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The impact of the financial crisis on foreign banks operating in the U.S.

Abstract

This paper explores the impact of the financial crisis on groups of foreign-owned U.S. banks relative to their domestic competitors. Multinational banks, from some countries at least, may have certain strategic advantages that domestic banks do not have. While there has been little historical evidence that these advantages have significantly improved the financial performance of the U.S. subsidiaries in strong economic periods, it is possible that access to international resources could be more important in a recessionary economy. When other local banks are being forced to contract their loan portfolios due to rising loan defaults, some of the stronger foreign banks may have the opportunity to capitalize on this environment to expand and capture market share. Of course, if many foreign subsidiaries are already in a weak financial position at the beginning of the recession, then these institutions may not be capable of repositioning themselves either. The evidence shows the European and Asian banks stabilized the U.S. banking system during the early and middle stages of the recession by expanding their loan portfolios when domestic banks were contracting. The findings also indicate that large foreign-owned banks operating in the U.S. were impacted differently from smaller foreign banks in terms of loan and deposit growth as the global financial crisis progressed.

Keywords: foreign banks, U.S., banking, financial crisis.
JEL Classification: F65, G21.

Introduction

Over the past two decades, there has been a growing presence of large multi-national banks operating in the United States. Many of these institutions established a significant foothold quickly through the acquisition of domestic banks rather than de novo (greenfield) expansion. However, an unsettling characteristic of this expansion has been that foreign-owned U.S. banks have historically underperformed their domestic counterparts. One explanation is that foreign institutions often acquire poorly managed, financially weak banks that are relatively cheap to purchase and offer fewer regulatory barriers. By improving management and changing business strategies, the foreign parent hopes to turn around the financial performance of the American unit. Despite high expectations, numerous studies have found evidence the U.S. subsidiaries of foreign banks continue to lag their domestic counterparts for many years.

With the recent global financial crisis, an interesting research question is whether foreign-ownership provides U.S. operations with any significant home country advantages over domestic banks which are entirely dependent on the state or regional economy. It is generally assumed foreign parents have greater access to capital along with the substantial international resources of a global institution. In situations where the parent country finds itself in a stronger economic position than the host country, it might be possible for that bank to make strategic decisions that cannot be matched by domestic banks. If so, over a period of a few years there should be tangible benefits in the form of improved financial performance of foreign subsidiaries relative to their domestic counterparts. This is most likely to manifest itself in greater profitability and enhanced asset/liability structures.

The primary objective of this paper is to explore the impact of the financial crisis on groups of foreign-owned U.S. banks relative to their domestic competitors. Specifically, we want to test the hypothesis that multinational banks, from some countries at least, have certain strategic advantages that domestic banks do not have. While there is little empirical evidence that these advantages have significantly improved the financial performance of U.S. subsidiaries in strong economic periods, it is possible that access to international resources could be more important in a weak or financially stressed economy. When other local banks are being forced to contract their loan portfolios due to rising loan defaults, some of the stronger foreign banks may have the opportunity to capitalize on this environment to expand and capture market share. Of course, if many foreign subsidiaries are already in a weak financial position at the beginning of the recession, then these institutions may not be capable of repositioning themselves either.

1. Literature review

There are a number of early papers that highlighted the performance problems of foreign-owned U.S. banks. Studies in the 1980s and 1990s can be separated into two groups. One group focuses on the determinants of performance of foreign-owned banks. The studies in this group include Grosse and Goldberg (1991), Zimmer and McCauley (1991), McCauley and Seth (1992), and Terrell (1993). They generally found lower funding cost for foreign-owned banks.

The other group studied the difference between foreign-owned versus American-owned banks by focusing on operating efficiency. Hodgkins and Goldberg (1981) and Houpt (1980) found lower profitability of foreign-owned banks that were purchased in the 1970s. Seth (1992) found similar results using data from the 1980s and early 1990s. By estimating minimum cost functions, Chang, Hasen and Hunter (1995) and Nolle (1995) attributed the low profitability to cost inefficiencies of foreign-owned banks. DeYoung and Nolle (1996) emphasized technical inefficiency (e.g. low production or non-optimal mix of outputs) by estimating maximum profit functions.

Peek, Rosengren and Kasirye (1999) studied foreign acquisitions of the U.S. banks to determine what accounted for the poor financial performance of these subsidiaries relative to their domestic counterparts. They found that many of the target banks were less healthy at the time of acquisition due to low profitability, being under-capitalized and poor credit underwriting standards. However, even after the foreign management implemented new business strategies, which did improve some problems within the bank, these policies still did not generally bring the performance of the foreign subsidiary up to the level of their domestic peers. Thus, the authors concluded that both the choice of target bank and business strategies contributed to the poor returns of foreign-owned banks.

In 2000s, research focus shifted from foreign-owned banks in the U.S. to the foreign-owned banks in emerging markets, reflecting the liberalization of those markets. Peria and Mody (2004) empirically analyzed the impact of increasing foreign bank share on the Latin American bank markets by estimating the bank spread functions. They found that widespread foreign bank presence increased financial intermediation. Foreign banks had lower interest margins and greater concentrations of market share-which increased the spread. The seminal paper by de Haas and van Lelyveld (2006) using Central and Eastern European data analyzed how the response to business cycles and bank crises differed between foreign-owned and domestic banks. They showed greenfield foreign banks had a stabilizing effect on credit markets during crises as domestic institutions were contacting credit. However, the behavior of the foreign banks seemed to be more affected by the economic conditions of the home countries than host country. Other research including Claeys and Hainz (2007), Sengupta (2007), and Lehner (2009) studied how foreign banks enter the host countries' markets by using theoretical models with information, funding costs, legal protection, and screening technologies.

Another paper by de Haas and van Lelyveld (2010) sought to determine if an internal capital market exists for multinational financial institutions allowing them to better manage their subsidiaries' credit growth. Such an internal capital market would exist if capital markets have frictions which prevent subsidiaries from raising all of the liabilities they need to finance profitable opportunities. Using 1991-2004 panel data for 45 large multinational banks, they found evidence of the existence of an internal capital market. Parent organizations that were financially strong were able to expand the credit supply of foreign subsidiaries even when domestic banks were being forced to cut back during a financial crisis. Gormley (2010) shows the negative effect of foreign bank entry on loans to firms in India. Employing data drawn from firms and banks, he concluded that foreign bank entry into local bank markets expanded lending to the most profitable 10% of firms. On average, however, firms lost 7.6% of their credit because of the information asymmetries in the LDC bank markets.

2. Methodology

To investigate how foreign-owned banks responded in the U.S. to the 2007-2009 financial crisis, we use a methodology that explores bank behavior at four distinct levels. First, we consider whether the size of the U.S. bank subsidiary of foreign banks has any impact on bank performance. Second, through dummy variables, we look at the behavior of individual foreign-owned banks to determine if one or more of them reacted differently than their peers during some quarters of the recession. Third, we also group foreign-owned banks by home country's geographical region to assess whether as a group they responded differently than domestic banks to each crisis quarter. Finally, foreign-owned banks are evaluated by region for the entire data rather than individual crisis quarters. This allows us to investigate whether they reacted differently through our whole sample periods.

2.1. The conceptual model. Assume banks set management goals and strategies for implementation every quarter. At the beginning of the quarter, each bank develops plans for achieving a certain target growth rate for its loans and deposits. This decision will be based on the bank's own recent financial performance in the previous quarter and prevailing economic conditions in its home country. The actual growth rate of loans and deposits is also affected by the economic conditions in the American state where the bank operates in the quarter and the occurrence or non-occurrence of a crisis. Hence, bank behavior can be represented by equation (1) as follows:

$$\frac{\Delta Y_{i,t}}{Y_{i,t}} = \alpha_1 \Delta Solvency_{i,t-1} + \alpha_2 \Delta ROE_{i,t-1} + \alpha_3 \Delta Liquidity_{i,t-1} + \alpha_4 \frac{\Delta HOMECPI_{i,t-1}}{HOMECPI_{i,t-1}} + \alpha_5 \frac{\Delta HOMEFOREX_{i,t-1}}{HOMEFOREX_{i,t-1}} +$$
$$+ \alpha_6 \frac{\Delta HOMEGDP_{i,t-1}}{HOMEGDP_{i,t-1}} + \alpha_7 \frac{\Delta HOMEUNEMP_{i,t-1}}{HOMEUNEMP_{i,t-1}} + \alpha_8 \frac{\Delta STATUNEMP_{i,t-1}}{\Delta STATUNEMP_{i,t-1}} + \alpha_9 \frac{\Delta STATCPI_{i,t-1}}{STATCPI_{i,t-1}} + \quad (1)$$
$$+ \alpha_{10} \frac{\Delta STATHOUSEP_{i,t-1}}{STATHOUSEP_{i,t-1}} + \sum_{j=2007q3}^{2009q1} \sum_{k=1}^{m} \beta_{j,k} Foreign\ Bank\ Crisis\ Dummy_{j,k} + \sum_{k=1}^{n} \gamma_k\ Individual\ Bank\ Dummy_k .$$

The variable definitions are shown in Table 1. Our specification that the growth rates of the various independent variables explain the growth rate of the dependent variable is derived from a simple Cobb-Douglas function.

Table 1. List of variables

Variable name	Definition
Y_t	Net loans/net deposits.
Solvency	Equity over total assets.
ROE	Return on average equity.
Liquidity	Liquid assets over total assets.
HOMECPI	CPI of the bank's home country.
HOMEFOREX	Foreign exchange rate of US dollar in terms of home currency, unity for domestic banks.
HOMEGDP	Real GDP of the home country.
HOMEUNEMP	Unemployment rate in the bank's home currency.
STATUNEMP	Unemployment rate in the American state where the bank operates.
STATCPI	CPI for the state where the bank operates.
STATHOUSEP	House price index in the state.
m	The number of the foreign banks.
n	The number of total banks, foreign and domestic.

The model is similar to those used in previous studies cited including de Haas and van Lelyveld (2010) except that we use quarterly data and do not use a dynamic panel data estimation framework. Their framework is more appropriate for models that have at least one lagged dependent variable. Adding a lagged dependent variable to the above model would indicate some inertia in the growth rate. The usage of inertia models depends on the coefficients and *P*-values for the lagged dependent variables. We estimated various models (not reported) with lagged dependent variables using the generalized method of moments (GMM) and system GMM. However, the models with the lagged dependent variables performed worse than models without those variables (not reported), so we employ only models without this specification for the remainder of the analysis.

Before deciding which technique provided the best fit, we conducted the Breusch-Pagan test and the Houseman test (results not reported) for large banks and medium-sized banks. This was accomplished by estimating pooled OLS regression, fixed effect estimation (FE), and random effect estimation (RE) to determine the relative goodness of fit among the methods. We found FE estimation fit the best for both data sets. We could not run the tests for small banks because we employed the imputation technique developed by Rubin (1987) to retain the maximum number of observations. The programs could not handle data sets that included imputed data. Finally, we used OLS regression with the panel-effect dummies instead of FE estimation because OLS regression with panel-effect dummies and the FE estimation technique produce the same results. However, the OLS method offers the advantage of also providing the coefficients of panel dummies which are not reported with the FE model.

Generally, panel data estimation methods are used by researchers whose main focus is on the coefficients from which the influences of the individual differences (i.e., the panel effects) are removed. All econometric methods to analyze panel data (fix effect model, random effect model, and GMM) do not calculate panel effect dummy variables. However, the central focus of this paper is on the dummies to examine the differences in behavior of domestic banks versus individual foreign banks and regional groups of foreign banks during the recent crisis period. Hence we explicitly include individual foreign bank crisis dummies. Also, we estimate the coefficients of panel-effect dummies to capture the average behavior of individual foreign and domestic banks over the entire data period. Thus we use two sets of dummies: foreign bank dummies for every crisis quarter; and foreign and domestic bank dummies for the panel effects. Despite the large set of dummies, the number of observations is still sufficient for our estimation techniques.

The crisis dummies for foreign banks are for seven quarters, from the third quarter 2007 through the first quarter 2009. The selection of the crisis quarters is based on the *Dow Jones Industrial Average*, which peaked on October 9, 2007 at 14,164 and hit a low of 6,547 on March 9, 2009 (a decline of 53.8%). The number of crisis dummies is the product of the number of foreign banks and the number of crisis periods. Crisis dummies are not used for domestic banks because it would greatly increase the number of crisis dummies and we are only interested in domestic banks as a group. While it is possible to do simultaneous equations, estimating the demand and supply functions simultaneously is problematic and our primary focus is on the dummy variables. Thus, we utilize single reduced-form equations.

2.2. Data. The quarterly banking data was drawn from the Bureau van Dijk's popular data base called *Bankscope*, one of the largest international bank data sources in existence. For missing data on the domestic operations of foreign banks, we supplemented the available data with information gathered by hand from the FDIC's *Bank Data & Statistics*. Given the very limited population of foreign-owned banks with the U.S. subsidiaries, it was necessary to retain as many of the foreign banks as possible. *Bankscope provided a list of* 67 U.S. banks owned by foreign holding companies. From this list, banks were deleted if they were inactive in the fourth quarter of 2009 or if they were trust companies/special entities with no deposits or loans. This resulted in 43 foreign holding companies operating full bank subsidiaries in the U.S. To make comparisons, domestic banks were drawn only from the states with foreign bank subsidiaries.

To study bank policies and operations during the financial crisis, we collected data for the 2nd Quarter 2006 through the 4th quarter 2009. Other data were drawn from the IMF's *International Financial Statistics* (CPI and GDP of home country), the U.S. Bureau of Economic Analysis (state level GDPs), the U.S. Bureau of Labor Statistics (state unemployment rates), and the Federal Housing Finance Agency (state house price indices).

Total assets of the domestic subsidiaries of foreign banks ranged from $59 million to $170 billion in U.S. dollars. There is reason to believe that different sized banks would behave differently, so the data was segregated into three group sizes by total assets. This gave us 16 large banks with assets from $10 billion to $170 billion; 15 medium sized banks with $1 billion to $10 billion in assets; and 12 small banks with assets ranging between $59 million to $1 billion. The small banks included parent holding companies located in India and the Dominican Republic. Because IFS has neither GDP and unemployment data for the Dominican Republic nor unemployment data for India, we used the multiple imputation procedure by Rubin (1987) to impute those statistics to avoid dropping any more banks from the sample for a single missing variable. Altogether, there were 20 imputations to estimate the missing values.

Similar to an elasticity model using logarithmically-transformed variables, all the variables in our model are growth rates. As in many other economic applications, it is not uncommon to have very large or small growth rates in a quarter because of ad hoc transactions like M&As, branch sales, etc. To reduce the influence of special transactions like that, we dropped the outlier observations in which the dependent variable (loans or deposits) fell outside a reasonable range for quarterly growth of over 20% or under -20%. If left in the sample, these few outliers would likely distort our results. The descriptive statistics of the dependent variables for the foreign and domestic banks are shown in Table 2.

Table 2. Descriptive statistics

Group	Variable	Home	Banks	Obs.	Mean[1]	Std. dev.	Min	Max	*t* value[2]
Large ($10 B -$170 B)	Loans	Foreign	16	211	1.2	5.0	-10.4	18.6	1.088928
		Domestic	71	794	0.9	5.4	-19.9	19.5	
	Deposits	Foreign	16	207	1.6	5.9	-16.5	19.1	0.530722
		Domestic	71	757	1.4	5.9	-19.3	20.0	
Medium ($1 B-$10 B)	Loans	Foreign	15	207	1.5	5.3	-15.6	16.4	0.19894
		Domestic	246	2933	1.4	4.2	-19.4	19.9	
	Deposits	Foreign	15	195	1.3	5.6	-15.5	16.7	-0.48402
		Domestic	246	2884	1.5	4.8	-19.0	19.4	
Small ($.059 B-$1 B)	Loans	Foreign	12	157	1.7	5.7	-16.2	16.0	0.752819
		Domestic	738	9184	1.4	4.4	-19.8	20.0	
	Deposits	Foreign	12	160	1.4	7.4	-19.0	19.4	-0.10982
		Domestic	738	9041	1.5	5.0	-19.8	20.0	

Source: [1] Data used to make the table are % growth rates of loans and deposits. [2] On a univariate basis, at the 10% level of significance, none of the average growth rates were found to be statistically different between the foreign and domestic groups.

As a group, large foreign banks reported higher average growth rates in loans and deposits than their domestic counterparts during the period of study. For example, large foreign-owned banks had an average quarterly growth rate of 1.2% for loans and 1.6% for deposits. Similar size domestic banks reported lower average growth in loans of only 0.9% and 1.4% for deposits. For medium and smaller size banks, the growth rates in loans were higher for foreign-owned banks but they also exhibited lower growth rates for deposits than domestic banks. However, one should not put much weight on these simple univariate statistics since *t*-tests of group means indicate they are not statistically different at the 10% level.

2.3. Expected signs of coefficients. As the financial performance and condition of a bank improves, it can afford to become more aggressive in expanding its business. Both deposits and loans should increase as customers recognize the bank's improvement and are enticed by more competitive pricing of services. Hence, the signs for the deposit and loan growth variables should be positively related to bank performance variables.

In countries with strong relative economies, ceteris paribus, bank holding companies operating in those countries would most likely develop strategies to grow in these markets. Conversely, a weak economy in one country (e.g. Greece, Spain) or region of the world would encourage bank holding companies to shift resources to other global locations to take advantage of growth opportunities elsewhere. In our case, a relatively strong U.S. business climate should attract foreign banks seeking to capitalize on growth. If for any period of time the outlook is poor in the U.S., then foreign holding companies would be expected to curtail expansion here favoring other opportunities abroad that may provide greater long-term returns. Alternatively, if a foreign holding company has limited growth opportunities at home due to strong competition, market saturation, regulation, etc., then it may still invest in the U.S. even in a weak economic environment. Thus, the expected signs for major economic variables like CPI and GDP of the home country are ambiguous and depend on the impact of several possible influences.

There is no question that changing foreign exchange rates could impact bank expansion strategies in a number of important ways. For example, a depreciation of the home currency relative to the U.S. dollar with a constant CPI should lead to (1) an expansion of exports and business lending activities in those industries at home in the future; and (2) an increase of the value of capital investments in subsidiaries in the U.S. in terms of home currency. In our model, it is not clear which effect would dominate. The rising value of dollar based subsidiaries may encourage expansion of business in America if the home currency is expected to continue to decline. However, if a particular parent considers its dollar denominated assets over-weighted in its global investment portfolio, then the foreign parent may still seek to limit or reduce its business in the U.S.

Finally, as a state economy improves, a bank will most likely want to expand its business in that state. Hence, increases in the CPI and House Price Index in the state should result in growth in deposits and loans. We expect the coefficients for those variables will be positive.

There are two sets of dummy variables. First, as for the crisis dummies for each foreign bank, if a foreign bank behaves differently from domestic banks, its dummy will be significant, whether the sign is positive or negative. If many dummies are positive and significant, it would suggest the existence of the foreign banks in the U.S. mitigate the adverse effects of the crisis. If the signs are negative, then foreign banks tend to exaggerate the crisis. Second, the panel dummies for the foreign-owned banks show the average difference of the growth rates for the entire period among the banks, all other things being equal. The dummy coefficients will be smaller than those for the average of the domestic banks if foreign banks grow slower than the domestic banks during the crisis.

3. Empirical results

Before building the regression models, we tested for the stationarity of panel datasets. This was accomplished using a Fisher-type unit root test by Choi (2001) for all variables. At a 0.1% significant level, the test rejected the null hypothesis that all the panels contain unit roots for all variables (not reported). We could not use other unit-root test methods because our data set is unbalanced and includes missing values[1].

Table 3 shows the sample sizes and the overall results for six models[2]. The number of observations is different among the models because for each group, the 20% threshold for the quarterly growth rate is applied independently to the six dependent variables (loans and deposits for three size groups, respectively). For simplicity, we will refer to the two basic models as the "loan model" and the "deposit model". The explanatory power of the loan models, as measured by R^2 and adjusted R^2, is larger than those for the deposit models[3]. This suggests that banks have a more difficult time managing their deposit growth because the deposit gathering function is more indirect and passive. Of course banks wishing to drastically increase or decrease deposits can often rely on high cost vehicles like brokered deposits, large negotiable CDs, and money-market accounts.

[1] There is good reason to believe in the stationary of variables because growth rates are naturally the first-order differenced level data.

[2] As an alternative to using loans as a dependent variable, we also employed total assets. However, the total assets model was omitted from the paper because the results were similar to the loan model which had a better fit.

[3] The R^2 and adjusted R^2 are not shown for small banks because the imputation method does not calculate them.

Table 3. Overall estimation results

Group	Variable	No. of obs.	No. of banks	R^2	Adj R^2	Prob > F
Large banks	Loans	1005	87	0.324	0.164	0.000
	Deposits	964	87	0.293	0.121	0.000
Medium banks	Loans	3140	261	0.358	0.271	0.000
	Deposits	3079	260	0.264	0.166	0.000
Small banks	Loans	9341	749	n.a.	n.a.	0.000
	Deposits	9201	748	n.a.	n.a.	0.000

3.1. Variables for subsidiary financial condition and performance. Tables 4, 5, and 6 show the variable coefficients and *P*-values for all three size groupings of banks. A bank's financial condition and performance variables (solvency, liquidity and ROE) should generally have positive effects on both loan and deposit growth. However, the signs of the coefficients are both positive and negative. In Table 4, for a 1% of increase in solvency, the growth rate of deposits for large banks went up 0.491%. Uninsured depositors of large banks, including major corporate customers, are sensitive to the increasing risk of bank failure as the equity position weakens. This would encourage large commercial accounts to transfer deposits to stronger banks, even more so in times of financial crisis. For medium and small banks (Tables 5 and 6), the solvency variable is not statistically significant for deposits suggesting these banks have much smaller depositors who are less concerned about the institution's financial condition since they are more likely to be fully covered by deposit insurance.

Table 4. Large banks (16 foreign banks and 71 domestic banks)

				Conti-nent	Coun-try	Loans		Deposits	
						Coef.	P.	Coef.	P.
Solvency (lag)						0.032	0.832	0.491	0.009***
ROE (lag)						-0.006	0.487	-0.014	0.144
Liquidity (lag)						0.028	0.572	0.051	0.403
CPI of home country (lag)						0.003	0.989	-0.116	0.602
Foreign exchange rate in home (lag)						0.086	0.540	-0.086	0.599
GDP in home (lag)						1.013	0.001***	0.093	0.802
Unemployment rate increase in home (lag)						-0.131	0.690	-0.413	0.275
Price index in the state (lag)						0.333	0.044**	-0.049	0.798
House price index in the state (lag)						-0.021	0.866	0.344	0.017**
Crisis dummies for foreighn banks	2007	Q3	TD Bank National Association	Americas	CA	-2.483	0.636	1.426	0.814
			Harris National Association		CA	-3.596	0.493	-7.115	0.237
			RBC Bank (USA)		CA	-3.501	0.504	-1.802	0.762
			TD Bank USA NA		CA			-2.878	0.674
			UBS Bank USA	Europe	CH	-1.814	0.727	0.448	0.939
			Deutsche Bank Trust Company		DE	-2.592	0.630	1.534	0.798
			Sovereign Bank		ES	4.280	0.419	3.809	0.526
			Compass Bank		ES	-2.279	0.662	0.977	0.869
			Bank of the West		FR	1.624	0.755	0.324	0.956
			First Hawaiian Bank		FR	-1.067	0.837	-3.741	0.525
			HSBC Bank USA, NA		GB	7.337	0.157	5.048	0.391
			RBS Citizens, N.A.		GB				
			Citizens Bank of Pennsylvania		GB	-1.057	0.838	6.920	0.239
			Barclays Bank Delaware		GB	3.231	0.536		
			ING Bank, FSB		NL	6.951	0.181	4.355	0.46
			Union Bank, N.A.	Asia	JP	4.571	0.379	-3.743	0.525
		Q4	TD Bank National Association	Americas	CA	-0.216	0.967	0.415	0.945
			Harris National Association[3]		CA	1.488	0.776	-13.517	0.024**
			RBC Bank (USA)		CA	-0.825	0.874	1.768	0.765
			TD Bank USA NA		CA			-3.611	0.594
			UBS Bank USA		CH	0.672	0.897	7.256	0.217

Table 4 (cont.). Large banks (16 foreign banks and 71 domestic banks)

			Continent	Country	Loans		Deposits	
					Coef.	P.	Coef.	P.
		Deutsche Bank Trust Company	Europe	DE	9.571	0.075	-1.753	0.769
		Sovereign Bank		ES	4.429	0.401	4.873	0.415
		Compass Bank		ES	-1.523	0.784	-5.578	0.380
		Bank of the West		FR	3.058	0.557	6.619	0.262
		First Hawaiian Bank		FR	3.551	0.494	-1.606	0.785
		HSBC Bank USA, NA		GB	3.571	0.491	7.055	0.230
		RBS Citizens, N.A.		GB				
		Citizens Bank of Pennsylvania		GB	1.190	0.819	-1.936	0.742
		Barclays Bank Delaware		GB				
		ING Bank, FSB		NL	-0.769	0.882	-1.466	0.804
		Union Bank, N.A.	Asia	JP	3.643	0.485	-0.953	0.872
2008	Q1	TD Bank National Association[3]	Americas	CA	-0.082	0.988	-14.344	0.018**
		Harris National Association		CA	2.033	0.698	-6.658	0.268
		RBC Bank (USA)		CA	-0.582	0.912	-3.488	0.557
		TD Bank USA NA		CA	3.971	0.481	0.452	0.947
		UBS Bank USA[4]	Europe	CH	2.245	0.666	14.111	0.017**
		Deutsche Bank Trust Company[5]		DE	-1.550	0.774	12.404	0.039**
		Sovereign Bank		ES	5.251	0.325	0.578	0.924
		Compass Bank		ES				
		Bank of the West		FR	1.617	0.759	2.136	0.720
		First Hawaiian Bank		FR	3.288	0.528	0.511	0.931
		HSBC Bank USA, NA		GB	-1.524	0.809	1.471	0.803
		RBS Citizens, N.A.		GB	0.460	0.930	3.786	0.521
		Citizens Bank of Pennsylvania		GB	1.022	0.844	-3.569	0.545
		Barclays Bank Delaware		GB				
		ING Bank, FSB		NL	-2.952	0.571	2.330	0.693
		Union Bank, N.A.	Asia	JP	5.211	0.323	1.999	0.738
	Q2	TD Bank National Association	Americas	CA				
		Harris National Association		CA	1.015	0.846	-0.267	0.965
		RBC Bank (USA)		CA				
		TD Bank USA NA		CA	-1.388	0.803	-7.292	0.275
		UBS Bank USA	Europe	CH	9.023	0.086*	-3.560	0.550
		Deutsche Bank Trust Company		DE	-2.308	0.670		
		Sovereign Bank		ES	5.220	0.333	5.023	0.412
		Compass Bank		ES				
		Bank of the West		FR	1.776	0.734	3.144	0.596
		First Hawaiian Bank		FR	7.190	0.167	-1.124	0.849
		HSBC Bank USA, NA		GB	-2.608	0.619	-3.539	0.552
		RBS Citizens, N.A.		GB	1.624	0.758	3.212	0.591
		Citizens Bank of Pennsylvania		GB	1.919	0.715	-1.276	0.830
		Barclays Bank Delaware[6]		GB	-0.850	0.871	17.248	0.004**
		ING Bank, FSB		NL	-0.389	0.941	4.453	0.455
		Union Bank, N.A.	Asia	JP	5.583	0.294	-0.279	0.963
	Q3	TD Bank National Association	Americas	CA				
		Harris National Association[7]		CA	2.504	0.632	15.151	0.012**
		RBC Bank (USA)		CA				
		TD Bank USA NA[8]		CA	6.089	0.274	16.482	0.014**
		UBS Bank USA	Europe	CH	-0.757	0.884	-3.765	0.524
		Deutsche Bank Trust Company		DE	9.096	0.096*		
		Sovereign Bank		ES	4.886	0.358	-3.573	0.554

Table 4 (cont.). Large banks (16 foreign banks and 71 domestic banks)

				Conti-nent	Coun-try	Loans		Deposits	
						Coef.	P.	Coef.	P.
	2008	Q3	Compass Bank	Europe	ES	3.377	0.520	-0.798	0.893
			Bank of the West		FR	2.593	0.619	3.053	0.605
			First Hawaiian Bank		FR	5.669	0.277	-4.777	0.419
			HSBC Bank USA, NA		GB	2.397	0.645	5.271	0.371
			RBS Citizens, N.A.		GB	3.885	0.455	2.562	0.664
			Citizens Bank of Pennsylvania		GB	3.475	0.504	-5.893	0.318
			Barclays Bank Delaware		GB				
			ING Bank, FSB		NL	2.174	0.676	1.439	0.807
			Union Bank, N.A.	Asia	JP	6.101	0.241	-1.856	0.753
		Q4	TD Bank National Association	Americas	CA	0.776	0.882	0.581	0.923
			Harris National Association[7]		CA	-5.187	0.326		
			RBC Bank (USA)		CA	-0.764	0.884	0.137	0.982
			TD Bank USA NA		CA			4.864	0.471
			UBS Bank USA[9]	Europe	CH	-9.591	0.069*	17.875	0.003***
			Deutsche Bank Trust Company		DE	-5.496	0.315		
			Sovereign Bank[10]		ES	2.719	0.612	13.069	0.032**
			Compass Bank		ES	1.379	0.793	0.520	0.931
			Bank of the West		FR	1.225	0.816	5.645	0.345
			First Hawaiian Bank		FR	1.925	0.714	-2.506	0.674
			HSBC Bank USA, NA		GB	-3.714	0.480	2.834	0.635
			RBS Citizens, N.A.		GB	1.388	0.792	-0.296	0.960
			Citizens Bank of Pennsylvania		GB	2.568	0.625	2.363	0.692
			Barclays Bank Delaware		GB				
			ING Bank, FSB		NL	-1.778	0.736	0.909	0.879
			Union Bank, N.A.	Asia	JP	4.596	0.379	1.841	0.756
	2009	Q1	TD Bank National Association	Americas	CA	3.768	0.515	9.005	0.174
			Harris National Association[7]		CA	-0.877	0.883		
			RBC Bank (USA)		CA	1.147	0.843	1.485	0.823
			TD Bank USA NA		CA			11.635	0.112
			UBS Bank USA[11]	Europe	CH	-1.303	0.810	14.028	0.023**
			Deutsche Bank Trust Company		DE	-1.658	0.781		
			Sovereign Bank		ES	3.285	0.567	6.731	0.302
			Compass Bank		ES	-2.373	0.675	-1.514	0.814
			Bank of the West		FR	-0.277	0.961	4.472	0.487
			First Hawaiian Bank		FR	0.287	0.959	8.400	0.192
			HSBC Bank USA, NA[12]		GB	10.592	0.082*	2.902	0.676
			RBS Citizens, N.A[13]		GB	0.389	0.949	13.714	0.049**
			Citizens Bank of Pennsylvania		GB	2.672	0.659	8.787	0.204
			Barclays Bank Delaware[14]		GB	-12.809	0.035**	3.669	0.600
			ING Bank, FSB		NL	-7.921	0.175	4.286	0.519
			Union Bank, N.A.	Asia	JP	1.587	0.770	-8.258	0.180
Panel dummies			TD Bank National Association	Americas	CA	1.115	0.76	1.544	0.79
			Harris National Association[7]		CA	-1.224	0.381	3.768	0.527
			RBC Bank (USA)		CA	1.144	0.750	2.169	0.986
			TD Bank USA NA		CA	-5.045	0.047	2.820	0.875
			UBS Bank USA	Europe	CH	3.647	0.115	0.166	0.365
			Deutsche Bank Trust Company		DE	-0.888	0.567	-0.085	0.360
			Sovereign Bank		ES	-5.250	0.010**	-3.574	0.023**
			Compass Bank		ES	1.122	0.766	2.345	0.953
			Bank of the West		FR	-0.535	0.598	-0.427	0.243
			First Hawaiian Bank		FR	-0.154	0.736	2.003	0.927

Table 4 (cont.). Large banks (16 foreign banks and 71 domestic banks)

		Conti-nent	Coun-try	Loans		Deposits	
				Coef.	P.	Coef.	P.
	HSBC Bank USA, NA		GB	-2.995	0.077*	-0.081	0.308
	RBS Citizens, N.A.		GB	-3.000	0.077*	-1.148	0.136
	Citizens Bank of Pennsylvania		GB	-3.888	0.027**	-0.447	0.238
	Barclays Bank Delaware		GB	6.882	0.002***	-6.056	0.001***
	ING Bank, FSB		NL	6.964	0.001***	1.585	0.783
	Union Bank, N.A.	Asia	JP	0.209	0.877	5.633	0.125
Number of observations				1005		964	
Number of banks				87		87	
R^2				0.324		0.293	
Adjusted R^2				0.164		0.121	
Probability > F				0.000		0.000	

Notes: [1] ***, **, and * mean that the coefficient is significant at 1%, 5%, 10%, respectively. [2] It should be noted that the *P* value of a panel dummy is based on the difference between the coefficient and the average panel coefficients of the 71 domestic banks. Coefficients of the panel dummies of domestic banks are not shown to save space. [3] The drop of the deposits of Harris NA (-9.4%) and TD Bank NA (-12.5%) was associated with a drop of Federal funds sold & reverse repurchase agreements leading to an increase in loans but a drop in total assets. [4] 99.5% of the deposits of UBS Bank are brokered deposits and they increased about 20% in this quarter. [5] Deutsche Bank received $1.5 billion deposits from banks in foreign countries. [6] Barclays Bank increased deposits 10% in this quarter with brokered deposits and deposits comprising only 5% of total liabilities. [7] The Harris Bank completed the acquisition of two banks in the quarter, and increased deposits by 19%. [8] 99.98% of the deposits of TD Bank USA are MMDAs that increased 14% in this quarter. [9] 99.65% of the deposits of UBS Bank are brokered deposits. Asset increase is due to the increase of the trading accounts. [10] A large percentage of the 10% increase in deposits is due to brokered deposits. [11] Most deposits are brokered deposits, which increased 12%. [12] Consumer loans (mostly credit cards) increased $10 billion in the quarter. [13] Deposits increased 9.2% and loans grew about 5%. [14] Loans decreased 5.3%.

Table 5. Medium banks (15 foreign banks and 246 domestic banks)

				Conti-nent	Coun-try	Loans		Deposits	
						Coef.		Coef.	
Solvency (lag)						0.091	0.242	0.087	0.412
ROE (lag)						0.005	0.144	0.016	0.000***
Liquidity (lag)						0.041	0.040**	-0.094	0.000***
CPI of home country (lag)						0.134	0.072*	-0.226	0.014**
Foreign exchange rate in home (lag)						0.313	0.026**	-0.163	0.373
GDP in home (lag)						0.051	0.676	-0.271	0.078*
Unemployment rate increase in home (lag)						-0.428	0.002***	-0.224	0.182
Price index in the state (lag)						0.347	0.000***	-0.072	0.397
House price index in the state (lag)						0.058	0.279	0.243	0.000***
Crisis dummies for foreighn banks	2007	Q3	Inter National Bank	Americas	MX	-2.039	0.617	4.628	0.369
			Mercantil Commercebank NA		VE	-10.414	0.010**	-7.666	0.120
			BMW Bank of North America	Eurpoe	DE	-5.265	0.193	-4.143	0.399
			City National Bank of Florida		ES	1.176	0.772	-1.471	0.765
			Totalbank		ES	1.325	0.7444	3.207	0.514
			Sabadell United Bank NA		ES	-1.492	0.717	3.493	0.477
			Rabobank National Association		NL				
			Bank Leumi USA	Asia	IL	5.817	0.151	-4.228	0.390
			Israel Discount Bank of New York(3)		IL	10.794	0.008***	6.074	0.217
			Bank of Tokyo-Mitsubishi UFJ Trust		JP	8.452	0.037**	-0.154	0.977
			Mizuho Corporate Bank (USA)		JP	10.017	0.013**	-3.014	0.641

Table 5 (cont.). Medium banks (15 foreign banks and 246 domestic banks)

Year	Quarter	Bank	Continent	Country	Loans Coef.	Loans P.	Deposits Coef.	Deposits P.
2007	Q3	Manufacturers Bank		JP	1.329	0.742	-0.142	0.977
		Woori America Bank		KR	-0.098	0.981	-8.415	0.092*
		Chinatrust Bank (USA)		TW	10.418	0.010**	-1.460	0.766
		Far East National Bank		TW	-0.420	0.917	2.360	0.631
	Q4	Inter National Bank	Americas	MX	0.183	0.964	5.555	0.275
		Mercantil Commercebank NA		VE	2.263	0.576	-5.955	0.225
		BMW Bank of North America	Europe	DE	-10.004	0.013**	-7.351	0.134
		City National Bank of Florida		ES	9.830	0.015**	4.229	0.389
		Totalbank		ES	1.338	0.741	9.326	0.057*
		Sabadell United Bank NA		ES	0.420	0.919	5.174	0.295
		Rabobank National Association		NL	2.658	0.518	4.430	0.374
		Bank Leumi USA	Asia	IL	0.715	0.861	3.583	0.469
		Israel Discount Bank of New York		IL	-1.208	0.767	1.795	0.717
		Bank of Tokyo-Mitsubishi UFJ Trust		JP	7.381	0.069*	12.991	0.015**
		Mizuho Corporate Bank (USA)		JP	6.030	0.138		
		Manufacturers Bank		JP	8.591	0.035**	1.550	0.754
		Woori America Bank		KR	0.717	0.860	-2.115	0.667
		Chinatrust Bank (USA)		TW	13.651	0.001***	13.281	0.007***
		Far East National Bank		TW	-0.528	0.896	-1.499	0.760
2008	Q1	Inter National Bank	Americas	MX	-0.460	0.910	7.308	0.154
		Mercantil Commercebank NA		VE	0.314	0.938	3.812	0.440
		BMW Bank of North America	Europe	DE	2.751	0.499	1.637	0.740
		City National Bank of Florida		ES	3.476	0.394	5.538	0.263
		Totalbank		ES	7.864	0.059*	-0.097	0.985
		Sabadell United Bank NA		ES	3.906	0.346	-1.150	0.816
		Rabobank National Association		NL	3.572	0.388	1.543	0.759
		Bank Leumi USA	Asia	IL	5.865	0.154	-2.587	0.605
		Israel Discount Bank of New York		IL	5.434	0.186	1.014	0.839
		Bank of Tokyo-Mitsubishi UFJ Trust 4		JP	19.952	0.000***	3.959	0.461
		Mizuho Corporate Bank (USA)		JP	6.239	0.127		
		Manufacturers Bank		JP	1.750	0.669	6.982	0.161
		Woori America Bank		KR	-2.338	0.569	-5.862	0.240
		Chinatrust Bank (USA)		TW	11.902	0.003***	9.020	0.067*
		Far East National Bank		TW	3.412	0.401	-2.121	0.667
	Q2	Inter National Bank	Americas	MX	-3.021	0.457	5.279	0.301
		Mercantil Commercebank NA		VE	-1.523	0.708	2.165	0.661
		BMW Bank of North America	Europe	DE	5.562	0.170	-1.289	0.793
		City National Bank of Florida		ES	6.181	0.130	-0.736	0.882

Table 5 (cont.). Medium banks (15 foreign banks and 246 domestic banks)

			Conti-nent	Coun-try	Loans		Deposits	
					Coef.	P.	Coef.	P.
2008		Totalbank5		ES	9.677	0.018**	2.697	0.586
		Sabadell United Bank NA		ES	5.283	0.207	5.138	0.306
		Rabobank National Association		NL	5.817	0.158	8.372	0.094*
		Bank Leumi USA	Asia	IL	0.277	0.947	-4.115	0.418
		Israel Discount Bank of New York	Asia	IL	4.341	0.298	-1.706	0.737
		Bank of Tokyo	Asia	JP	2.920	0.484	-10.653	0.053*
		Mizuho Corporate Bank (USA)	Asia	JP	-2.591	0.543		
		Manufacturers Bank	Asia	JP	4.297	0.304	2.586	0.611
		Woori America Bank	Asia	KR	4.527	0.285	7.414	0.149
		Chinatrust Bank (USA)	Asia	TW	8.061	0.048**	5.204	0.294
		Far East National Bank	Asia	TW	6.573	0.107	4.278	0.388
	Q3	Inter National Bank	Americas	MX	4.389	0.289	-0.301	0.954
	Q3	Mercantil Commercebank NA	Americas	VE	-9.706	0.017**	-6.094	0.218
	Q3	BMW Bank of North America	Europe	DE	-1.143	0.778	-0.272	0.956
	Q3	City National Bank of Florida	Europe	ES	2.635	0.517	-0.455	0.927
	Q3	Totalbank7	Europe	ES	9.587	0.018**	12.017	0.015**
	Q3	Sabadell United Bank NA	Europe	ES	-1.508	0.715	-0.825	0.867
	Q3	Rabobank National Association	Europe	NL	0.384	0.926	1.452	0.771
	Q3	Bank Leumi USA	Asia	IL	3.894	0.342	-0.610	0.902
	Q3	Israel Discount Bank of New York	Asia	IL	9.968	0.015**	4.093	0.411
	Q3	Bank of Tokyo-Mitsubishi UFJ Trust8	Asia	JP	13.388	0.001***	5.828	0.271
	Q3	Mizuho Corporate Bank (USA)	Asia	JP	11.444	0.005***		
	Q3	Manufacturers Bank	Asia	JP	3.082	0.446	2.259	0.646
	Q3	Woori America Bank	Asia	KR	-3.404	0.432	-7.177	0.177
	Q3	Chinatrust Bank (USA)	Asia	TW	4.509	0.271	-1.728	0.728
	Q3	Far East National Bank	Asia	TW	1.809	0.659	-1.177	0.813
	Q4	Inter National Bank	Americas	MX	0.128	0.975	-1.100	0.829
	Q4	Mercantil Commercebank NA9	Americas	VE	-14.035	0.001***	-3.429	0.475
	Q4	BMW Bank of North America	Europe	DE				
	Q4	City National Bank of Florida	Europe	ES	1.490	0.719		
	Q4	Totalbank	Europe	ES	-0.452	0.913	-2.870	0.569
	Q4	Sabadell United Bank NA	Europe	ES	2.964	0.484	5.244	0.298
	Q4	Rabobank National Association	Europe	NL	-6.093	0.147	-5.871	0.251
	Q4	Bank Leumi USA	Asia	IL	-3.178	0.436	6.006	0.225
	Q4	Israel Discount Bank of New York	Asia	IL	-8.064	0.048**	2.635	0.595
	Q4	Bank of Tokyo-Mitsubishi UFJ Trust	Asia	JP	-2.735	0.501	16.989	0.001***
	Q4	Mizuho Corporate Bank (USA)	Asia	JP	6.955	0.089*		
	Q4	Manufacturers Bank	Asia	JP	-2.616	0.520	6.320	0.200
	Q4	Woori America Bank	Asia	KR	-5.521	0.183	-1.566	0.757

Table 5 (cont.). Medium banks (15 foreign banks and 246 domestic banks)

			Continent	Country	Loans Coef.	Loans P.	Deposits Coef.	Deposits P.
		Chinatrust Bank (USA)		TW	0.651	0.875	-1.250	0.803
		Far East National Bank		TW	-0.882	0.831	5.946	0.236
2009	Q1	Inter National Bank	Americas	MX	-7.631	0.158	5.773	0.396
		Mercantil Commercebank NA		VE	-10.473	0.010***	-5.223	0.289
		BMW Bank of North America	Europe	DE				
		City National Bank of Florida		ES	-6.399	0.179		
		Totalbank		ES	-2.040	0.659	4.229	0.458
		Sabadell United Bank NA		ES	-4.382	0.344	3.889	0.495
		Rabobank National Association		NL	-3.380	0.470	1.861	0.747
		Bank Leumi USA	Asia	IL	-6.050	0.160	-2.681	0.610
		Israel Discount Bank of New York		IL	-4.651	0.280	2.978	0.571
		Bank of Tokyo-Mitsubishi UFJ Trust10		JP	14.191	0.001***		
		Bank of Tokyo-Mitsubishi UFJ Trust10		JP	2.342	0.589		
		Manufacturers Bank		JP	2.928	0.499	0.175	0.974
		Woori America Bank		KR	-3.884	0.506	0.472	0.949
		Chinatrust Bank (USA)		TW	3.024	0.464	-1.617	0.747
		Far East National Bank		TW	-3.693	0.371	-5.467	0.277
Panel dummies[2]		Inter National Bank	Americas	MX	2.921	0.249	0.750	0.590
		Mercantil Commercebank NA		VE	5.308	0.012**	8.077	0.003***
		BMW Bank of North America	Europe	DE	7.240	0.000***	7.458	0.004***
		City National Bank of Florida		ES	0.635	0.744	-0.445	0.202
		Totalbank		ES	0.491	0.676	2.848	0.652
		Sabadell United Bank NA		ES	0.754	0.818	-1.774	0.049**
		Rabobank National Association		NL	1.958	0.634	2.541	0.790
		Bank Leumi USA	Asia	IL	0.493	0.672	0.168	0.330
		Israel Discount Bank of New York		IL	-0.467	0.295	-0.343	0.213
		Bank of Tokyo-Mitsubishi UFJ Trust		JP	-3.878	0.001***	-0.141	0.423
		Mizuho Corporate Bank (USA)		JP	-4.733	0.000***	-1.065	0.504
		Manufacturers Bank		JP	0.733	0.220	0.072	0.302
		Woori America Bank		KR	1.262	0.941	4.336	0.213
		Chinatrust Bank (USA)		TW	-5.547	0.000***	-1.100	0.097*
		Far East National Bank		TW	0.016	0.461	2.270	0.880
Number of observations					3140		3079	
Number of banks					261		260	
R^2					0.358		0.264	

Table 5 (cont.). Medium banks (15 foreign banks and 246 domestic banks)

	Conti-nent	Coun-try	Loans		Deposits	
			Coef.	P.	Coef.	P.
Adjusted R^2			0.271		0.166	
Probability > F			0.000		0.000	

Notes: [1] ***, **, and * mean that the coefficient is significant at 1%, 5%, 10%, respectively. [2] It should be noted that the *P* value of a panel dummy is based on the difference between the coefficient and the average panel coefficients of the 246 domestic banks. Coefficients of the panel dummies of domestic banks are not shown to save space. [3] Loans of the Israel Discount Bank of New York increased at 9.9%. [4] Loans of the Bank of Tokyo-Mitsubishi UFJ Trust increased at 15%. [5] Loans of the Totalbank increased at 8.6%. [6] The bank overall reduced both assets and liabilities sides, leading to the decrease of 7.4% of total assets. [7] The bank increased both loans and deposits at 14% and 8.4%, respectively. [8] The bank increased loans at 9.3%. [9] The bank decreased loans at 7.4%. [10] The bank increased loans at 5.3%, wheras reduced deposits at 23%.

Table 6. Small banks (12 foreign banks and 738 domestic banks)

				Conti-nent	Coun-try	Loans		Deposits	
						Coef.	P.	Coef.	P.
Solvency (lag)						-0.115	0.021**	-0.059	0.384
ROE (lag)						0.010	0.001***	0.001	0.766
Liquidity (lag)						-0.043	0.001***	-0.255	0.000***
CPI of home country (lag)						0.143	0.002***	-0.355	0.000***
Foreign exchange rate in home (lag)						0.666	0.003***	0.711	0.014**
GDP in home (lag)						0.426	0.000***	0.156	0.076*
Unemployment rate increase in home (lag)						0.101	0.268	-0.155	0.146
Price index in the state (lag)						0.156	0.000***	-0.173	0.001***
House price index in the state (lag)						0.051	0.147	-0.038	0.415
Crisis dummies for foreighn banks	2007	Q3	The Harris Bank NA	Americas	CA	2.923	0.502	2.722	0.643
			BPD Bank		DO	14.592	0.001***	15.787	0.007***
			Pacific National Bank		EC	1.086	0.796	3.902	0.491
			Deutsche Bank Trust Company DE	Europe	DE	-1.017	0.812	12.212	0.037**
			Millennium BCP Bank NA		PT	4.497	0.288	-6.009	0.291
			Espirito Santo Bank		PT	0.163	0.969	-1.919	0.736
			Bank of East Asia (USA), NA	Asia	HK	4.859	0.247	5.756	0.310
			State Bank of India (California)		IN	5.459	0.218	14.268	0.026**
			Mizuho Corporate Bank of California		JP	-11.816	0.013**	-14.911	0.009***
			Shinhan Bank America		KR	6.118	0.148	-3.573	0.530
			Alliance Banking Company		MY	-0.680	0.872	-0.736	0.897
			First Commercial Bank (USA)		TW	4.963	0.237	1.247	0.826
		Q4	The Harris Bank NA	Americas	CA	6.173	0.150	8.047	0.164
			BPD Bank		DO	-7.225	0.532	9.242	0.211
			Pacific National Bank		EC	13.562	0.001***	4.928	0.384
			Deutsche Bank Trust Company DE	Europe	DE	2.085	0.624	4.740	0.419
			Millennium BCP Bank NA		PT	5.083	0.225	4.282	0.450
			Espirito Santo Bank		PT	2.305	0.583	0.334	0.953
			Bank of East Asia (USA), NA	Asia	HK	-3.626	0.395	1.374	0.810
			State Bank of India (California)		IN			0.234	0.970
			Mizuho Corporate Bank of California		JP			-5.020	0.381
			Shinhan Bank America		KR				
			Alliance Banking Company		MY	5.322	0.213	4.429	0.440
			First Commercial Bank (USA)		TW	5.224	0.214	1.887	0.739

Table 6 (cont.). Small banks (12 foreign banks and 738 domestic banks)

				Conti-nent	Coun-try	Loans		Deposits	
						Coef.	P.	Coef.	P.
Crisis dummies for foreign banks	2008	Q1	The Harris Bank NA	Americas	CA	6.726	0.121	5.073	0.386
			BPD Bank		DO	-21.993	0.049**	-7.474	0.373
			Pacific National Bank		EC	-0.048	0.991		
			Deutsche Bank Trust Company DE	Europe	DE	4.765	0.272	20.307	0.001***
			Millennium BCP Bank NA		PT	0.834	0.845	-4.712	0.412
			Espirito Santo Bank		PT	8.471	0.047**	-1.931	0.737
			Bank of East Asia (USA), NA	Asia	HK	-2.915	0.491	-2.816	0.621
			State Bank of India (California)		IN			9.450	0.186
			Mizuho Corporate Bank of California		JP			-3.863	0.506
			Shinhan Bank America		KR				
			Alliance Banking Company		MY	-1.523	0.719	-1.068	0.852
			First Commercial Bank (USA)		TW	-0.763	0.856	4.581	0.421
		Q2	The Harris Bank NA	America	CA	2.270	0.594	0.808	0.888
			BPD Bank		DO	11.766	0.179	13.676	0.082*
			Pacific National Bank		EC	-0.154	0.971		
			Deutsche Bank Trust Company DE	Europe	DE	2.285	0.593	20.516	0.000***
			Millennium BCP Bank NA		PT	7.020	0.100	-3.732	0.515
			Espirito Santo Bank		PT	15.254	0.000***	11.383	0.047**
			Bank of East Asia (USA), NA	Asia	HK	4.878	0.252	5.448	0.340
			State Bank of India (California)		IN			0.962	0.882
			Mizuho Corporate Bank of California		JP			4.811	0.426
			Shinhan Bank America		KR	2.022	0.644	1.878	0.750
			Alliance Banking Company		MY	-0.706	0.868	-0.808	0.888
			First Commercial Bank (USA)		TW	-3.631	0.394	-5.647	0.326
		Q3	The Harris Bank NA	Americas	CA	0.186	0.965	5.512	0.332
			BPD Bank		DO	10.335	0.216	-3.536	0.619
			Pacific National Bank		EC	-4.346	0.300	1.563	0.783
			Deutsche Bank Trust Company DE	Europe	DE	-7.554	0.079*	-1.169	0.843
			Millennium BCP Bank NA		PT	-1.215	0.775	-2.296	0.688
			Espirito Santo Bank		PT	4.992	0.240	0.415	0.942
			Bank of East Asia (USA), NA	Asia	HK	1.494	0.722	0.270	0.962
			State Bank of India (California)		IN			9.401	9.190
			Mizuho Corporate Bank of California		JP			12.704	0.026**
			Shinhan Bank America		KR	-7.839	0.095*	-18.607	0.003***
			Alliance Banking Company		MY	17.356	0.000***	-11.256	0.048**
			First Commercial Bank (USA)		TW	3.849	0.370	0.148	0.980
		Q4	The Harris Bank NA	Americas	CA	-1.960	0.648	3.290	0.570
			BPD Bank		DO	-19.283	0.023**	-1.373	0.856
			Pacific National Bank		EC	0.470	0.911	-12.245	0.031**
			Deutsche Bank Trust Company DE	Euro-pe	DE	-7.937	0.073*	-1.328	0.829

Table 6 (cont.). Small banks (12 foreign banks and 738 domestic banks)

			Continent	Country	Loans Coef.	Loans P.	Deposits Coef.	Deposits P.
		Millennium BCP Bank NA		PT	-1.369	0.756	-10.992	0.064*
		Espirito Santo Bank		PT	4.410	0.317	4.794	0.419
		Bank of East Asia (USA), NA	Asia	HK			-19.924	0.000***
		State Bank of India (California)		IN			0.093	0.989
		Mizuho Corporate Bank of California		JP	-7.907	0.097*	-15.093	0.008***
		Shinhan Bank America		KR	-7.215	0.104	-8.496	0.155
		Alliance Banking Company		MY	-11.417	0.009***	-5.081	0.387
		First Commercial Bank (USA)		TW	-6.250	0.141	-3.512	0.539
2009	Q1	The Harris Bank NA	Americas	CA	-8.878	0.117	-1.961	0.794
		BPD Bank		DO	-15.361	0.097*	-5.471	0.469
		Pacific National Bank		EC	1.400	0.739	5.379	0.343
		Deutsche Bank Trust Company DE	Europe	DE	-11.777	0.030**	-5.068	0.496
		Millennium BCP Bank NA		PT	-12.025	0.031**	-13.804	0.061*
		Espirito Santo Bank		PT	-5.738	0.303	-3.175	0.665
		Bank of East Asia (USA), NA	Asia	HK			-0.512	0.928
		State Bank of India (California)		IN	-8.746	0.120	-9.745	0.174
		Mizuho Corporate Bank of California		JP			7.957	0.221
		Shinhan Bank America		KR	-19.392	0.014**	-23.515	0.023**
		Alliance Banking Company		MY	-3.455	0.444	-0.162	0.979
		First Commercial Bank (USA)		TW	-1.989	0.650	-3.111	0.598
Panel dummies		The Harris Bank NA	Americas	CA	1.718	0.623	2.522	0.627
		BPD Bank		DO	-4.002	0.012**	-3.224	0.041**
		Pacific National Bank		EC	2.019	0.494	-1.348	0.189
		Deutsche Bank Trust Company DE	Europe	DE	0.936	0.998	-14.487	0.000***
		Millennium BCP Bank NA		PT	0.630	0.855	4.304	0.204
		Espirito Santo Bank		PT	-0.401	0.420	2.255	0.725
		Bank of East Asia (USA), NA	Asia	HK	2.704	0.264	1.859	0.857
		State Bank of India (California)		IN	4.626	0.025**	6.634	0.102
		Mizuho Corporate Bank of California		JP	3.707	0.316	-2.675	0.054*
		Shinhan Bank America		KR	2.987	0.208	5.238	0.087*
		Alliance Banking Company		MY	3.379	0.126	4.704	0.135
		First Commercial Bank (USA)		TW	2.029	0.490	2.084	0.776
Number of observations					9341		9201	
Number of banks					749		748	
R^2					n.a. because of imputation method		See left	
Adjusted R^2					n.a. because of imputation method		See left	
Probability > F					0.000		0.000	

Notes: [1] ***, **, and * mean that the coefficient is significant at 1%, 5%, 10%, respectively.[2] It should be noted that the P-value of a panel dummy is based on the difference between the coefficient and the average panel coefficients of the domestic banks. Coefficients of the panel dummies of domestic banks are not shown to save space.[3] The loans and deposits of the small banks sometimes grow or shrink more than 10% and this is not special.

On the other hand, the solvency variable does not significantly impact loan growth positively or negatively for either the large or medium banks. This is consistent with de Haas and van Lelyveld (2006) who found subsidiary credit growth was more sensitive to the parent holding company's capital position than the capital position of the subsidiary itself. This shows borrowers are not as concerned as depositors about their lender's financial condition, most likely because they have less money at risk. However, small banks seem to be an exception in this regard. As shown in Table 6, a 1% decrease in the Equity/ total asset ratio increases loan growth by 0.115% for small banks showing a fairly strong inverse relationship. Compared to larger banks, small banks have less access to the capital markets to raise new capital. Thus, they have to rely more on building equity through profitability and retained earnings. Since the loan portfolio provides the best opportunity to generate the highest profit margins, bank management of weaker banks might adopt aggressive policies that encourage loan growth to the extent regulators allow it. It may also be that smaller banks with rising equity positions are deliberately being more conservative through taking less risk by decreasing the size of their loan portfolios.

For the largest banks in our study, ROE seems to have little impact on the growth rates of loans and deposits during the financial crisis. Neither of the coefficients for ROE in our models on Table 4 is statistically significant. This could be because large banks have asset / liability structures less dependent on traditional loans and deposits. As a result, they also generate more of their income from noninterest sources than smaller banks. For medium size banks (Table 5), a significant coefficient of 0.016 shows increased profitability (ROE) enhances deposit growth but does very little to expand lending. Highly profitable banks become more attractive to larger uninsured depositors and can afford to provide depositors with higher interest rates on certain types of accounts. In the case of small banks (Table 6), a coefficient of 0.010 indicates improving financial performance is more likely to impact the loan portfolio in a positive way than deposits. This suggests banks with increasing profitability are better positioned to take advantage of new lending opportunities as they arise than struggling banks. It may also capture superior management or a more robust local economy with more lending opportunities and higher margins. This variable is significant at the 1% level for deposits at medium size banks and for loans at small banks indicating a very strong influence among our sample banks.

Although changes in liquidity have little impact on loan and deposit growth for the largest banks, it is a much more important variable for their smaller competitors. Larger banks have greater access to alternative sources of liquidity (e.g. repurchase agreements, commercial paper) than banks with fewer resources and relationships to draw on. Liquidity is negatively correlated with deposit growth for small and medium banks. If banks are experiencing or expecting large deposit withdrawals as the financial crisis unfolds, the liquidity ratio falls and they will build their liquidity positions to protect themselves. The direction of the relationship between liquidity and loan growth is less clear. It appears that banks under $1B in total assets (our small banks) slowly cut back on lending and make alternative security investments to increase liquidity. The – 0.43 coefficient in Table 6 is significant at the 1% level. Small banks operate in a more restrictive environment. If business conditions of the area of a small bank is good (bad), it will increase (decrease) loans for such a good (bad) quarter, leading to the decrease (increase) of liquidity. This process continues as long as the economic conditions of the market do not change, so we have the negative correlation between liquidity and loans.

However, liquidity is positively correlated with loan growth for medium size banks with a coefficient of 0.41. As banks become larger, they are more likely to focus on larger commercial accounts rather than households and smaller businesses to fuel the growth. Transactionary accounts for large businesses can be very volatile, requiring a higher level of liquidity to service these types of customers. Management also wants to be prepared for unexpected increased funding requests from existing / new customers so they do not miss opportunities or lose major clients.

3.2. Home country economic variables. Next, we consider the impact of the parent bank holding company's home economy variables. In our models, these include the CPI, the foreign exchange rate, and the GDP of the home country. For small and medium banks, the CPIs of the home country of the parent company are positively correlated with loan growth in the U.S. and negatively associated with deposit growth. This suggests that as the CPI of the home country rises, the bank would expect depreciation of the home currency against the dollar in the future. Thus, there is a strong incentive for foreign banks to want to hold more assets in countries with strong currencies relative to their own. It should also be recognized that in the case of our small and medium bank groups, the assets and liabilities of the bank are very small relative to those of the foreign parent. Even with higher U.S. loan growth, it would still have a minimal impact on the parents' financial statements. Therefore, it is unlikely that management would be very concerned about the short-term impact of new loan growth on international business portfolio diversification. Nor, due to the subsidiary's small size, is it likely to create a problem with international bank capital regulations. An international bank has a number of alternative strategies to cope with home country inflation to protect its book value in terms of U.S. dollars. For example, a CPI increase followed by currency depreciation gives management a strong incentive for the bank to increase U.S. loans and other assets to build market value in terms of the home currency.

It is interesting our models show that large banks are not very sensitive to changes in the CPI or exchange rates. Most likely, it is because large foreign subsidiaries operating in the United States are already too large or diversified to be influenced by these factors in one unit. An increase of the foreign exchange rate for small banks is positively correlated with the growth of loans and deposits. If the U.S. dollar appreciates against the home currency, the book value of the subsidiary will also rise relative to other assets in the home country. As long as these conditions are expected to hold, it encourages the holding company to expand the scale of operations in the U.S. to capture these currency gains. A similar story is applicable to the loans of the medium banks, but the effect is not as strong.

The change in real GDP in the home country is positively associated with loan growth in large and small U.S. bank subsidiaries (significant at the 1% level). Large banks were more influenced by this variable. A 1% higher home country GDP leads to a 1.013% improvement in credit at the large American subsidiary but only a 0.426% increase at small banks (Tables 4 and 6). An increase in real GDP indicates a strengthening foreign economy. This in turn should increase loan demand in the home country, and puts management in a better position to expand their credit portfolios domestically and abroad with multinational clients, which are often the customers of the large foreign banks. Although statistically significant at the 10% level, a rising GDP produces a weaker and mixed influence on deposits of medium and small bank operations in the U.S. For medium banks, GDP growth at home is negatively correlated with deposit growth indicating there may be an incentive to restrain deposits in the U.S. subsidiary as better business opportunities are found at home. In small banks, the American loan portfolio is expanding which then requires new local funding to support the expansion of credit.

In general, the results show the unemployment rate in the home country has very little impact on loan and deposit growth in their U.S. subsidiaries. The one exception was for medium banks (see Table 5) where we found a loan model coefficient of -.428 suggesting a negative correlation between home unemployment rate and loan growth. The result is consistent because a decline in the home unemployment rate, like a GDP increase, is a measure of an expanding economy in the home country with new opportunities there.

3.3. Variables for American state economic conditions. To capture local economic conditions for the U.S. subsidiary, we include separate variables for the changes in the CPI and housing price indices for the American state where the operation is headquartered[1]. In all three base loan models, the coefficients for consumer prices are all positive and significant at the 1% or 5% levels. This indicates that loan growth is stronger during periods of high demand for consumer goods which also fuels inflation and stimulates greater business borrowing to meet this demand. However, only for the smallest banks does the CPI have a negative influence over deposit growth. This is not unexpected since small banks have more small retail depositors who may be forced to save less when consumer prices are rising faster than their disposable incomes.

The state house price index for both medium and large banks is positively related to deposits but did not significantly influence lending. In times of financial crisis and uncertainty, consumers have a strong incentive to save new equity from rising home prices rather than spend it. Many recent home buyers in major metropolitan markets in the U.S. were "under water" on their mortgages and may thus save any rise in home values to cover any previous loss in wealth. Some of this money would come into banks in the form of additional deposits.

3.4. Impact of foreign banks on the U.S. banking system. Some of the most important findings of this paper relate to the variables which measure the impact of foreign bank subsidiaries on the U.S. banking system during the global financial crisis. Unlike other studies which focused more on the influences of the type of foreign bank entry (de novo versus acquisition), our research considers the impact of subsidiary size on bank policies during the crisis. We also are interested in determining if banks from various regions of the world responded to the crisis with similar behavior or did they take a different approach to the problem. The middle panels of Tables 4, 5, and 6 show all of the foreign bank dummy variables and related coefficient estimates. This methodology allows us to test whether individual foreign bank subsidiaries responded differently from the behavior of domestic banks (and each other) in a given time period during the crisis.

[1] In addition to these two variables, we also considered the unemployment rate in the state as a possible explanatory variable. But it was dropped from the models due to its strong (negative) correlation with the states' CPI index.

Table 7. Average coefficients broken by area and *P*-value of Wald tests for no difference between foreign banks and domestic banks

				Large foreign banks					Medium foreign banks					Small foreign banks				
				n	Loans	Prob > *F*	Deposits	Prob > *F*	*n*	Loans	Prob > *F*	Deposits	Prob > *F*	*n*	Loans	Prob > *F*	Deposits	Prob > *F*
Crisis dummies	2007	Q3	Americas	4	-3.193	0.302	-2.592	0.424	2	-6.227	0.030**	-1.519	0.669	3	6.200	0.015**	7.470	0.028**
			Europe	11	1.461	0.383	2.186	0.274	5	-1.064	0.603	0.271	0.913	3	1.214	0.622	1.428	0.668
			Asia	1					8	5.789	0.000***	-1.122	0.539	5	1.484	0.400	0.342	0.885
		Q4	Americas	4	0.149	0.961	-3.736	0.240	2	1.223	0.670	-0.200	0.955	3	4.170	0.334	7.406	0.042**
			Europe	11	2.639	0.132	1.496	0.450	5	0.848	0.642	3.161	0.152	3	3.158	0.194	3.119	0.346
			Asia	1					8	4.419	0.002***	4.227	0.024**	5	2.307	0.351	0.583	0.826
	2008	Q1	Americas	4	1.335	0.629	-6.010	0.062*	2	-0.073	0.980	5.560	0.118	3	-5.105	0.222	-1.200	0.813
			Europe	11	0.903	0.613	3.751	0.064*	5	4.314	0.023**	1.494	0.516	3	4.690	0.065*	4.555	0.184
			Asia	1					8	6.527	0.000***	1.486	0.451	5	-1.734	0.482	1.257	0.647
		Q2	Americas	4	-0.187	0.961	-3.780	0.402	2	-2.272	0.428	3.722	0.294	3	4.627	0.189	7.242	0.134
			Europe	11	2.060	0.225	2.620	0.196	5	6.504	0.001***	2.837	0.209	3	8.186	0.001***	9.389	0.005***
			Asia	1					8	3.551	0.027**	0.430	0.838	5	0.641	0.765	1.108	0.651
		Q3	Americas	4	4.296	0.263	15.817	0.001***	2	-2.658	0.365	-3.198	0.380	3	2.058	0.542	1.179	0.742
			Europe	11	3.680	0.031**	-0.720	0.722	5	1.991	0.285	2.383	0.290	3	-1.259	0.613	-1.017	0.762
			Asia	1					8	5.586	0.000***	0.212	0.912	5	-4.963	0.020**	-5.458	0.027**
		Q4	Americas	4	-1.725	0.578	1.860	0.610	2	-6.953	0.015**	-2.264	0.522	3	-6.924	0.047**	-3.443	0.047**
			Europe	11	-0.938	0.617	4.490	0.043**	5	-0.533	0.809	-1.166	0.703	3	-1.632	0.554	-2.509	0.504
			Asia	1					8	-1.924	0.206	5.011	0.011**	5	-8.197	0.000***	-8.669	0.001***
	2009	Q1	Americas	4	1.346	0.736	7.375	0.109	2	-9.052	0.008***	0.275	0.948	3	-7.613	0.056*	-0.684	0.869
			Europe	11	-0.829	0.780	6.547	0.060*	5	-4.050	0.182	3.326	0.414	3	-9.847	0.022**	-7.349	0.197
			Asia	1					8	0.526	0.734	-1.023	0.688	5	-8.396	0.024**	-4.848	0.122
Panel dummies			Americas	4	-1.003	0.175	2.575	0.797	2	4.114	0.008***	4.414	0.109	3	-0.088	0.305	-0.684	0.090*
			Europe	11	0.173	0.627	-0.520	0.001***	5	2.216	0.162	2.126	0.883	3	0.389	0.599	-2.643	0.005***
			Asia	1					8	-1.698	0.000***	0.525	0.095*	5	3.239	0.002***	2.974	11.910
			Domestic		0.513		2.208			1.147		1.989			0.933		1.473	

Notes: ***, **, and * mean that the coefficient is significant at 1%, 5%, 10%, respectively. Wald tests for crisis dummies are for H0: Average of coefficients in the area = 0. Wald tests for panel dummies are for H0: Average of coefficients of foreign banks in the area is equal to the average of domestic banks.

In Table 7, we also investigate how groups of foreign banks from the same continent changed their loan and deposit policies in reaction to the financial crisis. This information on the behavior of banks from various parts of the world is insightful. It is much easier to see the change in deposits in large banks as a group than if we looked only at Table 4 that shows the results for large banks individually. Grouping foreign banks according to the parent company's domicile, this approach uses the Wald test on the difference of the average coefficients among foreign groups and the competing domestic banks.

The findings about the lending behavior of large foreign banks indicate it was generally not different from domestic large banks except in 2008Q3 when the European banks as a group increased lending (Table 4)[1]. The coefficient was 3.680 and significant at the 5% level. As Figure 1 shows, the total loans held by all FDIC-insured financial institutions started strongly declining in 2008Q1. With the European large banks increasing lending and going after market share, this helped to mitigate the decline to a limited degree. The fact that most of the loan coefficients for individual European large banks in Table 4 (except Deutsche Bank) were not significant demonstrates the efficacy of analyzing banks aggregated by region as shown in Table 7.

As for deposit growth in Table 4, the behavior of the large foreign banks was generally consistent with domestic banks with a few individual banks deviating in a particular quarter. For example, in 2008Q3, two large Canadian banks increased their deposits at a much higher rate than domestic banks as suggested by the significant coefficients of 15.151 for Harris and 16.482 for TD Bank. This is confirmed by the Wald tests reported in Table 7. When compared to their peer domestic banks, it shows the change in deposits for the large Canadian banks as a group decreased in 2008Q1 (a coefficient of -6.010) but then strongly rebounded with deposit growth in 2008Q3 (a coefficient of 15.817)[2]. On the other hand, deposits of European banks increased at a higher rate than large domestic banks in quarters 1 and 4 of 2008 and 1st quarter of 2009 (with significant coefficients of 3.751, 4.490, and 6.547, respectively)[3]. This suggests that some corporate and individual depositors preferred European banks as the crisis unfolded and moved their deposits from others including Canadian large banks in 2008Q1 and domestic banks after that period. Overall, the evidence suggests the activities of large foreign banks were generally less affected by the financial crisis than domestic banks, which either deliberately scaled back their lending and deposit growth or were forced to do so by the deteriorating market conditions.

The difference in loan portfolio behavior between the medium size foreign and domestic banks is much more striking than for their larger competitors. Table 7 shows the medium banks from the Americas (Mexico and Venezuela) decreased loans even more than similar size domestic banks in 2007Q3, 2008Q4, and 2009Q1 as shown by the large negative coefficients of -6.227, -6.953 and -9.052[4]. We can also confirm these results by the behavior of Mercantil Commercebank from Venezula as a medium bank in Table 5. In contrast, the Asian medium size banks strongly increased loan growth from 2007Q3 through 2008Q3 (coefficients of 5.789, 4.419, 6.527, 3.551 and 5.586, respectively). The European medium size banks grew their loan portfolios faster than domestic banks in just 2008Q1 (4.314) and 2008Q2 (6.504).

The panel dummies at the bottom of Table 7 capture the loan growth rates for groups of banks over the entire period and not just single quarters. The evidence indicates that medium banks from the Americas experienced higher average growth rates in loans in our whole sample period than domestic banks. Larger panel dummies and negative crisis dummies together indicate that the loans of the medium size Americas banks recorded more volatility than the domestic banks. In contrast, the Asian medium banks' average growth rate of loans was lower than those of the domestic banks. Taken together, the loan decrease of the Americas medium banks accelerated the crisis, however, the increased loan activity by the European and Asian medium banks helped to alleviated it.

For the deposits side, with two exceptions, medium foreign banks were subjected to the same levels of deposit growth as peer domestic banks. As the panel dummy variable in Table 7 for the Asian banks (0.525) indicates, average deposit growth of the Asian banks was positive in our whole sample period. Furthermore, they had their most robust deposit growth in 2007Q4 (4.227) and 2008Q4 (5.011). This suggests that Asian medium banks generally grew slower than domestic banks, but grew at a higher rate in key crisis periods, when they attracted new customers and encouraged existing depositors to move more of their money from other banks to them.

[1] In September 2008, Fannie Mae and Freddie Mac were put under conservatorship of the Federal Housing Finance Agency, Lehman Brothers filed for bankruptcy, and Washington Mutual terminated its operations.

[2] In March 2008, the Federal Reserve Bank of New York provided Bear Stearns with $25 billion in bailout funds leading up to the acquisition by JP Morgan Chase in May 2008.

[3] In October, 2008, the bank Fortis received financial support from the governments of Belgium, the Netherlands, and Luxembourg. Similarly, in November, the Federal Reserve provided Citigroup with a $20 billion bailout.

[4] On August, 2007, two funds owned by BNP Paribas closed their operations because of the sub-prime mortgage crisis. In this quarter, the increased growth of loans and deposits for the 1,110 sample banks were 2.2% and 1.2%, respectively.

It is interesting that all three regions of small foreign banks have changed loan and deposit levels in a similar way. As shown in Table 7, banks in the Americas grew at an accelerated pace in the beginning of the crises (2007Q3), but later experienced reduced credit growth rates in 2008Q4 and 2009Q1. The variable coefficients of 6.200, -6.924, -7.613 were all significant at either the 5% or 10% levels. Loan levels of the small European banks increased in 2008Q2 (8.186), then decreased in 2009Q1 (-9.847). Loans of the small Asian banks decreased for three consecutive quarters from 2008Q3 through 2009Q1 (coefficients of -4.963, -8.197, -8.396, respectively).

With regard to funding, small banks in the Americas increased their deposits faster than domestic banks in 2007Q3 and 2007Q4, then lost this advantage in 2008Q4 as the financial crisis deepened (Table 7). As a group, small European banks had relative gains in deposits only in one quarter, 2008Q2. It suggests that in this quarter, depositors had more confidence in the performance of the European banks due to the subprime crisis already starting to impact American banks. Asian banks had no competitive advantage in gathering deposits as the crisis unfolded and actually had sharp declines in growth rates in 2008Q3 (-5.458) and 2008Q4 (-8.669). Taken together, the foreign small banks had modest success in expanding both loans and deposits early in the economic downturn through 2008Q2 but then lost that advantage over domestic banks in the later crisis periods (from 2008Q3 through 2009Q1).

What is most noteworthy about the empirical findings is that medium and small foreign banks expanded lending during the early stages of the crisis. This is largely consistent with the results of others including De Haas and Lelyveld (2006) for foreign-owned banks operating in Eastern European countries. These findings also refute the fear of many critics of foreign-owned banks that these institutions primarily serve larger firms and neglect small and medium businesses (e.g. Sengupta, 2007). Banks of this size are likely to have few large commercial accounts and be more focused on smaller businesses due to legal lending limits and resource restrictions. Thus, the question of what market is being served by foreign banks is more likely to be a function of the U.S. subsidiary size and its location rather than foreign investment per cent.

Conclusions

This paper makes several major contributions to the literature by investigating the difference in behavior between groups of foreign-owned banks and domestic U.S. banks during the 2007-2009 financial crisis. Our analysis relies on quarterly data of individual banks focusing on the geographic origin of the parent holding companies. The evidence shows that foreign banks as group (European and Asian in particular) generally helped to stabilize the U.S. banking system during the early and middle stages of the recession by expanding their loan portfolios when domestic banks were contracting. Parent holding companies from the same geographical region may behave in a similar way because (1) customers, especially depositors, are likely to regard banks from the same foreign area to be similar and (2) the economic influences of the home countries in the same region may be more strongly related than those found in other regions of the world.

Our findings show that the lending activity of large foreign-owned U.S. bank subsidiaries was impacted by the financial crisis quite differently than medium or small foreign-owned banks. Thus, policy makers and regulators should be careful to not group all foreign-owned banks into one category since their behavior and reactions to the crisis were dissimilar. The deposit growth of large banks from Canada decreased in the beginning of the financial crisis, then recovered in quarter 3 of 2008. Compared to domestic banks, the deposits of the large European banks expanded in three out of five quarters starting in the 1st quarter of 2008. This suggests that large foreign-owned banks did not change their loan activity significantly but deposits naturally flowed into them from other banks including large domestic banks. Most likely, this was because commercial accounts and large uninsured depositors believed some large foreign banks were safer than their American competitors. Overall, the independent variables controlling for bank operations and economic conditions (Tables 4 to 6) did not influence loan and deposit growth at large foreign banks as much as they did for the medium and smaller foreign banks. This is not too surprising since bigger banks have more opportunities for diversification and additional resources to draw on than smaller institutions would have.

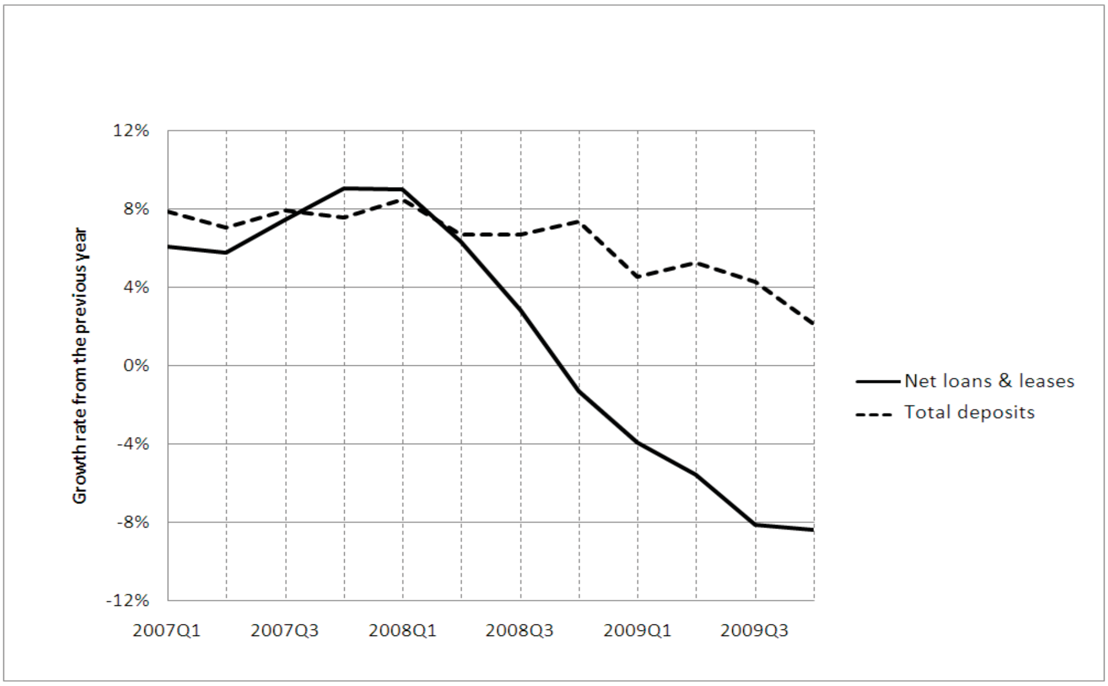
In contrast, the medium sized foreign banks changed their loan activity. During the crisis, the loan growth rates of medium banks from the Americas decreased. This sharply contrasted with the loan growth of the European and Asian medium banks during the early stages of the recession. The later groups, while not nearly large or numerous enough to have real impact on the national economy, still cushioned the deteriorating business climate in their local economies. The medium Asian banks had the most success in growing deposits during the crisis era.

It is interesting that all three groups of small foreign banks behaved in a similar way during the financial crisis. In the early stages of the crisis, small foreign-owned banks from the Americas and Europe experienced faster growth rates than domestic banks for both loans and deposits. But then as the financial conditions got worse in quarter 3 of 2008, all three groups fell behind their domestic peers with slower growth in deposits and stronger negative growth rates in lending. These banks may be so small with such limited resources that they were less adept than larger institutions in responding to the most severe changes in economic conditions regardless of their home countries and internal capital resources of the parent holding company. A good question to be addressed by future research is the speed of recovery of foreign-owned banks versus their domestic counterparts and how it impacts credit supply.

References

1. Chang, C. Edward, Iftekhar Hasan, and William C. Hunter (1995). Efficiency of Multinational Banks: An Empirical Investigation. Paper presented at the Financial Management Association meetings.
2. Choi, In (2001). Unit root tests for panel data, *Journal of International Money and Finance*, 20, pp. 249-272.
3. Claeys, Sophie and Christa Hainz (2007). Acquisition versus Greenfield: The Impact of the Mode of Foreign Bank Entry on Information and Bank Lending Rates, Working Paper Series 210, Sveriges Riksbank, Stockholm, Sweden.
4. De Haas, Ralph and Iman Van Lelyveld (2006). Foreign Banks and Credit Supply in Central and Eastern Europe: A Panel Data Analysis, *Journal of Banking and Finance*, 30, pp. 1927-1952.
5. De Hass, Ralph and Iman Van Lelyveld (2010). Internal Capital Markets and Lending by Multinational Bank Subsidiaries, *Journal of Financial Intermediation*, 19, pp. 1-25.
6. DeYoung, Robert and Daniel E. Nolle (1996). Foreign-Owned Banks in the United States: Earning Market Share or Buying It, *Journal of Money, Credit and Banking*, 28 (4), pp. 622-636.
7. Gormley, Todd A. (2010). The Impact of Foreign Bank Entry in Emerging Markets: Evidence from India, *Journal of Financial Intermediation*, 19, pp. 26-51.
8. Grosse, Robert, and Lawrence G. Goldberg (1991). Foreign Bank Activity in the United States: An Analysis by Country of Origin, *Journal of Banking and Finance* 15, pp. 1093-1112.
9. Hodgkins, Blair B. and Goldberg, Ellen S. (1981). Effect of Foreign Acquisition on the Balance Sheet Structure and Earnings Performance of American Banks, *Financial Review*, 16 (4).
10. Houpt, James V. (1980). Foreign Ownership and the Performance of U.S. Banks, *Federal Reserve Bulletin*, 66, pp. 543.
11. Lehner, Maria (2009). Entry Mode Choice of Multinational Banks, *Journal of Banking and Finance*, 33, p. 1781-1792.
12. McCauley, Robert N., and Rama Seth (1992). Foreign Bank Credit to U.S. Corporations: The Implications of Offshore Loans, Federal Reserve Bank of New York, *Quarterly Review*, Spring, pp. 52-65.
13. Nolle, Daniel E. (1995). Foreign Bank Operations in the United States: Cause for Concern? *International Finance in the New World Order*, edited by H. Peter Gray and Sandra C. Richard, Oxford, England: Elsevier Science, Ltd.
14. Peek, Joe, Eric S. Rosengren and Faith Kasirye (1999). The Poor Performance of Foreign Bank Subsidiaries: Were the Problems Acquired or Created, *Journal of Banking and Finance*, 23, pp. 579-604.
15. Peria and Mody (2004). How Foreign Participation and Market Concentration Impact Bank Spreads: Evidence from Latin America, *Journal of Money, Credit, and Banking*, 36 (3) (Part 2), pp. 511-537.
16. Rubin, D.B. (1987). *Multiple Imputation for Nonresponse in Surveys*, New York: Wiley & Sons.
17. Sengupta, Rajdeep (2007). Foreign Entry and Bank Competition, *Journal of Financial Economics*, 84, pp. 502-528.
18. Seth, Rama (1992). Profitability of Foreign Banks in the United States, *Federal Reserve Bank of New York*, *Research paper* No. 9225, December.
19. Terrell, Henry S. (1993). U.S. Branches and Agencies of Foreign Banks: A New Look, Board of Governors of the Federal Reserve System, *Federal Reserve Bulletin*, 79, October 10, pp. 913-25.
20. Zimmer, Steven A., and Robert N. McCauley (1991). Bank Cost of Capital and International Competition, *Federal Reserve Bank of New York*, *Quarterly Review*, Winter, pp. 33-59.

Appendix



Source: FDIC.

Fig. 1. Loans and deposits of all FDIC-insured institutions