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Foreign Entry and the Mexican Banking System, 1997–2007

In recent years, governments around the world have been opening up their banking systems to foreign competition with the expectation of making them more efficient, stable, and resilient to shocks. Academics and policy-makers have therefore been exploring the effects of foreign bank entry from both a theoretical and an empirical point of view. Most studies conclude that foreign entry increases the contestability of markets, thereby reducing administrative costs, lowering net interest margins (NIMs), and driving down bank rates of return. Nevertheless, as Clarke and others note, much of what we know comes from cross-country studies that are heavily weighted toward developed economies.¹ This is particularly crucial because the impact of foreign entry may vary with the level of economic development.²

The literature to date on foreign bank entry in developing economies does not provide a consensus set of results. There is some evidence that foreign entry increases social welfare. Clarke, Cull, and Martínez Pería find that enterprises in countries with high levels of foreign bank participation tend to rank interest rates and access to long-term loans as lesser constraints on their operations and growth than do enterprises in countries with low levels of foreign bank participation.³ Martínez Pería and Mody, analyzing a group of

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1. Clarke and others (2005).

2. Lensink and Hermes (2004); Claessens, Demirgüç-Kunt, and Huizinga (2001).

3. Clarke, Cull, and Martínez Pería (2006).

Latin American cases in a pooled time-series cross-sectional framework, find that foreign banks charge lower interest rate spreads than domestically owned banks.⁴ They also find that foreign bank entry is associated with an overall increase in administrative efficiency and a decrease in interest spreads, suggesting that foreign entry spurred competition. Denizer obtains similar results in a study of Turkey: foreign entry reduced domestic bank overhead expenses, as well as bank profitability.⁵ Unite and Sullivan find that foreign entry was associated with declines in interest rate spreads, overhead expenses, and profits in the Philippines, but the effect was confined to domestic banks that had been tied to business groups.⁶ Kasekende and Sebudde report that foreign banks in Uganda have better internal control mechanisms than domestic banks in terms of judging the quality of borrowers.⁷

Not all the evidence points in the same direction, however. Havrylchuk finds that foreign banks in Poland are more efficient than domestic banks, but then shows that the efficiency gains are all located in so-called greenfield banks: domestic banks that are acquired by foreign banks do not become more efficient.⁸ Cardim de Carvalho finds no differences between foreign and domestic banks in Brazil in terms of credit allocation or technical efficiency.⁹ Indeed, technical progress in online banking and automation in Brazil has been introduced more aggressively by domestically owned banks. Claessens, Demirgüç-Kunt, and Huizinga find that foreign banks operating in developing economies have higher overhead expenses, charge higher interest margins, and earn higher rates of return than domestic banks.¹⁰

Foreign banks may also be less willing to extend credit on the basis of “soft knowledge” about firms than domestically owned banks. Studies of Argentina and Pakistan suggest that foreign entry may therefore give larger firms even greater advantages by exacerbating problems of differential access to capital.¹¹ The finding that foreign banks eschew soft-knowledge lending is supported by multicountry studies that use panel data techniques. Detragiache, Tressel, and Gupta report that foreign entry in a panel of poor economies is associated with a net reduction in total lending to the private sector: foreign

4. Martínez Pería and Mody (2004).

5. Denizer (1999).

6. Unite and Sullivan (2003).

7. Kasekende and Sebudde (2002).

8. Havrylchuk (2006).

9. Cardim de Carvalho (2002).

10. Claessens, Demirgüç-Kunt, and Huizinga (2001).

11. Clarke and others (2000); Berger, Klapper, and Udell (2001); Mian (2006).

banks appear to have skimmed off the best credit risks, leaving domestic banks with a pool of weaker borrowers from which to select.¹² A related body of research suggests that foreign banks represent a trade-off for a developing country. Galindo, Micco, and Powell develop a model and present evidence indicating that foreign banks may be less susceptible to funding shocks than domestic banks because they can tap capital from their home institutions, but at the same time foreign banks are more reactive to shocks that affect expected returns.¹³ That is, they may be more fickle than domestic lenders, leading to greater banking system instability.

One limitation that affects most of the empirical studies to date is that they draw inferences from cross-country regressions or from regressions at the country level that do not control for unobservable variables, such as the riskiness of the loan portfolio or the level of risk aversion of the bank itself. Wong develops a model that shows that banks may increase net interest margins when their risk aversion increases, their operating costs (for loans) increase, or their market share increases.¹⁴ Because foreign bank entry into emerging markets is usually done through a combination of greenfield investments and mergers and acquisitions of domestic banks, it is hard to know if the effects of foreign bank entry are a product of the banks' foreignness or of the characteristics of the domestic banks being acquired.

We offer a contribution to the literature through a detailed study of the impact of foreign entry in Mexico from 1997 to 2007. Focusing on a single country over a long period allows us to improve identification by taking a quasi-experimental approach. First, regulatory restrictions in Mexico limited foreign bank entry before 1997, but they were then dramatically liberalized, allowing foreign firms to purchase the country's largest banks. The foreign market share grew from 16 percent in September 1997 to 54 percent by December 2000 and to 76 percent by December 2002—a ratio that has held more or less constant since then. Second, we are able to disaggregate foreign-owned banks into those that were created by the acquisition of preexisting, domestically owned banks and those that are *de novo*, greenfield operations.¹⁵ Third, the long time span of our data set allows us to employ regressions with

12. Detragiache, Tressel, and Gupta (2006).

13. Galindo, Micco, and Powell (2004).

14. Wong (1997).

15. Greenfield or foreign *de novo* banks in our database are both foreign banks that start new operations in Mexico and those that bought small domestic banks to enter the country. These greenfield or *de novo* banks are different from the banks that bought medium and large commercial banks in Mexico to enter the market, which we code as foreign mergers or acquisitions.

bank fixed effects. Fourth, the detailed nature of the Mexican data allows us to control for time-varying factors within banks, particularly the allocation of credit across different types of loans. In short, we are able to generate estimates that allow for cleaner identification of the impact of foreign ownership on bank behavior.

Our analysis indicates that, on average, foreign banks charge lower net interest margins than their domestic counterparts. This result may be driven by bank characteristics we do not control, however. In particular, foreign banks that bought Mexican banks started with a portfolio that was perhaps more risky than they would have liked. In the late 1990s, Mexican banks were still recovering from the banking crisis of 1995, and they were gradually unloading the bailout bonds issued by the government's deposit insurance agencies (in particular, the *Fondo Bancario de Protección al Ahorro*, or FOBAPROA, and the *instituto para la Protección al Ahorro Bancario*, or IPAB) and reducing their nonperforming loan portfolio.

Since there are many unobservable characteristics, such as the actual riskiness of the acquired bank portfolios, we examined the effect of switching from domestic to foreign ownership in a fixed-effects regression setting. This switch is associated with both a sizable decline in the ratio of nonperforming loans and a sizable increase in interest rate spreads. The most straightforward interpretation of these results is that foreign concerns bought domestic banks that had been making loans with low interest rates to parties that had a low probability of repayment. Our interpretation of the evidence is consistent with La Porta, López-de-Silanes, and Zamarripa, who show that in 1995–98, Mexican bankers tunneled into their own banks.¹⁶ This interpretation receives support from another of our findings: foreign greenfield banks do not display the pattern that we find for foreign mergers and acquisitions. All other things being the same, foreign greenfield banks screen borrowers no more intensively than domestically owned banks (including those that later became foreign owned), but charge lower interest spreads.

Our analysis also indicates that switching from domestic to foreign ownership is not associated with an expansion of credit. To the degree that we detect statistically significant relationships, they suggest that the switch to foreign ownership is associated with a reduction in loan volume. We also find some weak evidence that foreign greenfield banks extend less credit than domestically owned banks (including those that later transitioned to foreign ownership). We speculate that the inverse relationship between foreign ownership

16. La Porta, López-de-Silanes, and Zamarripa (2003).

and the extension of credit might be a product of Mexico's weak property rights environment.

Data

We obtained, and put into machine-readable form, balance sheets, income statements, and loan portfolios on a quarterly basis for every retail bank in Mexico from September 1997 to December 2007.¹⁷ These data were gathered by Mexico's National Banking and Securities Commission (*Comisión Nacional Bancaria y de Valores*, or CNBV) for the purpose of regulating the banks and then published in the CNBV's banking industry statistical bulletin (*Boletín Estadístico de Banca Múltiple*). The most recent quarters of data were available from the CNBV's website.¹⁸ For some reporting periods, some of the data were published by the CNBV in cumulative form (each quarter's data were the sum of that quarter's activity plus the activity of the previous quarter). Undoing these cumulative totals was a straightforward process after we identified the cases. Some of the data for some reporting periods were also published by the CNBV in deflated form (where the data had been first run through a price index). Here again, undeflating the data was a straightforward process after we identified the cases. We next identified those banks that had been subject to mergers and acquisitions (both by other domestic banks and by foreign banks) from information compiled by Mexico's National Commission for the Protection and Defense of Financial Service Users (CONDUSEF), and posted to their website. We were therefore able to create a unique data set that allows us to follow banks in time, regardless of changes in name or ownership.¹⁹ We then coded each bank-quarter

17. We exclude representation offices or small subsidiary operations of foreign banks that are not engaged in retail banking, where retail banking is defined as being in the deposit-loan business. This means that we exclude from our analysis a very small number of foreign-owned representation offices that make loans but do not take deposits. These banks account for a trivial fraction of the total loan volume.

18. These data are available online at www.cnbv.gov.mx. Readers who 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 data from the CNBV website will produce a truncated sample of surviving, merged banks.

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

as domestically owned, a foreign merger and acquisition (hereafter, foreign MA), or a foreign greenfield bank (hereafter foreign de novo).²⁰ Table 1 provides a guide to our coding of each bank operating in Mexico.

In an ideal world, we would begin our analysis prior to the entry of any foreign banks, which is to say in the early 1990s. Instead, we begin our analysis in September 1997. We do so because the macroeconomic instability of 1995–96 produced widespread debtor defaults, bank insolvencies, government interventions in the banks, and a bailout that ultimately cost Mexican taxpayers 15 percent of gross domestic product (GDP).²¹ There were two consequences of these interventions. First, to recapitalize the banks, the government lifted the regulatory restrictions that had limited the ability of foreign banks to purchase Mexican retail banks. Second, to prevent a reoccurrence of the 1995–96 banking crisis, the government reformed bank accounting standards in 1997. This means that it is not possible to link data from before September 1997 with data from after September 1997.²²

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 (September 1997), the vast majority of the foreign banks in Mexico were extremely small operations. There was only one foreign MA bank operating in Mexico (the Banco Santander, which had acquired a small Mexican bank in 1993), with a 7.7 percent market share. Fifteen foreign de novo banks accounted for an additional 8.3 percent of the loan market. At the end of the period under study, there were six foreign MA banks operating in Mexico (namely, Banamex, BBVA Bancomer, Santander Serfin, GE Capital Bank, Bital, and Scotiabank Inverlat), with a combined market share of 74.2 percent. Foreign de novo banks, of which there were seven, accounted for an additional 1.8 percent of the market. In short, the total foreign market share mushroomed from 16 percent in September 1997 to 76 percent by December 2007. Table 1 provides identifying information for each bank in our data set.

20. Foreign MA was coded as one if a foreign bank purchased a controlling interest in a domestic Mexican bank. This means that the Mexican bank continues to exist as a reporting unit, although its name is sometimes altered to reflect the change in ownership. For example, when the Banco de Bilbao y Vizcaya purchased a controlling interest in Bancomer, the merged bank was renamed BBV Bancomer.

21. Haber (2005).

22. Del Angel-Mobarak, Haber, and Musacchio (2006).

TABLE 1. Banks Operating in Mexico, by Ownership Type, September 1997 to December 2007

Domestically owned bank	Dates in sample		Foreign de novo bank	Dates in sample		Foreign MA bank ^a (acquirer—acquired bank)	Dates in sample (year:quarter)
	(year:quarter)	(year:quarter)		(year:quarter)	(year:quarter)		
Afime	1997:3	2007:4	Bank of America	1997:3	2007:4	HSBC—Bital	2002:4
Ahorro Famsa	2007:1	2007:4	American Express	1997:4	2007:4	Citibank—Banamex	2002:4
Amigo	2007:3	2007:4	ABN AMRO	1997:3	2007:4	BBVA—Bancomer	2000:4
Autofin	2006:4	2007:4	Banco Ve Por Mas (Dresdner Bank)	2004:2	2007:4	GE Capital Bank—Alianza	1997:4
Azteca	2002:4	2007:4	Bank One	1998:1	2004:3	Santander—Banco Mexicano	1997:4
Banamex	1997:3	2002:3	BankBoston	1997:3	2004:2	Santander Mexicano—Serfin	2000:3
BANCEN	1997:3	2006:2	BNP Mexico	1997:3	2000:4	Scotiabank Inverlat—Inverlat	2000:4
Bancomer	1997:3	2000:3	Chase Manhattan	1997:3	2001:1		
Bancoppel	2007:3	2007:4	Citibank	1997:4	1998:3		
Banorte	1997:3	2007:4	Comerica Bank	1997:3	2007:4		
Banpaís	1998:1	1999:4	Deutsche Bank	2000:4	2001:4		
BanRegio	1997:3	2007:4	Dresdner Bank	1997:3	2003:2		
Bansi	1997:3	2007:4	HSBC	1997:3	1999:2		
Bital	1997:3	2002:3	ING Bank	1997:3	2007:4		
Compartamos	2006:2	2007:3	J. P. Morgan	1997:3	2007:4		
Del Bajío	1997:3	2007:4	BBVA/Probrsa (Acquired 1995)	1997:3	2000:3		
Fácil	2007:3	2007:4	Nations Bank	1997:3	1998:4		
Inbursa	1997:3	2007:4	Société Générale	1997:3	1999:4		
Interacciones	1997:3	2007:4	Tokio Mitsubishi	1997:3	2007:4		
Invex	1997:3	2007:4					
IXE	1997:3	2007:4					
Mifel	1997:3	2007:4					
Multiva	2007:2	2007:4					
Quadrum	1997:3	2001:3					
Serfin	1997:3	2000:2					

a. We code Mexican banks as foreign MA banks on the date that the merged bank began to operate.

Methods

To explore the impact of foreign entry, we build on the methods employed by Martínez Pería and Mody to study interest rate spreads in foreign banks in Latin America.²³ Their framework draws, in turn, on two bodies of literature: the dealership model of bank spreads and the firm-theoretic model of bank spreads.²⁴

We start with a baseline model that replicates Martínez Pería and Mody and then add controls for the characteristics of loan portfolios and bank fixed effects.²⁵ Given that we include quarterly dummy variables (that is, time fixed effects), we do not include the macroeconomic controls that Martínez Pería and Mody use in their paper and that are also part of the model of Ho and Saunders.²⁶ Thus, our baseline model is of the following form:

$$(1) \quad \begin{aligned} NIM_{i,t} = & \alpha_0 + \alpha_1 Liquidity_{i,t} + \alpha_2 AdmnCosts_{i,t} + \alpha_3 NPL_{i,t} \\ & + \alpha_4 Equity_{i,t} + \alpha_5 BankMktShare_{i,t} + \alpha_6 ForeignMA_t \\ & + \alpha_7 ForeignMA_t \cdot LinearTrend + \alpha_8 ForeignDeNovo_t \\ & + \alpha_9 ForeignDeNovo_t \cdot LinearTrend \\ & + \alpha_{10} QtrDummy_t + \varepsilon_{i,j}, \end{aligned}$$

where i is the bank identification number and t refers to the time period considered. NIM is calculated as interest on loans over total loans minus interest rates paid to depositors over total deposits. $Equity$ is the ratio of a bank's equity to its assets. In theory, higher equity ratios should discourage risky lending, because more stockholder wealth is at risk. $Liquidity$ is the ratio of cash (including deposits in other banks or in the central bank) to assets, $AdmnCosts$ is the ratio of administrative costs to total assets, and NPL is the

23. Martínez Pería and Mody (2004).

24. The dealership model was developed by Ho and Saunders (1981), Allen (1988), Angbazo (1997), and Brock and Rojas-Suárez (2000); the firm-theoretic model was developed by Zarruck (1989) and Wong (1997).

25. Martínez Pería and Mody (2004).

26. Martínez Pería and Mody (2004); Ho and Saunders (1981). The macroeconomic variables they include are real output growth (using the change in industrial GDP per quarter), inflation (using changes in the consumer price index), and the short-term interest rate (using the three-month Tesobono rate). They also include a term for the share of foreign banks in total loans, but we did not include it because that source of variation should be captured by our quarter dummies. Specification 1 of table 3 includes these macroeconomic variables, and the results do not change at all.

ratio of nonperforming loans to total loans. *BankMktShare* is the proportion of each bank's loans to total system loans. We do not add additional controls for mergers and acquisitions among domestic banks because there is not enough variation to make it worthwhile. We employ robust standard errors.

Our variables of interest are *ForeignMA*, which is a dummy variable that takes a value of one at each point in time that a bank is owned by a foreign bank, and *ForeignDeNovo*, which takes a value of one at each point in time that a bank is a foreign-owned greenfield operation. These allow us to compare foreign MA and de novo banks to domestic banks. Including them separately permits us to draw inferences about behavior that is linked to foreignness per se: if the coefficients for these variables have the same sign and significance, it implies that foreign owners take a different approach to the Mexican market than domestic banks; if the coefficients are of a different sign and significance, it implies that the differences between these bank types and domestic banks are driven by some unobserved characteristic other than their foreignness. We also interact each of these variables with a time trend to see if the behavior of foreign banks changes over time.

We then go beyond this baseline model in a second set of regressions, to control for some bank characteristics that tend not to be included in the extant literature. Specifically, we control for the characteristics of bank loan portfolios by including the percentage of housing, commercial, and consumer loans in assets. We also control for the fact that some banks had very large portfolios of bad loans, which the government swapped for bailout bonds from 1995 to 1999, by including the ratio of those bonds to total assets in each bank (FOBAPROA-IPAB). In some specifications we also introduce a series of controls for bank nationality to determine whether the behavior of foreign banks varies by country of origin. We separate foreign-owned banks into three groups: Spanish banks (Santander/Serfin and BBVA Bancomer), U.S. banks (Citibank/Banamex and GE Capital/Alianza), and other foreign MA banks (HSBC and ScottiaInverlat).

One might argue that the results on even these regressions might be driven by unobserved bank characteristics that are correlated with foreign ownership. Indeed, one problem that bedevils studies of the impact of foreign bank entry is that the ownership status of banks is not randomly assigned: the characteristics that make certain banks attractive targets for foreign acquisition may also make them more likely to display the outcomes of interest. To mitigate these problems, we take a quasi-experimental approach. First, we control for all time-invariant factors that are specific to banks by including bank dummy variables in the regressions. Second, we include quarter dummy variables,

in order to control for factors that affect all banks at any particular time, such as changes in the macroeconomic or institutional environment. Third, to control for time-varying heterogeneity within banks, we continue to control for the factors that might have determined foreign acquisition. The Mexican banks that were acquired by foreign firms tended to be large, undercapitalized, illiquid, and distressed—which is precisely why the Mexican government allowed them to be purchased by foreigners in the first place. Since these characteristics could correlate with a number of bank performance outcomes, our regressions include bank market shares, equity ratios, liquidity ratios, loan portfolio ratios, and the ratio of a bank's assets composed of bailout bonds issued by the government's deposit insurance agencies (FOBAPROA and IPAB). To control for serial correlation, we cluster the (robust) standard errors by bank.

We employ the following specification with and without bank fixed effects:

$$\begin{aligned}
 (2) \quad \text{NIM}_{i,t} = & \alpha_0 + \alpha_1 \text{Liquidity}_{i,t} + \alpha_2 \text{AdmnCosts}_{i,t} + \alpha_3 \text{NPL}_{i,t} \\
 & + \alpha_4 \text{Equity}_{i,t} + \alpha_5 \text{BankMktShare}_{i,t} + \alpha_6 \text{ForeignMA}_t \\
 & + \alpha_7 \text{ForeignMA}_t \cdot \text{LinearTrend} + \alpha_8 \text{ForeignDeNovo}_t \\
 & + \alpha_9 \text{ForeignDeNovo}_t \cdot \text{LinearTrend} + \alpha_{10} \text{HomeLoans}_{i,t} \\
 & + \alpha_{11} \text{CommercialLoans}_{i,t} + \alpha_{12} \text{ConsumerLoans}_{i,t} \\
 & + \alpha_{13} \text{FobaproalPAB}_{i,t} + \alpha_{14} \text{Bank}_i + \alpha_{15} \text{QtrDummy}_t + \varepsilon_{i,j}.
 \end{aligned}$$

The foreign MA dummy variable in the fixed-effects setting picks up the effect of switching from domestic ownership to foreign ownership. That is, we are not picking up differences between foreign-owned and domestically owned banks—differences that are potentially caused by unobserved heterogeneity across banks—but are picking up what happens to domestic banks after they are bought by foreigners. We then add interactions with bank nationality and other possible unobservable characteristics that may be driving the behavior of foreign MA banks.

Empirical Results

Table 2, which presents summary statistics, suggests that there are differences in the behavior of foreign banks relative to Mexican banks. They appear to charge much lower NIMs, have much lower ratios of nonperforming loans,

TABLE 2 . Summary Statistics

Variable	All banks			Foreign MA banks			Foreign de novo banks			Domestically owned banks		
	No. observations	Mean	Standard deviation	No. observations	Mean	Standard deviation	No. observations	Mean	Standard deviation	No. observations	Mean	Standard deviation
Spread (net interest margin)	1,226	0.018	0.061	210	0.024	0.026	442	0.007	0.080	574	0.251	0.051
Market share loans	1,270	0.033	0.064	213	0.100	0.086	466	0.003	0.101	591	0.033	0.607
Nonperforming loan ratio	1,268	0.034	0.078	213	0.033	0.029	464	0.025	0.106	591	0.422	0.063
Equity ratio	1,270	0.184	0.158	213	0.130	0.095	466	0.218	0.172	591	0.175	0.158
Return on equity	1,266	0.010	0.097	212	0.028	0.082	463	-0.008	0.078	591	0.173	0.113
Private lending as % assets	1,260	0.440	0.258	211	0.419	0.227	465	0.350	0.289	584	0.520	0.214
Commercial lending as % assets	1,268	0.319	0.243	212	0.234	0.189	465	0.279	0.256	591	0.381	0.233
Consumer lending as % assets	1,268	0.055	0.160	212	0.087	0.131	465	0.062	0.219	591	0.039	0.104
Home lending as % assets	1,268	0.039	0.099	212	0.081	0.114	465	0.009	0.084	591	0.047	0.097
FOBAPROA-IPAB as % assets	1,268	0.059	0.144	212	0.114	0.143	465	0.016	0.066	591	0.073	0.175
Loans to SOFOLES as % assets	1,268	0.048	0.094	212	0.027	0.042	465	0.065	0.122	591	0.047	0.081
Liquidity ratio	1,270	0.178	0.139	213	0.162	0.050	466	0.223	0.187	591	0.149	0.101
Interest income on loans	1,232	0.049	0.050	210	0.043	0.035	448	0.048	0.050	574	0.052	0.053
Interest paid on deposits	1,226	0.030	0.054	210	0.019	0.014	442	0.041	0.086	574	0.027	0.017
Administrative costs as % assets	1,269	0.020	0.027	212	0.019	0.020	466	0.021	0.021	591	0.021	0.033

and earn much higher returns on equity than domestically owned banks. The summary statistics also suggest that foreign MA and de novo banks are quite different from one another. Foreign MA banks appear to be much larger, make more housing loans, hold more FOBAPROA-IPAB bailout bonds, and earn higher returns on equity than de novo banks.

We subject these observations to multivariate analysis in table 3, which presents the results of ordinary least squares (OLS) regressions that follow the model in Martínez Pería and Mody.²⁷ Specification 1 uses the baseline regression and includes the original macroeconomic controls of their paper. The results are basically the same as those of specification 2, where we drop the macroeconomic variables. Specification 2 tests the hypothesis that NIMs for foreign banks in general are higher than those for domestic Mexican banks. Neither the foreign bank dummy nor the time trend for foreign banks enters as significant. In specification 3, we add controls for the composition of bank loan portfolios; while the coefficient for housing loans enters as significant and of large magnitude, its addition has no effect on either the foreign bank dummy or the time trend for foreign banks.

Specifications 3 and 4 reproduce specifications 2 and 3, but separate foreign banks into foreign MA and foreign de novo banks. This exercise suggests that the result for NIM regressions can be sensitive to the inclusion of variables that control for the composition of loan portfolios. Specification 4, which does not control for loan portfolio composition, indicates that foreign de novo banks charge significantly lower NIMs than domestic banks (and than foreign MA banks). On average, they charge spreads that are a full 1.8 percentage points lower than domestic banks. This result is not trivial, as the average NIM for Mexican banks is 2.5 percent. This result mimics, to an extent, the results of Martínez Pería and Mody, who find that foreign banks tend to have lower NIMs.²⁸ Once we control for the composition of loan portfolios in specification 5, however, the result attenuates. The foreign de novo dummy variable is no longer statistically significant, and although there is a statistically significant negative coefficient on its interaction with time, the magnitude is small: less than .05 percentage point per quarter. At the same time, in specification 5 the coefficient for *ForeignMA* is significant and negative. That means that those Mexican banks that were acquired by foreigners actually have NIMs that are lower by 1.4 percent, on average, than the margins charged by Mexican banks. Unfortunately, the result is significant at the 10 percent level only.

27. Martínez Pería and Mody (2004).

28. Martínez Pería and Mody (2004).

TABLE 3. Net Interest Margins (NIMs): OLS Regressions, 1997–2007^a

<i>Explanatory variable</i>	(1)	(2)	(3)	(4)	(5)	(6)
Foreign bank	-0.0086 (0.0109)	-0.0070 (0.0090)	-0.0118 (0.0099)			
Foreign bank × trend	-0.0000 (0.0000)	-0.0000 (0.0000)	-0.0000 (0.0000)			
Foreign MA				-0.0072 (0.0079)	-0.0146* (0.0076)	-0.0224** (0.0094)
Foreign MA × trend				0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
Foreign de novo				-0.0182*** (0.0070)	-0.0051 (0.0064)	-0.0044 (0.0063)
Foreign de novo × trend				0.0000 (0.0001)	-0.0004** (0.0002)	-0.0004** (0.0002)
Foreign MA × NPL/loans						0.0234*** (0.0084)
Foreign MA × U.S. bank						-0.0000 (0.0000)
Foreign MA × U.S. bank × trend						-0.0068 (0.0075)
Foreign MA × Spanish bank						0.0000*** (0.0000)
Foreign MA × Spanish bank × trend						0.000571 (0.0106)
Constant	0.450 (0.495)	0.0281* (0.0149)	0.0216 (0.0174)	0.0124* (0.00664)	0.00181 (0.0101)	

(continued)

TABLE 3 . Net Interest Margins (NIMs): OLS Regressions, 1997–2007^a (Continued)

Explanatory variable	(1)	(2)	(3)	(4)	(5)	(6)
<i>Summary statistic</i>						
Macroeconomic controls						
No. observations	Yes 1,226	No 1,226	No 1,224	No 1,212	No 1,210	No 1,210
No. banks	47	47	47	45	45	45
Controls for loan portfolio	Yes	Yes	Yes	Yes	Yes	Yes
R ² overall	0.197	0.193	0.238	0.239	0.293	0.296
R ² between	0.158	0.155	0.299	0.204	0.406	0.412
R ² within	0.099	0.095	0.112	0.115	0.105	0.105
Chi squared	23.68	13.36	32.56	271.50	135.90	345.80
Chi squared p value	0.014	0.037	0.000	0.000	0.000	0.000
AR(1) test F statistic	0.723	0.774	0.343	1.400	0.876	0.887
AR(1) test p value	0.400	0.384	0.561	0.244	0.355	0.352

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 1 percent level.

a. The dependent variable is net interest margins (NIMs). The estimation method is ordinary least squares (OLS) with random effects. All specifications include quarter dummies. Specification 1 includes macroeconomic controls. Specifications 3, 5, and 6 control for the loan portfolio by type of loan (home loans/assets, FOBA/PROA bonds/assets, commercial loans/assets, and consumer loans/assets). All specifications control for cash/assets, administration costs/assets, NPL/loans, and the equity ratio. Robust standard errors are in parentheses. Errors are clustered at the bank level.

One might be tempted to argue that we obtain different results on foreign MA and foreign de novo banks because we do not control for the nationality of the foreign MA banks. Galindo, Micco, and Powell and Galindo, Izquierdo, and Rojas-Suarez suggest that foreign banks may behave differently than domestic banks because they react to conditions at home, as well as in the host country.²⁹ In table 3, specification 6, we therefore introduce dummy variables for foreign MA banks that were acquired either by a U.S. bank or by a Spanish bank. We also interact these dummies with time. The results indicate that, on average, U.S.-owned foreign MA banks charge NIMs that are, on average, almost 4 percentage points per quarter higher than those of domestically owned banks, and that Spanish-owned banks charge NIMs that are almost 3.5 percentage points higher than domestic banks. The interactions of these dummies with time suggest that U.S. and Spanish banks have gradually been reducing their NIMs, relative to domestically owned banks, but the rate of reduction has been exceedingly slow. Other foreign MA banks actually charge significantly lower NIMs than domestically owned banks—on the order of 2.5 percentage points per quarter.

There is clearly substantial heterogeneity among foreign MA banks, which suggests that researchers might want to be cautious in making strong claims about the behavior of foreign banks as a general category. While our regressions suggest that the nationality of the acquiring bank may be driving heterogeneity among banks, another interpretation is that the nationality of ownership is collinear with unobserved characteristics of the banks that were acquired by foreign banks. To evaluate this hypothesis, we reestimate our regressions, but now include bank fixed effects. These regressions, presented in table 4, therefore pick up the effect of being acquired by a foreign bank. Specification 1 indicates that, all other things held constant, the acquisition of a Mexican bank by a foreign owner resulted in a 1.41 percentage point *increase* in NIMs. The result holds even after we control for portfolio characteristics of the banks (specification 2). That is, even if all foreign banks, on average, charge lower NIMs than Mexican banks, it appears that banks that were acquired by foreigners (*ForeignMA*) actually increase their interest margins significantly.

In all specifications, we include the results of the Hausman test. These results suggest that we should use random effects, but we chose to examine the results using fixed effects, for the reason just mentioned above. That is, while foreign banks charge lower NIMs than domestic banks, on average, it seems that there is something about the Mexican banks that were acquired by

29. Galindo, Micco, and Powell (2004); Galindo, Izquierdo, and Rojas-Suarez (2010a).

TABLE 4. Fixed-Effects Regressions^a

<i>Explanatory variable</i>	(1)	(2)	(3)	(4)	(5)
Foreign MA	0.0141** (0.0059)	0.0129** (0.0058)	0.0159* (0.0087)	0.0133 (0.0089)	0.0097* (0.0054)
Foreign de novo	0.0001 (0.0067)	-0.0042 (0.010)	0.0001 (0.0065)	-0.0041 (0.0109)	0.0003 (0.0113)
Foreign MA × NPL/loans			-0.0516 (0.1460)	-0.0111 (0.1300)	
Foreign MA × U.S.bank					0.0075 (0.0059)
Foreign MA × Spanish bank					0.0035 (0.0040)
Constant	0.0245 (0.0192)	0.0285 (0.0175)	0.0246 (0.0192)	0.0285 (0.0178)	0.0267 (0.0177)
<i>Summary statistic</i>					
No. observations	1,226	1,224	1,226	1,224	1,224
No. banks	47	47	47	47	47
Controls for loan portfolio	No	Yes	No	Yes	Yes
R ² overall	0.152	0.185	0.153	0.185	0.179
R ² between	0.076	0.127	0.077	0.128	0.119
R ² within	0.120	0.138	0.120	0.138	0.139
F statistic	2.207	2.690	3.100	6.498	3.689
F statistic p value	0.059	0.011	0.009	0.000	0.000
F statistic Time dummies	180.5	171.0	152.9	134.4	176.3
F statistic Time dummies p value	0	0	0	0	0
F statistic Bank FE	2,973	7,768	2,762	7,413	10,689
F statistic Bank FE p value	0	0	0	0	0
AR(1) test F statistic	0.776	0.345	0.766	0.339	0.344
AR(1) test p value	0.384	0.560	0.387	0.564	0.560
Hausman chi squared	12.54	15.45	18.13	5.071	5.328
Hausman p value	1.000	1.000	1.000	1.000	1.000

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 1 percent level.

a. The dependent variable is net interest margins (NIMs). The estimation method is ordinary least squares (OLS) with fixed effects. All specifications include quarter dummies. Specifications 3 and 4 include NPL interactions; specification 5 includes bank nationality. Specifications 3, 5, and 6 control for the loan portfolio by type of loan (home loans/assets, FOBAPROA bonds/assets, commercial loans/assets, and consumer loans/assets). All specifications control for cash/assets, administration costs/assets, NPL/loans, and the equity ratio. Robust standard errors are in parentheses. Errors are clustered at the bank level.

foreigners (the foreign MA banks) that led them to charge *higher* NIMs after the acquisition. The random effects regression ignores specific characteristics of those banks that are crucial to understand the differences in behavior among the different types of foreign banks.

It is somewhat puzzling that the coefficient for the nonperforming loans control has a negative sign across specifications (even if it is not significant).

All domestic banks in Mexico lowered NPLs during the period we study, so the variation in NPLs may be disconnected from the variation in NIMs. Still, in the fixed-effects regression, we interact NPLs with our *ForeignMA* variable to see if some of the heterogeneity we think exists among this kind of bank can be captured by differences in the trend of NPLs. In specifications 3 and 4, however, we find that the coefficient for that interaction is not significant.

Finally, to make sure that this result is not influenced by the nationality of the acquiring bank, in specification 5 we add dummy variables for Spanish banks and U.S. banks. The coefficients on these dummies do not enter the regressions as significant, suggesting that the results we obtained in specification 1 are not sensitive to the nationality of the acquirer bank. Rather, the differences in NIMs across bank nationalities that we detected in table 4 appear to be the product of characteristics of the acquired banks. That is, the results suggest that it is not bank foreignness per se or the specific origin of the acquirer that drove NIMs up. Rather, the differences across foreign MA banks versus foreign de novo banks and Mexican domestic banks appear to be a product of unobserved characteristics of the banks before they were acquired by foreign owners. One possibility is that three of the acquired banks were the largest banks in Mexico (Banamex, Bancomer, and Serfin) with over 60 percent of assets, loans, and deposits. We tested this with a dummy for the Big Three banks and found that it had no material effect on the results we obtained in specification 1 (not included). We also tried other interactions of *ForeignMA* and characteristics of the loan portfolio, and we did not detect any statistically significant results (not reported).

Taken as a group, the results in tables 3 and 4 suggest an extremely interesting dynamic. The Mexican banks that were later acquired by foreign banks charged lower NIMs than foreign de novo banks and domestic banks that remained under Mexican ownership. After acquisition, their new foreign owners increased their NIMs, bringing them into line with the interest spreads charged by their domestic competitors.

According to the theoretical model of Wong, banks tend to charge higher NIMs when their loan portfolio becomes riskier or when they become more risk averse.³⁰ The detailed nature of our data allows us to evaluate the hypothesis that NIMs increased because the riskiness of portfolios increased. All of the large Mexican banks that were acquired after 1997 had to unwind gradually their holdings of FOBAPROA-IPAB bailout bonds as they matured and then invest the cash in something else. Most of them increased housing loans,

30. Wong (1997).

TABLE 5. NPLs and Private Credit^a

<i>Explanatory variable</i>	<i>NPLs (1)</i>	<i>Private credit (2)</i>
Cash/assets	0.0834 (0.0643)	-0.1060 (0.0635)
Admin. costs/assets	0.3960 (0.2600)	0.6810* (0.3960)
NPL/loans		-0.1170*** (0.0383)
Equity ratio	0.1370 (0.1170)	0.1180** (0.0567)
Foreign MA	-0.0649*** (0.0228)	0.0203 (0.0169)
Foreign de novo	-0.0692*** (0.0165)	0.1270*** (0.0345)
Net interest margin (NIM)		-0.0257 (0.0831)
Constant	0.0205 (0.0550)	0.0457 (0.0374)
<i>Summary statistic</i>		
No. observations	1,265	1,191
No. banks	47	46
Controls for loan portfolio	Yes	Yes
R ² overall	0.104	0.802
R ² between	0.000	0.786
R ² within	0.177	0.743

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 1 percent level.

a. The dependent variable in specification 1 is the nonperforming loan ratio (NPL) and in specification 2, private credit. The estimation method is ordinary least squares (OLS) with fixed effects. All specifications include quarter dummies and include controls for the composition of the loan portfolio (home loans/assets, FOBAPROA bonds/assets, commercial loans/assets, and consumer loans/assets). Robust standard errors are in parentheses. Errors are clustered at the bank level.

but they also diversified into other assets and increased interbank loans. We would expect that if the riskiness of the loan portfolio of foreign MA banks rose, the ratio of nonperforming loans (NPLs) to loans should go up. We therefore estimate a regression of bank characteristics on NPLs, and present the results in specification 1 of table 5. We take the liberty of exchanging the dependent variable for NPLs, and we retain all of the controls from table 4 both for simplicity and because we want to control for the distribution of the loan portfolio. The results indicate that despite the fact that foreign MA banks increased housing loans after acquiring a Mexican bank, the riskiness of the loan portfolio did not increase. In fact, the results suggest exactly the

opposite: after a bank was acquired by a foreign MA bank, the riskiness of the loan portfolio declined by almost 7 percentage points!

The implication is that the foreign banks that purchased preexisting Mexican banks were more averse to risk than their previous Mexican owners. This is in line with what we heard in our informal interviews with industrialists and bankers, who said that foreign MA banks centralized credit approval, upgraded the credit scoring system, and relied less on soft information. For instance, large Mexican banks such as Banamex, Bancomer, or Serfin used to rely on regional credit committees that included local industrialists who had long relationships with the banks. After being acquired by a foreign owner, those regional credit committees lost importance or disappeared.

A final piece of evidence that supports the hypothesis that foreign MA banks are more prudent in their lending practices is presented in specification 2 of table 5. Here, again, we take the liberty of swapping the ratio of total private credit to assets as the dependent variable, where private credit is the sum of home, commercial, and consumer loans and lending to SOFOLES (nonbank consumer lenders who tend to fund themselves by borrowing from banks). We include NIMs on the right-hand side to control for the cost of credit, and we also include bank fixed effects to capture the impact of switching from domestic to foreign ownership. The results indicate that foreign banks did not increase lending after they acquired a distressed Mexican bank. This result is particularly surprising in light of the fact that foreign banks tended to acquire Mexican banks with large volumes of FOBAPROA-IPAB bailout bonds in their portfolios, so the foreign MA banks had significant inflows of cash as those bonds matured. Our regressions suggest, however, that this cash was not used to increase loans to the private sector, but was used for loan-loss provisions, invested in other assets such as government bonds, paid out as dividends, or held as cash.

Conclusions and Implications

We advance two types of conclusions: one substantive, the other methodological. Substantively, our results suggest that foreign bank entry in Mexico has moved the Mexican banking system toward greater stability. Most particularly, acquisition by a foreign bank appears to be associated with a substantial decrease in the ratio of nonperforming loans and an increase in net interest margins. One implication of this result is that the previous Mexican owners of those banks made loans with high probabilities of default at low interest

rates—an implication that is consistent with the findings of La Porta, López-de-Silanes, and Zamarripa.³¹ This is not to say, however, that foreign entry has been a panacea. In particular, our results point to a fact that is regularly mentioned in the Mexican mass media: the acquisition of Mexico's largest banks by foreign concerns has not produced increases in loan volumes (relative to bank assets). The ratio of private credit to GDP in Mexico at the end of 1997 was 18 percent. Twelve years later, it has grown to only 23 percent. This level is low by any comparative standard: Mexico has a low level of intermediation relative to the rest of Latin America, to other countries with Mexico's income level, and to other countries with a legal heritage of French civil law. The implication is that foreign entry is not a solution to a property rights environment that makes contract enforcement costly.³² In such an environment, prudent behavior implies low levels of financial intermediation.

Methodologically, our results suggest that researchers interested in the impact of foreign bank entry should be cautious about drawing inferences from either pooled OLS or random-effects regressions. Our analysis of the Mexican data suggests that foreign acquisition is not randomly assigned and that the characteristics of the banks offered for sale to foreigners may correlate with the outcomes of interest. Unless researchers expunge such unit heterogeneity, they may draw spurious conclusions or infer causality erroneously.

31. La Porta, López-de-Silanes, and Zamarripa (2003).

32. Haber (2005).

Comments

Liliana Rojas-Suarez: Issues relating to the participation of foreign banks in Mexico are as relevant today as they were after the Tequila crisis of 1994–95 when the country’s financial system collapsed. At that time, the Mexican authorities had few options but to recapitalize their broken system by liberalizing the participation of foreign banks into the system and allowing the free movement of cross-border capital flows. However, after a decade and a half of liberalization and following the effects of a global financial crisis, a number of academics and analysts have begun to question whether the laws governing the behavior of foreign banks need to be modified.

Guillermo Ortiz, former governor of the Central Bank of Mexico, is perhaps the most visible figure calling for reforms. Based on two observations that (a) out of profits, subsidiaries of foreign banks pay about three times more dividends than domestic banks, and (b) subsidiaries of foreign banks in Mexico are much better capitalized than their parent houses, Ortiz calls for regulation to control the dividend payments by subsidiaries of global foreign banks operating in Mexico and/or to mandate the compulsory listing of these subsidiaries on the local stock exchange. The central claim underlying this proposal is that if smaller proportions of banks’ profits are transferred abroad, credit to Mexican residents (firms and households) would increase, thus supporting higher economic growth.¹

Assessing these types of proposals requires rigorous empirical analysis. For example, to what extent does the behavior of foreign banks (provision of credit and interest charged) differ significantly from that of domestic banks? The paper by Haber and Musacchio makes some important contributions that help answer these questions.

A first, and crucial contribution, is that they have put together a comprehensive data set that, as they state, “allows us to follow banks in time, regard-

1. At 23 percent, Mexico’s credit to GDP ratio stands as one of the lowest in Latin America.

less of changes in name or ownership.” This is indeed very valuable in the context of the deep transformation in bank ownership structure that has taken place in the Mexican banking system since 1997 because of the large number of mergers and acquisitions as well as the establishment of new foreign banks. Before the construction of this new data set, it was extremely difficult for analysts to follow the activities of Mexican banks (and, therefore, the evolution of bank-specific financial variables) since a number of institutions changed names repeatedly. As a result, bank-level empirical research in Mexico has been severely limited. I believe that the Haber-Musacchio paper can help correct this deficiency. To this end, however, it would be most helpful if the authors’ data set were made publicly available (either for free or for purchase depending on legal restrictions on the distribution of these types of data).

The second important contribution is that armed with a fresh database and standard econometric techniques, the authors effectively shed light on the differing behavior of domestic and foreign banks. While the paper deals with a number of endogenous financial variables (especially net interest margins), a key finding is that switching from domestic to foreign ownership did not increase credit. Instead, in the cases where estimation of a model specification yielded statistically significant coefficients, the conclusion was that the *switch* translated to a reduction in loan volume.

The authors venture (without proof) that the inverse relationship between foreign ownership and the provision of credit might result from Mexico’s weak property rights (a well-known argument advanced by La Porta, López-de-Silanes, and Zamarripa 2003). While this might be a factor, I am not convinced that it is the dominant one. I can envisage an alternative explanation; namely, that the authors’ experiment did not differentiate between two very different time periods within the sample. The first period, comprising the last years of the 1990s and the beginning of the 2000s, when the process of internationalization of the troubled domestic banks was still in place, the Mexican authorities had not yet consolidated the reform of their banking regulatory and supervisory framework, and foreign banks were subject to stricter oversight rules on their lending practices (from supervisors in their home countries) than domestic banks. In the second time period, running from about 2003 to 2007, Mexico’s supervisory framework improved significantly and the largest Mexican banks were all foreign. Thus, in the first time period foreign bank supervision was stronger than domestic supervision, and, therefore, foreign supervisory practices were the *binding constraint* for subsidiaries of foreign banks (but not for domestic banks). This ceased to be the case in the second time period. Whether these large differences across time periods in the quality

of bank supervision in Mexico (relative to that in the countries of origin of the bank subsidiaries) played a major role in explaining the authors' results is an issue that deserves further research. In my view, the authors' hypothesis that the lackluster provision of credit following the entry of foreign banks results from a more prudent behavior of foreign owners can hold true for the first time period, but not necessarily for the second. In the second, this result could very well be attributed to decisions taken by the parent house, which, in turn, reflected developments in the home country.

Indeed, the authors' results regarding the provision of credit by foreign banks combined with developments in banking supervision around the world lend some support to Ortiz's arguments. In the pre-global crisis period (comprising most of the second period described above), as the quality of banking oversight improved in Mexico and other Latin American countries, it deteriorated in large parts of the developed world, including those countries in which the parent houses of the Mexican banks' subsidiaries were established. Ortiz might be right in that given current important differences in bank soundness between a Mexican subsidiary and its parent house, there is an incentive for excessive dividend payments by the Mexican subsidiaries of global banks: under current circumstances, what is optimal for the parent bank might be suboptimal for the host country. However, capital controls of the nature suggested by Ortiz are neither the only nor the best policy alternative to align incentives between the operations of foreign banks and those of Mexico's policymakers. While Mexican banks (domestic and subsidiaries of foreign banks) are currently better capitalized than the parent houses of the foreign subsidiaries, this situation might reverse in the future due to unforeseeable events. Therefore, proposals to protect the soundness of subsidiaries of foreign banks should not focus on the current economic cycle. In a recent paper, Galindo, Izquierdo, and I have laid out alternative recommendations that do not depend on the economic and business cycles of the home and host countries.² Additional research is certainly needed to reach clearer conclusions and policy recommendations. Nonetheless, the Haber-Musacchio paper has helped to pave the way.

2. In Galindo, Izquierdo, and Rojas-Suarez (2010b), three types of policy actions to protect the solvency of subsidiaries of foreign banks are advanced: (a) the establishment of adequate ring-fencing arrangements; (b) the development of early-warning systems regarding transfers from a subsidiary to its parent house above certain predetermined thresholds consistent with protecting the solvency of the subsidiary; and (c) the implementation of stricter agreements of collaboration between home- and host-country supervisors.

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