreign acquisitions. Since we do not have information on the actual share of the population that has access to or uses banking services, we employ a number of proxy measures of outreach. In particular, we track the behavior of the number or share of municipalities where banks are present and the number of branches, loans, and deposit accounts between 1997 and 2005. First, using quarterly country-level data we assess how the share of municipalities with branches, the number of branches, deposit accounts, and loan accounts per capita at the country-level changed as foreign bank participation increased due to foreign acquisitions. Second, using bank-level data, we examine how foreign bank outreach changed after foreign acquisitions. Again, we focus on the number of municipalities with bank presence, the number of branches, loans, and deposit accounts. Contrary to the country-level regressions where identification

is weak (particularly because omitted factors might be driving the link between outreach and foreign bank presence), in the bank-level regressions, we identify the effects of foreign acquisitions in two ways: (1) by comparing results for banks that were acquired at different points in time and (2) by including as a control group a similarly large bank that remained domestic throughout the sample (Banorte).² Also, controlling for bank and time effects in the analysis lessens the concern about endogeneity due to omitted factors. Finally, we conduct a more disaggregated examination using bank-municipality-level data.³ In this context, we examine the extent to which changes in outreach within a municipality varied after bank acquisitions by foreigners depending on the initial level of GDP per capita and the degree of urbanization of the municipality (i.e., the share of rural population). As in the bank-level regressions, identification hinges on comparing acquisitions at different moments in time and benchmarking the effects to a bank that was never acquired.

This paper is related to an extensive literature on the consequences of financial liberalization, in general, and of foreign bank participation, more specifically, in developing countries.⁴ In particular, the implications of foreign bank entry for bank efficiency, competition, stability, and access to credit have been investigated by cross-country and country-specific studies, using an array of different data sources.⁵ Studies on the impact of foreign bank participation on competition and efficiency suggest that foreign bank entry can bring potential gains in this area except in environments that limit competitive forces, such as when bank concentration is high, bank activities are restricted, and bank entry and exit is difficult.⁶ The research on foreign bank participation and stability concludes that for the most part foreign banks contribute to banking stability by continuing to lend when faced by financial crises and by lending more under these circumstances than their domestic counterparts.⁷ The literature on the implications of foreign bank participation for access to finance has primarily focused on the impact on lending to enterprises, in particular small and informationally opaque firms, with the evidence being mixed.⁸

In the specific case of Mexico, a number of papers have documented the impact of foreign bank entry into this country. Looking at the period immediately following the 1994 Peso crisis, when foreign bank participation was low and dominated by wholesale banks, [Goldberg et al. \(2000\)](#) and [Peek and Rosengren \(2000\)](#) conclude that foreign banks in Mexico were not volatile lenders, did not retrench in the aftermath of the crisis and, in fact, exhibited higher and more stable loan growth rates than their domestic counterparts. On the other hand, analyzing the effects of foreign bank penetration in Mexico during 1997–2004, when foreign bank participation rose to over 80% and five of the largest six banks were acquired by foreign banks, [Haber and Musacchio \(2005\)](#) and [Schulz \(2006\)](#) come to less optimistic conclusions. They conclude that while foreign banks helped recapitalize the banking sector and improve its asset quality, they were more profitable than their domestic counterparts because their market power allowed them to charge higher fees and their entry had limited effects on efficiency or lending.

² Banorte received a number of offers to be purchased by foreigners but its owners declined to sell time after time. Note that results are confirmed and, in fact, are stronger if we include the smaller domestic retail banks as part of the control group.

³ What in Mexico are known as “municipios”, which we translate as municipalities, are similar to what in the U.S. are referred to as counties.

⁴ For studies on the effect of capital account and equity markets liberalization, see among others, [Henry \(2003\)](#), [Bekaert et al. \(2005\)](#), and [Bekaert et al. \(2007\)](#).

⁵ See [Berger et al. \(2000\)](#), [Clarke et al. \(2003\)](#), and [Cull and Martinez Peria \(2007\)](#) for a review of the literature.

⁶ Among others, see [Barajas et al. \(2000\)](#), [Denizer \(2000\)](#), [Claessens et al. \(2001\)](#), [Unite and Sullivan \(2002\)](#), [Claessens and Laeven \(2003\)](#), [Claessens and Lee \(2003\)](#), [Martinez Peria and Mody \(2004\)](#), and [Levy-Yeyati and Micco \(2007\)](#).

⁷ See [Goldberg et al. \(2000\)](#), [Crystal et al. \(2001\)](#), [Goldberg \(2002\)](#), [Martinez Peria et al. \(2005\)](#), [Detragiache and Gupta \(2006\)](#), [De Hass and Van Lelyveld \(2006\)](#), among others.

⁸ Using bank-level data, [Berger et al. \(2001\)](#) and [Mian \(2006\)](#) present results for Argentina and Pakistan, respectively, that suggest that foreign banks limit access and serve only the largest and most transparent firms. On the other hand, also using bank-level data, [Clarke et al. \(2005\)](#) find evidence that large foreign banks surpass their domestic counterpart in the share and growth of lending to SMEs in Argentina, Chile, Colombia, and Peru. Summarizing a number of country studies, [De la Torre et al. \(2008\)](#) conclude that foreign banks can play an important role in expanding access to small and medium-sized enterprises. Using firm-level data for India, [Gormley \(2006\)](#) finds that on average firms located in districts with newly established foreign banks are less likely to get long-term financing, while cross-country research also using firm-level data conducted by [Giannetti and Ongena \(2005\)](#) and [Clarke et al. \(2006\)](#) indicates that firms of all sizes benefit from foreign bank presence.

Our study contributes to the literature on foreign bank participation – both in general and for the specific case of Mexico – by analyzing the link between foreign bank acquisitions and outreach. Unlike existing papers assessing the effect of foreign bank entry on firm access to credit, we consider access by the whole population to a broader set of services.⁹ Furthermore, when it comes to credit, rather than focusing on credit depth (i.e., the amount of credit provided), we examine the impact on the number of loans, a more suitable measure of the reach of the banking sector. The effect of foreign bank entry on banking outreach broadly defined is an interesting and policy-relevant question that is ex-ante unclear and has been largely unexplored by the empirical literature.¹⁰

Contrasting predictions can be derived from existing studies on the drivers of foreign bank entry and the determinants of foreign bank lending behavior. U.S. based studies on foreign bank entry in the 1980s suggest that foreign banks are not interested in offering services to the population at large but rather they primarily “follow their clients” and go abroad to offer services to the overseas operations of their domestic clients (see [Goldberg and Saunders, 1981a,b](#); [Cho et al., 1987](#); [Hultman and McGee, 1989](#); and [Goldberg and Grosse, 1994](#), among others). On the other hand, more recent studies of foreign bank entry have indicated that local profit motives are an important driving force for entry, which would suggest that foreign banks are interested in appealing to a broader clientele (see, for example, [Focarelli and Pozzolo, 2001](#); [Buch and DeLong, 2004](#); and [Buch and Lipponer, 2004](#), among others). At the same time, studies that predict that foreign banks tend to “cherry pick” and lend only to the largest most transparent firms (such as [Detragiache et al., 2008](#); [Gormley, 2006](#); and [Mian, 2006](#)) imply that foreign bank acquisitions would be negatively related to outreach, since greater outreach is associated with a larger number of loans and a wider branch network reaching smaller clients. For example, [Detragiache et al. \(2008\)](#) develop a model where if foreign banks are better at monitoring high-end customers (for which lending is based on “hard” information, such accounting ratios or collateral values), foreign bank entry benefits them but hurts others and welfare worsens.¹¹ On the other hand, studies that argue that large and foreign banks have superior transaction and risk management technologies that enable them to reach all types of clients including small ones (e.g., [Berger and Udell, 2006](#)), suggest a potential positive association between foreign acquisitions and outreach. There is also the argument that even if foreign banks do not cater themselves to small clients, outreach could increase if domestic banks are forced to move down the market, expanding their outreach to serve smaller clients.

Our results are generally consistent with a decline in outreach following foreign bank acquisitions in Mexico during the period 1997–2005. Country-, bank-, and bank-municipality-level estimations show a decline in the number of deposit and loan accounts following acquisitions.¹² Furthermore, this decline is found to be larger in poorer and more rural municipalities. Domestic banks only partially offset the decline in foreign bank lending. Finally, while country- and bank-level estimations indicate an increase in the share of municipalities with bank branches and in the likelihood of bank presence, bank-municipality-level regressions show that only rich and urban municipalities benefited.

Though our results withstand a number of robustness tests, several notes of caution are warranted. First, in our country-level regressions, we cannot eliminate the possibility that the increase in foreign

⁹ Specifically, we are looking at the impact on the number of deposit accounts. Furthermore, by examining the effect on the number of branches, we are implicitly studying the impact on all other kind of services offered by bank branches (e.g., payments, wire transfers, foreign exchange, financial literacy training (if offered), etc.)

¹⁰ Using country-level data for 2003–2004, [Detragiache et al. \(2008\)](#) offer evidence for a small sample of low and lower income (18) countries of a negative correlation between measures of outreach (such as branches, ATMs, loans and deposits per capita) and foreign bank participation. For a larger sample of countries (99), using the same outreach indicators, [Beck et al. \(2007\)](#) find a negative association of loan and deposit accounts per capita and the foreign bank share, but no significant association with branch or ATM penetration. This study, however, only has one year of data and cannot adequately control for many relevant factors affecting outreach.

¹¹ The idea that foreign banks have a comparative advantage at making loans based on “hard” as opposed to “soft” information is rooted in the notion that large and complex institutions or financial institutions for which the headquarters are far away have difficulty in processing and transmitting soft information through their formalized communication channels (see [Stein, 2002](#) and [Mian, 2006](#)).

¹² It is unlikely that the decline in loan and deposit accounts is driven by account consolidation (e.g., an individual has two deposit accounts or two loans and these get combined after the acquisition), since the foreign banks either had very small operations in Mexico or did not operate in the country at all prior to the acquisitions.

Table 1

Number and types of banks operating in Mexico, 1990–2005.

	1990	1994	1995	1997	1999	2000	2001	2002	2005
Total number of banks	20	33	46	41	34	32	29	30	27
Government-owned banks	18	0	0	0	0	0	0	0	0
Private domestically-owned banks	1	31	29	21	17	13	11	12	12
Foreign-owned banks	1	2	17	20	17	19	18	18	15

Source: Aguilar and Cabal (2004).

bank participation and the contemporaneous changes in outreach are driven by omitted factors. Identification in those estimations is weak and those regressions are only presented as suggestive evidence. Bank- and municipality-level regressions, however, allow for a cleaner identification of the effect of foreign entry, relying on the fact that acquisitions took place at different points in time and controlling for the operations of a similar bank that remained domestic. Second, our outreach indicators are admittedly crude and are not exact measures of the share of households that has access to or uses banking services.¹³ Cross-country comparisons, however, have shown a close link between outreach indicators such as branches, deposit, and loan accounts per capita and the share of households that uses banking services (Beck et al., 2007; Honohan, 2007). Third, the period we study is one following a severe crisis in Mexico and it is possible that taking a much longer horizon could yield different results.¹⁴ Finally, while our study provides new and robust evidence on how outreach changed during a period of rising foreign bank participation, with important implications for other countries, such inferences have to be made with caution. While Mexico experienced foreign bank entry through the acquisition of domestic private entities by foreign banks, there are different patterns of foreign bank entry around the world, ranging from de novo entry to entry of foreign banks through the privatization of government-owned banks and results might vary in those cases.

The rest of the paper is organized as follows. Section 2 provides an account of the changes in bank ownership experienced by the Mexican banking sector since the early 1990s. Section 3 describes the data used, while Section 4 lays out the methodology pursued to examine how outreach changed along with the increase in foreign bank participation. Section 5 presents our empirical results. Section 6 concludes.

2. The Mexican banking sector: from government to foreign ownership

In the span of two decades, the Mexican banking sector experienced an incredible transformation going from a government run sector to a privately, yet exclusively, domestically owned one, only to end up today as a sector dominated by foreign banks. Below we provide an account of the significant changes in ownership the Mexican banking sector underwent in recent years. Table 1 illustrates the development of the Mexican banking system from 1990 to 2005, showing the number of government, private domestically-owned banks, and foreign-owned banks operating in Mexico over the period.

Following the 1982 debt crisis, Mexican banks were nationalized under the López Portillo presidency and remained in government hands until 1991. During this period, banks primarily used their deposits to fund the public sector. In 1986, for example, over 60% of bank credit went to the government (Gruben and McComb, 1997). After a decade of government ownership, a process of rapid bank privatization took place between June 1991 and July 1992 under the Salinas de Gortari administration.

According to Schulz (2006), the new owners had little banking experience and severely mismanaged the banks.¹⁵ Haber (2005) argues that banks' behavior between 1991 and 1995 was also consistent with a tunneling view proposed by La Porta et al. (2003) by which shrewd bankers took advantage

¹³ Unfortunately, household level data is hard to come by and, in particular, is not available for Mexico.

¹⁴ Note, however, that our bank-level and bank-municipality-level analyses include time dummies so to some degree one could argue that common time effects, such as the general contraction and following recovery in the aftermath of the crisis, are being contemplated in our analysis.

¹⁵ Also, Haber (2005) argues that payment rules were very lax and bankers had little of their own capital at risk.

of the lax regulatory and supervisory environment in Mexico to engage in widespread insider lending. Others like Gruben and McComb (1997) argue that banks' aggressive lending practices during the post-privatization period were fueled by a struggle for market share. Regardless of the reasons behind events, bank credit and non-performing loans grew at alarming rates; total real bank lending doubled within three years and non-performing loans rose to 17.1% by December 1994 (considering loan rediscounts as non-performing loans). The on-going build up of non-performing loans was exacerbated by the macro imbalances that eventually led to the devaluation of the peso and the economic and financial crisis that ensued at the end of 1994.

Up until 1994, the only foreign bank in operation in Mexico was Citibank, which had been established in 1929, before legislation restricting foreign bank participation was passed in 1966. The North American Free Trade Agreement (NAFTA) was the first attempt by the Mexican government to liberalize the banking sector, albeit at a very slow pace.¹⁶ The treaty, which came into effect on January 1, 1994, allowed the establishment of chartered subsidiaries. Still, NAFTA restricted foreign bank participation severely, providing that US and Canadian banks could not own more than 30% of a Mexican bank's capital (Haber, 2005). Furthermore, banks from the US and Canada could not acquire a controlling stake in any bank whose market share exceeded 1.5% and the total market share under foreign control could not initially exceed 8% and it could only rise to 15% by the year 2000. Even after this period of transition, NAFTA recognized the right of the Mexican government to freeze the purchases of Mexican banks, if foreign banks as a group controlled more than one quarter of the market.

The 1994 Tequila crisis confronted the Mexican government with the urgent need to recapitalize banks, hastening the decision to rapidly open up the banking sector to foreign interests.¹⁷ By 1998, the government removed all remaining restrictions on foreign bank ownership. The liberalization of the foreign bank entry regime thus came as a result of the crisis, rather than the free trade agreement with the US and Canada.

Though there was an initial wave of foreign bank entry in 1995 (see Table 1), driven mostly by investment or corporate banks, the nature and extent of foreign bank ownership in Mexico started to change drastically in 1997–1998 with the foreign acquisition of some of the largest commercial banks. Table 2 provides a list and timeline for the foreign acquisitions that occurred between 1997 and 2005. Accounts of events and government actions following the Tequila crisis (see Banco de Mexico, 1995 and Haber, 2005) and conversations with Mexican government officials reveal that there were no ex-ante mandated schedules for which and when acquisitions were supposed to occur. With the exception of Serfin, none of the remaining large banks were in government hands at the time that they were sold to foreigners. Banks such as Bancomer, Banamex, and Bital were sold to foreigners because owners decided that it was in their best interest to sell.¹⁸ By the end of this period, large international banks such as BBVA (Spain), Banco Santander (Spain), Citibank (US), HSBC (UK), and Scotiabank (Canada) had acquired most of the largest Mexican banks. As a result of these acquisitions, the share of assets held by foreign banks increased from 15% in 1997 to 83% in 2005. In what follows, we study how outreach changed in Mexico as foreign bank participation rose over the period 1997–2005.

¹⁶ While a number of papers have looked at the implications of NAFTA on the Mexican economy, few have examined the effects on the financial sector. Furthermore, in most cases, the existing studies have been speculative and forward looking rather than based on solid empirical evidence. See Garber and Weisbrod (1993), Gruben et al. (1994), White (1994), and Glaessner and Oks (1998).

¹⁷ As part of their efforts to strengthen and recapitalize banks, the Mexican government also launched two programs known by their Spanish acronyms as PROCAPTE ("Programa de Capitalizacion Temporal") and PCCC ("Programa de Capitalizacion y Compra de Cartera"). Under the first program, troubled banks could raise capital by creating and selling subordinated debentures, with a five year maturity, to the nations' deposit insurance agency, FOBAPROA. The government set criteria for converting the debentures to equity if a bank turned out to be poorly managed or insolvent. The PCCC was a loan-repurchase program run by FOBAPROA to clean banks' balance sheets of non-performing loans. In exchange for their non-performing loans, the banks received a non-tradable zero coupon 10 year FOBAPROA promissory note. Banks that participated in this program had to agree to inject 50 cents in capital for every peso they received in FOBAPROA bonds.

¹⁸ On the other hand, though Banorte had also faced significant losses during the Tequila crisis, it repeatedly turned down offers to be acquired by foreign banks.

Table 2

Foreign acquisitions of Mexican banks.

Year	Acquirer	Target	Resulting share of bank assets held by foreign banks (%)
1997	Santander	Mexicano	14.63 ^a
1999	Santander	Serfin	31.34 ^b
2000	BBVA	Bancomer	48.04 ^c
2000	Scotiabank	Inverlat	55.36 ^d
2001	Citibank	Banamex	75.50 ^e
2002	HSBC	Bital	81.86 ^f

^a Banco Santander and Grupo Invermexico sign an agreement in the fourth quarter of 1996. The official merger happens in 1998, but in practice the banks operate as one since the first quarter of 1997.

^b In the third quarter of 1999, Serfin is taken over and absorbed by Santander Mexicano. The legal merger takes place in 2005, but in practice the management change occurs in 1999.

^c In the third quarter of 2000, BBVA acquires Bancomer.

^d Scotiabank acquires a majority of the shares of Inverlat in the fourth quarter of 2000.

^e Citibank acquires Banamex in the fourth quarter of 2001.

^f HSBC agrees to acquire Bital in the fourth quarter of 2002, the official merger takes place in the second quarter of 2003.

3. Data

Our primary data consist of quarterly banks' balance sheets and unaudited information on the number of branches, deposit accounts, and loan accounts, from the Comisión Nacional Bancaria y de Valores (CNBV), the banking regulatory and supervisory authority in Mexico. While balance sheets are available at the bank (but not branch) level, data on branches, deposit, and loan accounts were obtained per bank, per municipality, per quarter. In other words, we have information on the number of branches, deposits, and loans for each bank in each of 1192 municipalities for each quarter from 1997 through 2005.¹⁹ We also have information on the ownership type of all banks and the mergers and acquisitions that took place over the period 1997 through 2005 (Aguilar and Cabal, 2004).

From the data discussed above, we create different indicators of outreach. In particular, following previous work (Beck et al., 2007), we develop both indicators of access to (i.e., the possibility to use) and the actual use of financial services. In terms of access, we focus on the presence of bank branches across municipalities at the aggregate, i.e., Mexico-wide level (share of municipalities served), the bank-level (number of municipalities served), and the bank-municipality-level (probability of a bank being present or operating a branch in a specific municipality). We also consider the number of branches per capita at the country-level and the log of the number of branches at the bank and bank-municipality levels. These indicators are proxies for the extent to which the Mexican population as a whole and across different municipalities has geographic access to bank services, as well as, the geographic outreach effort of individual banks.

While easy to understand and interpret, branch penetration has its shortcoming as an access indicator. First, technology has allowed banks to use alternative delivery channels such as ATMs, phones, and the Internet.²⁰ Second, the presence of a branch in a specific municipality has its limit as a physical access indicator, as we do not know the geographic distribution of the population.²¹

The presence of a branch in a municipality, and thus the physical possibility to use banking services, is only one dimension of bank outreach. Even if people have physical access, they might face other barriers, such as socio-economic restrictions, or they might not see the need for financial services. We consider two indicators of the actual use of financial services: the number of deposit and the number of loan accounts. Specifically, we consider deposit (loan) accounts per capita at the

¹⁹ Mexico has close to 2500 municipalities, however, detailed information is available for 1163 municipalities. For 29 of the 32 Mexican states ("entidades federativas"), a category labeled "others" aggregates information for the smallest municipalities in each state. Combined the municipalities included under the "other" category account for less than 3% of the Mexican population. In total there are 1192 observations in the municipality-level estimations.

²⁰ Unfortunately, there is no data available on the access to or use of these alternative delivery channels at the municipality level.

²¹ Specifically, the population center of a municipality without a branch might be geographically very close to another municipality with a branch.

country level, as well as the number of deposit (loan) accounts for each bank over time, and for each institution in each municipality in every quarter. These indicators serve as proxy variables for the extent to which the Mexican population as a whole and across municipalities uses deposit and loan services, and for the extent to which different banks reach out to their clients of these two services in the aggregate and for each municipality.

As in the case of branch penetration, the deposit and loan account measures have their shortcomings. First, they do not capture the quality of services received by customers. Second, customers might have several deposit or loan accounts, so that these indicators are imperfect measures of the actual share of population using deposit and lending services in the banking system. However, Beck et al. (2007) and Honohan (2007) show that these account indicators are good proxies for the share of the population that uses banking services as reflected in household surveys (i.e., these outreach measures help predict the share of the population that uses banking services across countries for which household surveys on the use of banking services exist). Finally, we only have information on the total number of deposit and loan accounts, but cannot distinguish between accounts of households and enterprises of different sizes.

Since our objective is to examine changes in outreach, we focus exclusively on retail banks. We do not consider banks that only have a presence in Mexico City and are clearly either niche or investment banks. Hence, there are both domestic and foreign banks that are left out of the analysis for this reason. Table 3 lists the 14 banks included in our aggregate (country-level) analysis and, in parentheses, the banks that merged with any of these 14 banks during the sample period 1997–2005. The table also shows the initial (as of December 1997) size and outreach of each bank. It is important to note that we exclude Banco de Azteca, a domestic bank that entered the system in 2002 with a large branch network and high loan account penetration, because this bank operated as the consumer finance arm of a retail household item store (Electra) prior to 2002.²² Our findings are thus not driven by the conversion of Azteca into a bank. However, we are able to confirm our findings if we include Banco Azteca in our sample. In fact, if we include Azteca in the analysis we get stronger declines in all variables, including the number of municipalities and branches. These results are available upon request.

In our bank-level analysis, we focus only on large retail banks. Specifically, we limit our sample to the five large banks that were acquired by foreigners and to Banorte, the only remaining large domestic bank. The reason for restricting the sample in this way is that, for the purpose of including a valid control group, Banorte is truly the only institution comparable in initial size and outreach to the foreign acquired banks (see Table 3). Our results become stronger (i.e., we find larger declines in outreach) if we include all retail banks in our regressions. These results are also available upon request.

To measure foreign bank presence, we use information on the ownership type of specific banks as well as data on the overall market share of majority foreign-owned banks. In our aggregate analysis, we use balance sheet information across all Mexican banks to calculate the share of deposits (in terms of amounts) held by foreign-owned banks.²³ In our bank-level analysis, we construct virtual banks, i.e., we treat banks that merged during the sample period as one unit throughout the analysis.²⁴ Doing so yields a sample of six large retail banks, five of which ended the sample period as foreign-owned, and Banorte, which remained domestic during the sample period. We identify foreign-acquired banks with a dummy variable that takes on value one for the five banks that ended the sample period as foreign-owned starting with the quarter after the acquisition (we label this variable Foreign Acquisition).

Finally, our empirical analysis also incorporates a number of other country- and bank-level variables, depending on the estimations. In the aggregate, country-level analysis, we control for Mexico's GDP per capita in constant prices.²⁵ In the bank-level regressions, we control for a number of time-

²² Schulz (2006) also excludes Banco Azteca from his analysis of how foreign bank acquisitions affected bank efficiency, capitalization, and lending in Mexico. He argues that since Azteca began its operations as a bank in 2002 its balance sheet and income statement data for the first years are likely to reflect start-up costs and its inclusion in the analysis could bias results.

²³ Our results remain unchanged if we measure foreign bank presence by the share of loans granted by foreign banks.

²⁴ Take the case of Banamex and Citibank. The latter acquired Banamex in 2001; we treat the two banks as one throughout the sample. Prior to 2001, we add the data for both banks to create one consolidated institution. We do this to avoid the artificial jump in outreach measures (branches, loans, and deposits) that we would otherwise observe at the time of the merger. We consider the merged bank to be foreign starting in 2001, since Citibank operations were very small relative to Banamex prior to 2001.

²⁵ Results do not change if we control for GDP growth instead.

Table 3

Banks included in the country-level estimations. Table contains all banks that enter the aggregate regressions of Table 4 and shows their outreach and assets as of 1997, the first year in our sample period. The banks in parentheses are banks that were purchased by or merged with the first bank in the respective row during the period 1997–2005. For dates of foreign acquisitions see Table 2.

Bank	Ownership	Number of municipalities where bank is present as of 1997	Number of branches as of 1997	Number of deposit accounts as of 1997	Number of loans accounts as of 1997	Assets (in millions of pesos) as of 1997
Banregio	Domestic	1	3	3343	325	1395
Bansi	Domestic	1	1	9714	173	524
Inbursa	Domestic	2	3	8712	322	19,611
Interacciones	Domestic	2	2	9,336	100	7625
Invex	Domestic	1	1	56	64	2380
Ixe	Domestic	1	18	26,279	171	2381
Mifel	Domestic	1	3	5533	178	2072
Bajio (Industrial)	Domestic	7	22	27,764	234	2305
Banorte (Bancentro, Bancreer, Banpais)*	Domestic	318	1281	3131,493	14,419	50,947
Scotiabank (Inverlat)*	Foreign	125	300	1,129,251	5369	65,100
Citibank (Banamex, Confia)*	Foreign	332	1536	5,054,764	35,637	266,544
BBVA (Bancomer, Promex)*	Foreign	432	2039	4,976,738	82,109	322,250
HSBC (Bital, Republic of NY, Atlantico, Interestatal, Sureste)*	Foreign	320	1767	6,993,346	10,273	115,847
Santander (Mexicano, Serfin)*	Foreign	247	836	3,948,551	6139	209,131

* Banks included in bank-level and bank-municipality-level regressions.

variant bank characteristics, such as size, loan-asset ratio, return on assets (ROA), operating costs, and net interest margins, computed from financial statements. In some bank-municipality-level regressions, we interact the Foreign Acquisition dummy with GDP per capita or the share of rural population at the municipality level in 1994. GDP and population data come from the Instituto Nacional de Estadística, Geografía e Informática (INEGI), Mexico's statistical institute.²⁶

4. Methodology

To analyze how outreach changed as a result of foreign bank acquisitions we exploit the variation in our data along the three dimensions of time, banks, and municipalities. Specifically, we conduct (i) country-level time-series regressions, with data aggregated across all banks and municipalities, (ii) bank panel regressions, with data aggregated for each bank over all municipalities, and (iii) bank-municipality panel regressions, with data for each bank within each municipality and each quarter. We discuss each specification in turn.

We investigate changes in outreach for the overall Mexican banking system by running the following specification:

$$Y_t = \alpha \text{ Foreign Share}_t + \beta \text{ GDP per capita}_t + \varepsilon_t \quad (1)$$

²⁶ GDP data at the municipality level was constructed from value added information derived from the 1994 Economic Census conducted by INEGI. The share of rural population is defined as the share of population living in towns/villages with fewer than 2500 inhabitants. Population data at the municipality level (both total population and the share of rural population) come from the 1995 Censo de la Población conducted by INEGI.

where Y is one of our four outreach measures – share of municipalities with bank branches, bank branches per capita, number of deposit accounts per capita, and number of loan accounts per capita – measured in quarter t . Foreign Share, our measure of foreign bank presence, is the percentage of deposits held by foreign-owned banks. GDP per capita, measured in constant pesos, is introduced to control for changes in economic and institutional conditions that might affect the demand and supply of financial services. The coefficient α indicates whether there is a positive, negative, or insignificant association between foreign bank participation and outreach over time at the country level.²⁷

We estimate three versions of Eq. (1): one where the outreach indicators are aggregated for all banks in the system, one where we add up the outreach measures for the domestic banks only and, finally, one where we consider only the outreach indicators for the five banks that became foreign-owned during the sample period. Looking separately at the outreach indicators for domestic and foreign banks allows us to determine the reaction of both groups of banks to the increasing presence of foreign banks in the system.

Next, we examine the link between bank-level outreach and foreign bank acquisitions, by estimating the following equation:

$$Y_{i,t} = \alpha \text{ Foreign Acquisition}_{i,t} + b_i + q_t + \varepsilon_{i,t} \quad (2)$$

where Y refers to the log of the (i) number of municipalities where bank i is present (has a branch) at time t , (ii) number of branches, (iii) number of deposit accounts, and (iv) number of loan accounts for bank i in time t . We include bank and quarterly dummies, b_i and q_t , respectively, to lessen concerns about omitted factors affecting the link between foreign acquisitions and outreach. Foreign acquisition is a dummy that equals one starting with the period after bank i was acquired by a foreign bank. We include all outreach indicators in logs, so that α can be interpreted as the approximate percentage change in outreach following foreign acquisition.²⁸ We estimate Eq. (2) only for the banks that became foreign-owned during the sample period plus Banorte, the only large bank that remained domestic during the sample period. By focusing on the six largest banks, we avoid our results being driven by the smaller banks, which had little outreach throughout the whole sample period. Also, for identification purposes, it is important to have a valid control group. Banorte is the only domestic bank that fits this criterion, since it is the only institution that compares in size and outreach to the banks that were eventually acquired (see Table 3).²⁹ The coefficient on foreign acquisition indicates how outreach changed after the top five banks in Mexico were acquired by foreign banks compared to (i) before acquisition, (ii) banks that had not been acquired yet, and (iii) Banorte, which was never acquired by foreigners during the sample period.³⁰ In robustness tests, we control for other time-variant bank characteristics such as bank assets, loan-asset ratios, overhead costs, and net interest margin and confirm our findings.

To assess the association between foreign acquisition and outreach within banks within municipalities, we utilize the following specification:

$$Y_{i,k,t} = \alpha \text{ Foreign Acquisition}_{i,t} + m_k + b_i + q_t + \varepsilon_{i,k,t} \quad (3)$$

²⁷ Since the deposit and loan account data for some banks show unexplainable large jumps, we control for these outliers by including quarterly dummy variables for these periods. Further, in the deposit and loan accounts per capita regressions, we introduce step variables that equal one after Bancomer (later merged with BBVA) changed its classification of deposit and loan accounts. Bancomer started including passbook savings accounts in their deposit account numbers in the second quarter of 2002, giving rise to a jump in deposit numbers. Also, there was a significant change in the classification of loan accounts in the first quarter of 1998. Having thoroughly checked the data we use and after extensive consultations with the Mexican banking authorities, we are confident that there are no remaining outliers in the data.

²⁸ While the log specification allows interpreting the coefficient on the foreign acquisition dummy, α , as percentage change for small numbers, the exact percentage change is $\exp(\alpha) - 1$.

²⁹ Note that since foreign acquisitions occurred at different stages over time, the identification of the effect of acquisitions is also coming from cross-bank and municipality differences in the timing of acquisitions. Also, the fact that we are including time and bank fixed effects lessens the concerns about endogeneity due to omitted factors.

³⁰ To take account of some anomalous large jumps in deposit and loan accounts for some banks in some quarters, we drop these observations from the regression, while at the same time including step dummies for Bancomer in the deposit account and loan account regressions, as discussed earlier.

where k is the municipality indicator and m_k are municipality fixed effects. We allow for correlation across the error terms of each municipality by computing clustered standard errors. In this specification, α indicates the effect of foreign acquisition on outreach by bank i in quarter t . As in the case of the Eq. (2), we include only the five banks acquired by foreigners and Banorte to properly identify the effect of acquisitions and to prevent small banks with little outreach from biasing our results.

We estimate Eq. (3) using two different functional forms depending on the measure of outreach we consider. First, we run probit regressions to estimate the likelihood that a bank is present in a given municipality and given quarter as function of foreign acquisition, controlling for municipality, bank, and time effects.³¹ The marginal effects estimated from these probit regressions capture the “extensive” margin of foreign acquisitions. Second, we run an OLS regression to estimate the effect of foreign acquisitions on the log of the number of branches, deposit, and loan accounts in municipalities where banks are present. Here too, we control for bank, time, and municipality fixed effects. These regressions capture the “intensive” margin, as they do not include municipalities without bank presence.³² Finally, both in the case of the probit and OLS estimations, we present regressions where we allow for a differential effect of foreign bank presence across municipalities depending on their initial level of economic development and degree of urbanization. In particular, we include interaction terms of Foreign Acquisition with municipality-level GDP per capita and the share of rural population in 1994, respectively. These interaction terms allow us to test whether changes in outreach were evenly spread throughout the Mexican territory.

5. Results

We begin by exploring the association between foreign bank participation and banking outreach at the aggregate, Mexico-wide, level in the form of graphs. We, then, present regression results using time-series data for Mexico. Next, we turn to bank-level regressions. Finally, we report results using the bank-municipality panel estimations. In all cases, we use quarterly data for the period 1997–2005.

5.1. Graphical evidence

Figs. 2–5 illustrate developments in banking outreach and foreign bank participation in Mexico for the period 1997–2005. Specifically, we graph each of the outreach indicators together with the share of deposits held by foreign-owned banks. Fig. 2 suggests a positive co-movement between the share of municipalities with bank presence (i.e., with bank branches) and the measure of foreign bank participation. Fig. 3 shows a negative association between branches per capita and the importance of foreign banks, while Fig. 4 shows first an increase then a decrease in deposit accounts per capita with the increase in foreign bank penetration. Fig. 5 suggests a strong negative co-movement between loan accounts per capita and foreign bank participation until 2004. However, after this period both variables are trending upwards.

These univariate graphic illustrations are just that – illustrations. They do not control for other factors affecting outreach. Hence, we now turn to regression analysis for more formal hypothesis testing.

5.2. Evidence from country-level regressions

Table 4 presents regressions using country-level data across 36 quarters between 1997 and 2005. The results in Table 4 Panel A show a positive association between the participation of foreign-owned banks and the share of municipalities served. On the other hand, we find a negative correlation between the foreign bank deposit share and branches and deposits per capita. While the foreign bank share enters negatively in the loans per capita regression, it is not significant.

³¹ Given the biases that might arise from including numerous dummy variables in a probit regression, we also ran the regressions for the likelihood of bank presence using OLS, which yielded very similar findings.

³² As in the bank-level regressions, we exclude the observations with anomalous jumps in deposit or loan account numbers.

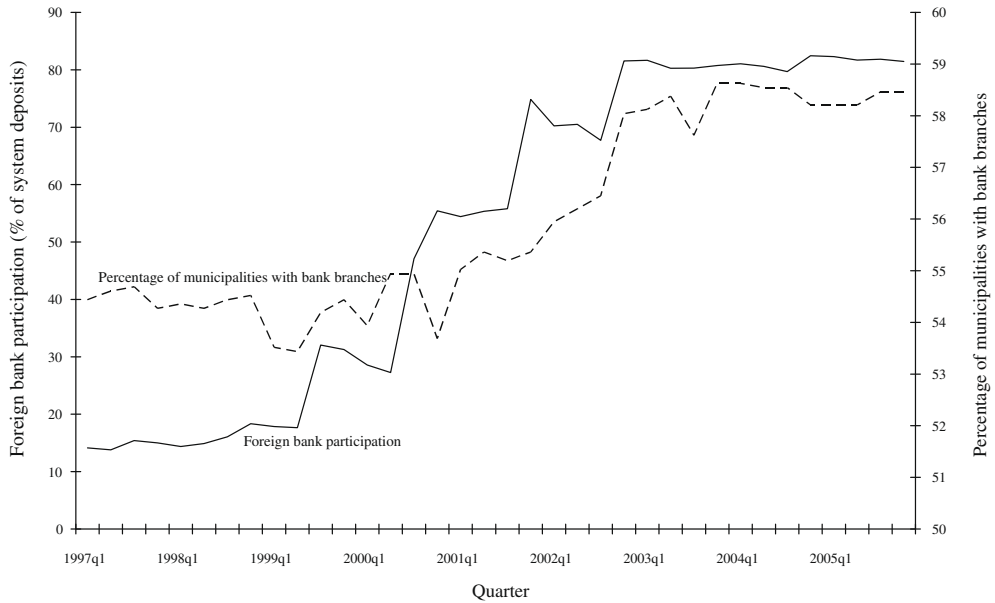


Fig. 2. Foreign bank participation and the percentage of municipalities with branches.

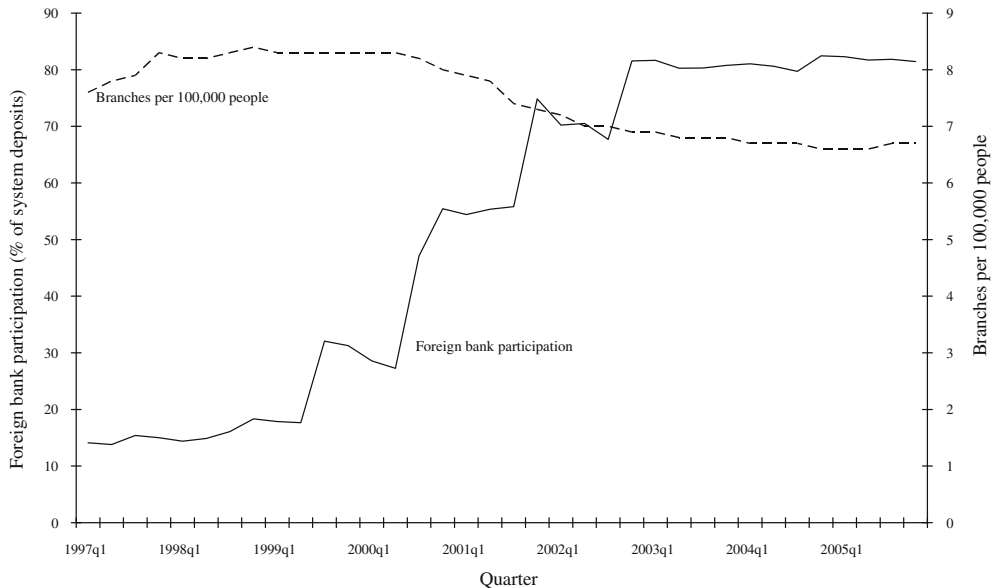


Fig. 3. Foreign bank participation and branches per capita.

In terms of economic significance, we find that our regressions predict that a 67% point increase in the foreign bank share (the actual change observed between 1997 and 2005) is associated with a 4.4% point increase in the share of municipalities served, relative to an initial share of 54%. On the other

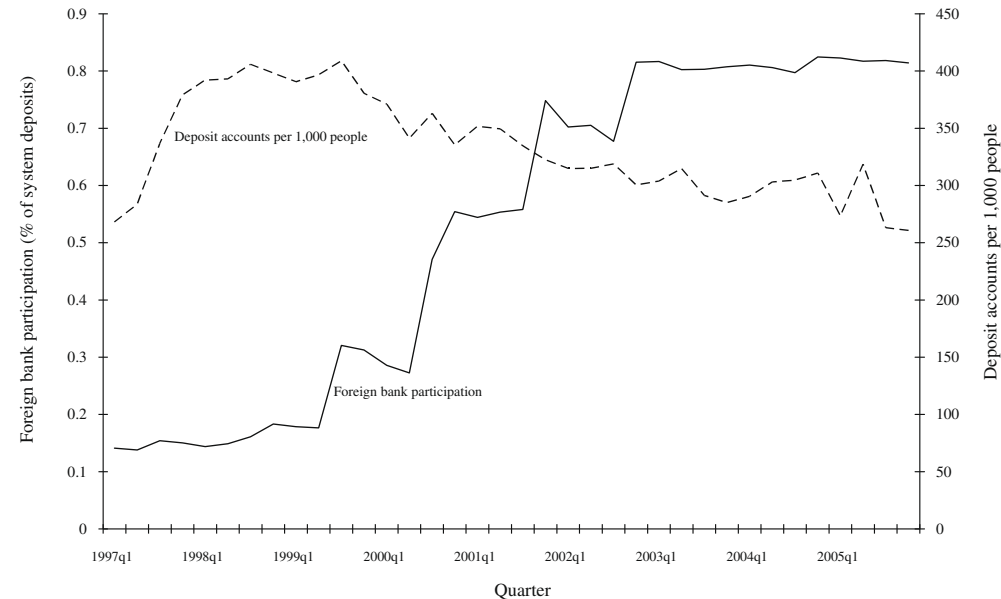


Fig. 4. Foreign bank participation and deposit accounts per capita.

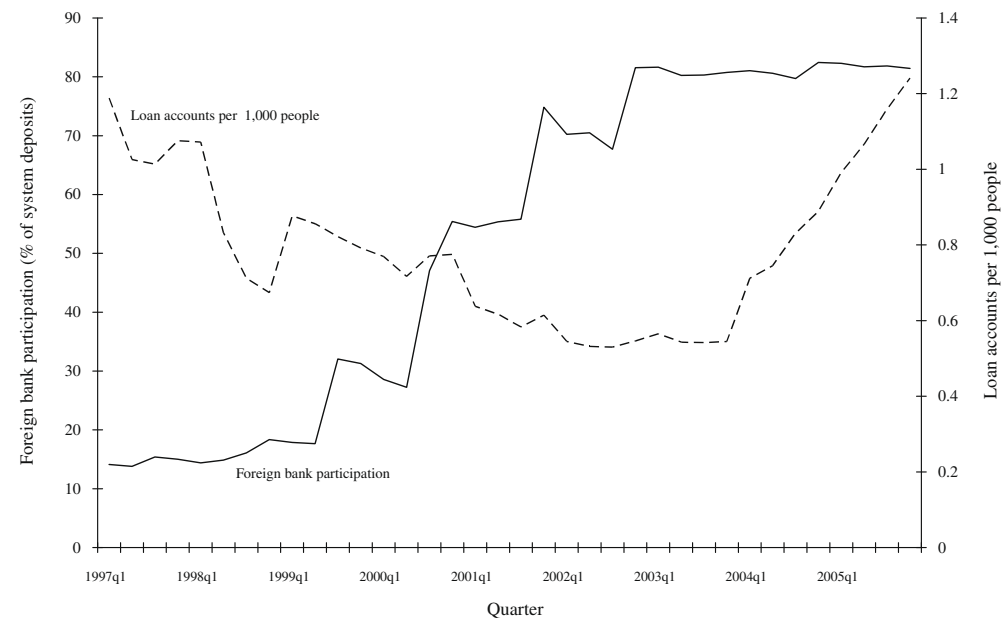


Fig. 5. Foreign bank participation and loan accounts per capita.

hand, this same increase in foreign bank participation is predicted to lead to a decline in 1.8 branches per 100,000 people and 46.6 deposit accounts per 1000 people. This compares to initial values of 8 for branches per 100,000 and 268 for deposit accounts per 1000 people. Hence, across the board the

Table 4

Foreign bank participation and outreach – Country-level time-series evidence. Regressions for deposit accounts per capita include the following dummies to control for outliers: first and second quarter of 1997; fourth quarter of 1998; second and fourth quarter of 2000; first, second, and third quarter of 2001; first and second quarter of 2003; first, third and fourth quarter of 2005. Regressions for loan accounts per capita include the following dummies to control for outliers: second, third, and fourth quarter of 1998; first quarter of 2001 and third and fourth quarter of 2003. We also include step dummies in the deposit (loan) accounts regressions that take on value one starting in the second quarter of 2002 (first quarter of 1998) to control for changes in the classification of deposits (loan) accounts by Bancomer. Robust *t*-statistics are in brackets. Panel A shows results using data aggregated at the country-level across all banks. Panel B (C) aggregates data at the country-level for all domestic (foreign) banks only.

	Share of municipalities with branches	Branches per 100,000 people	Deposits accounts per 1000 people	Loan accounts per 1000 people
<i>Panel A: aggregating across all banks</i>				
Foreign bank share	0.065***	−0.028***	−0.696***	−0.003
(% of total deposits)	[9.00]	[17.20]	[3.35]	[1.59]
Country GDP per capita	−0.302	0.274***	7.238	0.128
(in 000s of constant pesos)	[1.02]	[2.92]	[0.71]	[1.59]
Constant	57.471***	4.546***	175.427	−0.158
	[13.00]	[3.11]	[1.11]	[0.13]
Observations	36	36	36	36
R-squared	0.79	0.86	0.87	0.77
<i>Panel B: aggregating across domestic banks</i>				
Foreign bank share	−0.031***	−0.004***	0.013	0.001*
(% of total deposits)	[8.02]	[12.99]	[0.30]	[1.96]
Country GDP per capita	−0.159	−0.003	6.392**	0.053**
(in 000s of constant pesos)	[1.09]	[0.23]	[2.67]	[2.32]
Constant	29.531***	1.545***	−65.026*	−0.676*
	[13.38]	[8.57]	[1.74]	[1.95]
Observations	36	36	36	36
R-squared	0.76	0.89	0.71	0.48
<i>Panel C: aggregating across banks that became foreign</i>				
Foreign bank share	0.067***	−0.024***	−0.726***	−0.004***
(% of total deposits)	[10.10]	[16.97]	[4.76]	[3.27]
Country GDP per capita	0.036	0.277***	1.805	0.053
(in 000s of constant pesos)	[0.13]	[3.24]	[0.30]	[0.92]
Constant	47.323***	3.001**	225.703**	0.818
	[11.77]	[2.25]	[2.43]	[0.94]
Observations	36	36	36	36
R-squared	0.86	0.85	0.88	0.89

* Significance at 10% level.

** Significance at 5% level.

*** Significance at 1% level.

effects of changes in foreign bank participation appear to be sizeable and in relative terms (i.e., as a proportion of initial levels) the decline in branches and deposits seem to outweigh the increase in the share of municipalities served.

Table 4 Panel B and C consider the aggregate behavior of outreach measures for all domestic and, separately, all banks that became foreign-owned, respectively. We find that while the share of municipalities served by foreign banks increases along with the rise in foreign bank participation, domestic banks are present in fewer municipalities as the foreign bank share increases. On the other hand, the number of branches per capita declines for both foreign and domestic banks, along with the rise in foreign bank participation. While deposits per capita fall for foreign banks, we do not observe a decline for domestic banks in response to the increase in foreign bank presence. Finally, loans per capita among foreign banks fall as their presence increases, while loans per capita rise among domestic banks. The opposing effects explain why overall there is no significant relation between foreign bank share and loans per capita.

In summary, the evidence in Table 4 suggests that while more municipalities are being served as foreign bank penetration rises, branch penetration falls for all banks in the system. Deposits and loans per capita drop for banks that became foreign, but the decline in loans is partly offset by the behavior

of domestic banks, which seem to increase the number of loans as foreign banks gain market share in Mexico, potentially as reaction to the change in foreign banks' lending policies. Finally, we also find that GDP per capita is positively and significantly associated with branch penetration of all banks and of the five banks that became foreign-owned, while it is positively and significantly associated with deposit and loan accounts per capita of domestic banks.

The results above are robust to a number of alternative estimations, not shown but available upon request. First, the results remain the same if we lag the measure of bank participation to allow for a delayed response to ownership changes and to lessen concerns about endogeneity. Second, our findings do not vary if we control for changes in bank concentration, as measured by the share of deposits held by the top three banks in Mexico. As foreign banks acquired domestic banks, concentration levels increased from the range of 50% to 60%. Some might argue that observed changes in outreach might be driven by changes in concentration as opposed to foreign presence. This does not appear to be the case in Mexico.

5.3. Evidence from bank-level regressions

While the aggregate (country-level) regressions explore the overall effect of foreign bank participation on outreach, bank-level regressions enable us to examine changes in outreach after acquisitions. Also, relative to the country-level regressions, the bank-level estimations allow for a better identification strategy, since we can examine acquisitions that occurred at different points in time and compare them to a bank that was never acquired, while at the same time better controlling for omitted factors by including time and bank effects. Specifically, Table 5 presents bank-level regressions including the five banks that were acquired by foreigners – namely Banamex, Bancomer, Bital, Inverlat, and Serfin – and Banorte, the only remaining large domestic bank.³³ Here the variable of interest is the foreign acquisition dummy which takes the value of one after the acquisitions.

The results in Table 5 Panel A suggest that after foreign acquisition banks operate in a larger number of municipalities and increase their branch penetration, but at the same time the number of deposit and loan accounts drops. These regressions control for bank and time specific effects, thus the effect of lower outreach after the acquisition by foreign banks is relative to the average level of outreach of each bank over the sample period 1997–2005 and the average level of outreach across the six banks in a specific quarter. These findings are confirmed when we control for changes in Mexican GDP per capita instead of quarterly dummies.³⁴ We get stronger declines in outreach (even for branches and number of municipalities) if we include all retail banks and not just the six banks considered so far (namely, the five banks taken over by foreigners plus Banorte).

The regressions in Panel B show the robustness of our findings to including several time-variant bank-level characteristics. Specifically, we include the log of assets to proxy for size, the loan-asset ratio to control for retail orientation, return on assets to capture banks' profitability, and operating costs relative to total assets, and net interest margins as a share of assets to account for variations in efficiency. Foreign acquisition continues to enter significantly, with the same sign and with almost identical coefficient sizes as in Panel A. Furthermore, none of the bank-level characteristics enters with a consistently significant coefficient across different dependent variables.³⁵

The economic effects of foreign acquisition are quite large, especially when it comes to loans. Foreign acquisition leads to a 6% increase in the number of municipalities served and a 7% increase in the number of branches. On the other hand, it results in a 12% decline in deposits accounts and 59% fewer loan accounts. For the number of municipalities served and deposit and loan accounts, these results are largely consistent with the results of Table 4 Panel C. The results are different for the number of branches, where Table 4 shows a decline with higher foreign bank participation. The difference in

³³ As discussed above, we do not include the smaller domestic banks, as they do not seem to be an appropriate control group.

³⁴ These estimations are available upon request.

³⁵ They only become significant if we drop the bank dummies. Hence, it appears that financial characteristics are only significant in explaining cross-bank differences in outreach.

Table 5

Foreign bank acquisitions and outreach – Bank-level evidence. In the regressions for log of deposit accounts we drop the following observations since they are outliers: Banamex in first and second quarter of 1997; Bital-HSBC in third and fourth quarter of 2005; Banorte in the first quarter of 2005; Scotiabank in fourth quarter of 1998 and second quarter of 2000. In the regressions for log of loan accounts we drop the observations for Santander in the fourth quarter of 1998 and in the first quarter of 2001, Bital in the third and fourth quarter of 1998 and BBVA in the third and fourth quarter of 2003. We include step dummies in the observations for Bancomer in the deposit (loan) accounts regression that take on value one starting in the second quarter of 2002 (first quarter of 1998) to control for sudden reclassifications. Robust *t*-statistics are in brackets.

	Log of number of municipalities with bank branches	Log of number of branches	Log of number of deposits	Log of number of loans
<i>Panel A: Baseline regressions</i>				
Foreign acquisition	0.058*** [3.73]	0.070*** [3.70]	−0.123** [2.57]	−0.883*** [8.26]
Constant	5.394*** [98.33]	6.741*** [178.36]	13.697*** [136.53]	9.507*** [31.85]
Observations	216	216	204	209
R-squared	0.98	0.98	0.94	0.83
Bank dummies	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes
<i>Panel B: Controlling for bank characteristics</i>				
Foreign acquisition	0.054*** [3.47]	0.069*** [3.56]	−0.111** [2.25]	−0.855*** [7.93]
Log of total assets	0.022 [1.20]	0.021 [1.01]	−0.041 [0.99]	−0.149 [1.24]
Loan to asset ratio	−0.002 [0.03]	0.157* [1.75]	0.226 [1.55]	−0.679 [1.32]
Return on assets	−0.305 [0.53]	−1.204 [0.92]	4.248*** [2.64]	8.341 [1.13]
Overhead costs to assets	4.719** [2.23]	1.812 [0.61]	−10.342 [1.60]	−28.429 [1.62]
Net interest margin to assets	−0.176 [0.41]	0.318 [0.52]	−0.456 [0.58]	−3.538 [0.84]
Constant	5.695*** [21.92]	7.149*** [24.61]	14.166*** [26.17]	10.431*** [6.59]
Observations	216	216	204	209
R-squared	0.98	0.98	0.95	0.83
Bank dummies	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes

* Significance at 10% level.

** Significance at 5% level.

*** Significance at 1% level.

these results is driven by the fact that while the bank-level regressions include time dummies to control for country-wide trends, the estimation in Table 4 only controls for Mexico's GDP per capita.³⁶

5.4. Evidence from bank-municipality-level regressions

While the results using country-wide time-series data for Mexico show the aggregate effect of foreign bank participation on outreach and the bank-level regressions allow us to identify changes in outreach following acquisitions, the bank-municipality regressions in Table 6 enable us to assess the effect of foreign acquisitions on outreach as a function of municipality characteristics such as income and degree of urbanity. Further, given that for each of the six banks we have data for more than 1163 municipalities over 36 quarters between 1997 and 2005, these specifications give us greater power and allow us to verify whether the findings at the national and bank-level hold up when we focus on a smaller geographical entity. All regressions include municipality, bank, and quarter dummies, so that we measure the effect of foreign acquisitions relative to the average for each bank, municipal-

³⁶ In other words, if we drop the time dummies we get similar findings to those in Table 4.

ity, and time period. Panels A, B and C present (i) the baseline regression with the foreign acquisition dummy, (ii) regressions with the foreign acquisition dummy and its interaction with GDP per capita, and (iii) regressions with the foreign acquisition dummy and its interaction with the rural population share, respectively.

Panel A of Table 6 suggests that the likelihood of bank presence in a given municipality increases after acquisition by a foreign bank, while the number of deposit and loan accounts decrease. The foreign acquisition dummy enters positively and significantly in the probit regression and negatively and significantly in deposit and loan account regressions. It enters negatively, but insignificantly in the regressions for the number of branches. The economic significance is similar to the regressions in Table 5: foreign acquisitions lead to a 3% increase in the likelihood that the bank is present in the municipality, a 24% decrease in deposit accounts, and a 60% decrease in the number of loan accounts.

Table 6 Panel B results suggest that richer municipalities experience an increase in branches after foreign bank acquisition and a smaller decrease in the number of loan accounts. The interaction of foreign acquisition with municipality-level GDP per capita enters positively and significantly in the number of branches and loan account regressions, but insignificantly in the probit and deposit account regressions. Comparing the coefficient sizes on the foreign acquisition dummy and the interaction terms suggests that the effect of foreign bank acquisitions on the number of branches of a given bank in a given municipality is positive only above 3100 Pesos GDP per capita in 1994. However, the effect is statistically significant only for municipalities with GDP per capita above 19,000 pesos (those in the top 1 percentile of the distribution). In the case of loan accounts, except for municipalities with over 45,000 Pesos in per capita income (those in the top 0.01 percentile), all other municipalities experience a reduction in the number of loan accounts after foreign acquisitions. The increase in the likelihood of bank presence and the decrease in the number of deposit accounts after foreign acquisition, on the other hand, are independent of the GDP per capita level of the municipality.

Panel C regressions suggest that the change in the likelihood of bank presence and the number of bank branches after foreign acquisitions depend on the degree of urbanity, while rural municipalities experience an unequivocal stronger decrease in the number of deposit and loan accounts. The foreign acquisition dummy enters positively (negatively) and significantly in the probit and branch (deposit and loan accounts) regressions, while its interaction with the share of rural population enters negatively and significantly in all regressions. The coefficient sizes suggest that only municipalities with less than 66% rural population share experience an increase in the likelihood of bank presence, after the bank was acquired by foreigners. In fact, the effect is positive and statistically significant for municipalities with a share of rural population below 50%. For municipalities with a share of rural population above this percentage the effect is negative, but not significant. Similarly, from the coefficient sizes we can infer that only municipalities with a share of rural population below 26% (i.e., 28.8% of municipalities) experience an increase in branches after foreign acquisitions. However, this increase is statistically significant only for municipalities in the bottom 5 percentile of the distribution of the rural share (i.e., those with a rural share close to 1.5%). Municipalities with a rural share above 50% experience an economically and statistically significant decline in the number of branches. The negative impact of foreign acquisitions on the number of deposit and loan accounts is exacerbated for rural municipalities. While municipalities with 22% rural population share (25th percentile) experienced a decrease of 22% (59%), municipalities with 71% rural population share (75th percentile) experience a decrease of 34% (68%) in the number of deposit (loan) accounts.

In sensitivity analyses, we assessed whether there was a differential impact of acquisition by Spanish (Santander and BBVA) and non-Spanish banks (Citibank, HSBC and Scotia Bank) and we investigated whether our findings are robust to controlling for the time these banks had been in private ownership. Since these results do not materially change our main conclusions we report them in appendix tables.

The results in Table A1 show that there is not a clear pattern in terms of differences across banks of different foreign origin. While non-Spanish banks seem to be responsible for the increase in the presence of banks across municipalities following foreign acquisitions, they also seemed to have cut back more in terms of lending. At the same time, banks that were acquired by Spanish banks, experienced sharper declines in the number of branches and deposits relative to the other banks. In terms of the differences across municipalities, we find that banks acquired by non-Spanish banks increased their

Table 6

Foreign bank acquisitions and outreach – Bank-municipality regressions. Regressions for log of deposit accounts include the following dummies to control for outliers for municipalities where the respective bank is present: Banamex in first and second quarter of 1997; Bital-HSBC in third and fourth quarter of 2005; Banorte in the first quarter of 2005; Scotiabank in fourth quarter of 1998 and second quarter of 2000. Regressions for log of loan accounts include the following dummies to control for outliers: Santander in the fourth quarter of 1998 and in the first quarter of 2001, BBVA in the third and fourth quarter of 2003, and Bital in the third and fourth quarter of 1998 for municipalities where the respective bank is present. We also include step dummies in the deposit (loan) accounts regressions for municipalities with presence of Bancomer that take on value one starting in the second quarter of 2002 (first quarter of 1998) to control for sudden reclassifications. The estimation of the probability of bank presence is conducted using a probit model. Robust t or z-statistics are reported in brackets. Standard errors are clustered at the municipality level.

	Probability of bank presence	Log of number of branches	Log of number of deposits	Log of number of loans
<i>Panel A: Baseline regressions</i>				
Foreign acquisition	0.029*** [4.31]	–0.001 [0.12]	–0.271*** [13.29]	–0.909*** [26.10]
Constant		–0.093** [2.25]	7.844*** [144.64]	1.822*** [23.46]
Observations	117,496	62,910	59,072	49,211
R-squared	0.39	0.88	0.69	0.72
Bank dummies	Yes	Yes	Yes	Yes
Municipality dummies	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes
<i>Panel B: Interacting with GDP per capita</i>				
Foreign acquisition	0.021** [2.36]	–0.012 [1.25]	–0.296*** [10.79]	–0.987*** [25.36]
Foreign acquisition*	0.004	0.004*	0.008	0.022***
GDP per capita	[1.43]	[1.83]	[1.16]	[4.00]
Constant		–0.096** [2.33]	7.849*** [144.42]	2.555*** [38.82]
Observations	116,554	62,630	58,808	49,051
R-squared	0.39	0.88	0.69	0.73
Bank dummies	Yes	Yes	Yes	Yes
Municipality dummies	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes
<i>Panel C: Interacting with share of rural population</i>				
Foreign acquisition	0.076*** [3.49]	0.025* [1.86]	–0.179*** [5.60]	–0.794*** [18.16]
Foreign acquisition*	–0.001**	–0.001**	–0.003***	–0.005***
share rural population	[2.34]	[2.54]	[3.98]	[4.08]
Constant		–0.096** [2.35]	7.862*** [146.19]	2.566*** [39.56]
Observations	116,554	62,630	58,808	49,051
R-squared	0.39	0.88	0.69	0.73
Bank dummies	Yes	Yes	Yes	Yes
Municipality dummies	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes

* Significance at 10% level.

** Significance at 5% level.

*** Significance 1% level.

branches more in richer areas while at the same time Spanish banks decreased their lending less in richer municipalities but reduced their outreach more in rural areas.

As discussed above, most Mexican banks were privatized at different points in time during 1991 and 1992, so that the effect of foreign bank acquisition might be confounded with the effect of private ownership. However, the results in Table A2 show that controlling for the time since privatization does not change our main findings on the effect of foreign bank acquisition. Time since privatization itself has a positive impact on the probability of presence of a branch, the number of deposits and loans, but a negative impact on the total number of branches.

Table A1

Foreign bank acquisitions and outreach – Spanish vs. non-Spanish banks. Regressions for log of deposit accounts include the following dummies to control for outliers for municipalities where the respective bank is present: Banamex in first and second quarter of 1997; Bital-HSBC in third and fourth quarter of 2005; Banorte in the first quarter of 2005; Scotiabank in fourth quarter of 1998 and second quarter of 2000. Regressions for log of loan accounts include the following dummies to control for outliers: Santander in the fourth quarter of 1998 and in the first quarter of 2001, BBVA in the third and fourth quarter of 2003, and Bital in the third and fourth quarter of 1998 for municipalities where the respective bank is present. We also include step dummies in the deposit (loan) accounts regressions for municipalities with presence of Bancomer that take on value one starting in the second quarter of 2002 (first quarter of 1998) to control for sudden reclassifications. The estimation of the probability of bank presence is conducted using a probit model. Robust *t*- or *z*-statistics are reported in brackets. Standard errors are clustered at the municipality level. All regressions include bank, quarter and municipality dummies.

	Probability of bank presence	Log of number of branches	Log of number of deposits	Log of number of loans
<i>Panel A: Baseline regressions</i>				
Foreign acquisition by Spanish banks	−0.003 [0.33]	−0.094*** [7.30]	−0.420*** [15.83]	−0.717*** [16.40]
Foreign acquisition by non-Spanish banks	0.052*** [5.38]	0.063*** [6.79]	−0.171*** [7.30]	−1.014*** [24.16]
Constant		−0.142*** [3.48]	8.632*** [187.07]	1.879*** [24.77]
Observations	117,496	62,910	59,072	49,211
R-squared	0.39	0.88	0.70	0.73
Test for equality of Spanish vs. non-Spanish acquisitions	16.27***	109.81***	76.6***	35.04***
<i>Panel B: Interacting with GDP per capita</i>				
Foreign acquisition by Spanish banks	−0.01 [0.89]	−0.091*** [5.70]	−0.443*** [14.10]	−0.856*** [16.44]
Foreign acquisition by non-Spanish banks	0.045*** [3.88]	0.041*** [3.40]	−0.196*** [5.23]	−1.038*** [22.48]
Foreign acquisition by Spanish banks* GDP per capita	0.005 [1.12]	−0.001 [0.18]	0.008 [1.37]	0.038*** [3.97]
Foreign acquisition by non-Spanish banks* GDP per capita	0.003 [1.03]	0.007*** [2.94]	0.007 [0.71]	0.007 [1.27]
Constant		−0.147*** [3.61]	7.403*** [112.98]	1.876*** [25.27]
Observations	116,554	62,630	58,808	49,051
R-squared	0.39	0.88	0.70	0.72
Test for equality of Spanish vs. non-Spanish acquisitions	12.27***	44.73***	37.11***	9.06***
Test for equality of Spanish vs. non-Spanish acquisitions with interactions with GDP per capita	0.1	3.84**	0.01	8.87***
<i>Panel C: Interacting with share of rural population</i>				
Foreign acquisition by Spanish banks	0.075** [2.38]	−0.063*** [3.22]	−0.324*** [8.91]	−0.435*** [7.21]
Foreign acquisition by Non-Spanish banks	0.069** [2.37]	0.075*** [4.44]	−0.086** [2.12]	−1.026*** [20.59]
Foreign acquisition by Spanish banks* Rural pop.	−0.002** [2.56]	−0.001** [2.15]	−0.003*** [3.40]	−0.012*** [7.03]
Foreign acquisition by Non-Spanish banks* Rural pop.	−0.001 [0.67]	−0.001 [0.95]	−0.003*** [2.79]	0.001 [0.44]
Constant		−0.142*** [3.50]	7.401*** [112.98]	1.899*** [25.86]
Observations	116,554	62,630	58,808	49,051
R-squared	0.39	0.88	0.70	0.73
Test for equality of Spanish vs. non-Spanish acquisitions	0.03	32.76***	32.57***	81.22***
Test for equality of Spanish vs. non-Spanish acquisitions with interactions with the share of rural population	2.33	0.88	0.02	46.05***

* Significance at 10% level.

** Significance at 5% level.

*** Significance at 1% level.

Table A2

Foreign bank acquisitions and outreach – Controlling for time since privatization. Regressions for log of deposit accounts include the following dummies to control for outliers for municipalities where the respective bank is present: Banamex in first and second quarter of 1997; Bital-HSBC in third and fourth quarter of 2005; Banorte in the first quarter of 2005; Scotiabank in fourth quarter of 1998 and second quarter of 2000. Regressions for log of loan accounts include the following dummies to control for outliers: Santander in the fourth quarter of 1998 and in the first quarter of 2001, BBVA in the third and fourth quarter of 2003, and Bital in the third and fourth quarter of 1998 for municipalities where the respective bank is present. We also include step dummies in the deposit (loan) accounts regressions for municipalities with presence of Bancomer that take on value one starting in the second quarter of 2002 (first quarter of 1998) to control for sudden reclassifications. The estimation of the probability of bank presence is conducted using a probit model. Robust *t*- or *z*-statistics are reported in brackets. Standard errors are clustered at the municipality level. All regressions include bank, quarter and municipality dummies.

	Probability of bank presence	Log of number of branches	Log of number of deposits	Log of number of loans
<i>Panel A: Baseline regressions</i>				
Foreign acquisition	0.029 ^{***} [4.31]	−0.001 [0.12]	−0.271 ^{***} [13.21]	−0.910 ^{***} [25.93]
Time since privatization	0.002 ^{***} [6.81]	−0.002 ^{***} [5.28]	0.015 ^{***} [12.16]	0.013 ^{***} [7.96]
Constant		−0.054 [1.27]	7.563 ^{***} [109.74]	1.569 ^{***} [16.75]
Observations	117,496	62,910	59,072	49,211
R-squared	0.39	0.88	0.70	0.72
<i>Panel B: Interacting with GDP per capita</i>				
Foreign acquisition	0.021 ^{**} [2.36]	−0.012 [1.25]	−0.296 ^{***} [10.73]	−0.987 ^{***} [25.18]
Time since privatization	0.002 ^{***} [6.78]	−0.002 ^{***} [5.28]	0.015 ^{***} [12.03]	0.013 ^{***} [8.00]
Foreign acquisition*GDP per capita	0.004 [1.43]	0.004 [1.82]	0.008 [1.16]	0.022 ^{***} [3.97]
Constant		−0.057 [1.34]	7.569 ^{***} [109.34]	2.313 ^{***} [27.26]
Observations	116,554	62,630	58,808	49,051
R-squared	0.39	0.88	0.70	0.73
<i>Panel C: Interacting with share of rural population</i>				
Foreign acquisition	0.076 ^{***} [3.49]	0.025 [*] [1.85]	−0.179 ^{***} [5.56]	−0.794 ^{***} [18.03]
Time since privatization	0.002 ^{***} [6.78]	−0.002 ^{***} [5.31]	0.015 ^{***} [11.97]	0.013 ^{***} [7.98]
Foreign acquisition* Rural population	−0.001 ^{**} [2.34]	−0.001 ^{**} [2.52]	−0.003 ^{***} [3.96]	−0.005 ^{***} [4.05]
Constant		−0.058 [1.35]	7.206 ^{***} [88.26]	2.327 ^{***} [27.88]
Observations	116,554	62,630	58,808	49,051
R-squared	0.39	0.88	0.70	0.73

* Denote significance at 10 percent level.

** Denote significance at 5 percent level.

*** Denote significance at 1 percent level.

Summarizing, the bank-municipality regression results confirm the findings from the bank-level analysis that the probability of bank presence in a municipality increases after foreign acquisitions, while the number of deposit and loan accounts decrease. However, the positive effect of the geographic extension of foreign banks appears to be limited to urban areas, while the negative effect of foreign acquisitions on deposit and loan account penetration is stronger in rural and poorer areas. Finally, foreign acquisitions have a positive impact on branch penetration only in very urban and rich areas.

6. Conclusions

Foreign bank entry is a new and significant phenomenon that many developing countries are experiencing nowadays as part of a general trend toward financial liberalization and globalization. Though

a literature has emerged analyzing the impact of foreign bank participation on bank efficiency, stability, and access to small business finance, to our knowledge, no study had thoroughly examined the implications for banking sector outreach.

Using country-, bank- and bank-municipality-level data, this paper analyzed how outreach changed in Mexico, during a period of rapidly rising foreign bank presence resulting from foreign acquisitions. Our estimations showed a consistent decline in deposit and loan accounts following acquisitions. On the other hand, while country- and bank-level estimations indicated an increase in the share of municipalities with bank branches and in the likelihood of bank presence, bank-municipality-level regressions showed that only rich and urban municipalities benefited. Overall, we interpret our results as suggestive of a decline in outreach following foreign bank acquisitions, since banks intermediated fewer deposits and loans and increasingly concentrated their operations in rich and urban areas.

What drives the observed changes in outreach? At least two competing explanations might be consistent with our findings. First, changes in outreach might be driven by a need to reduce inefficiencies built before the 1994 crisis. In other words, the reduction in outreach could be a rational action by profit maximizing banks seeking to reduce their costs and become more efficient. However, both Haber and Musacchio (2005) and Schulz (2006) do not find significant efficiency gains after foreign bank acquisition. On the other hand, both find increases in the profitability of the five acquired banks driven by higher fees after they were taken over by foreigners. This points to a second explanation, i.e., the observed outreach patterns might reflect a deliberate strategy by foreign banks to cater to the upper end of the market (that is focus on the richer and more urban clients) consistent with the argument that foreign banks “cherry pick” their clients. Though it needs to be formally tested, this change in business strategy combined with an increase in profitability could have been made possible by the limited competition in the Mexican banking market over our sample period. Finally, whether the patterns described here will continue beyond our sample period or are specific to the early period of entry following the Tequila crisis will need to be examined in future research.

Appendix. See Tables A1 and A2.

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