

Banking on Foreigners: The Behavior of International Bank Claims on Latin America, 1985–2000

MARIA SOLEDAD MARTINEZ PERIA, ANDREW POWELL,
AND IVANNA VLADKOVA-HOLLAR*

The significant rise in foreign bank claims observed during the 1990s, following their steep decline during the 1980s debt crisis, reignited interest in understanding the behavior of these flows. This paper analyzes changes in foreign bank claims on the Latin American private sector over the period 1985–2000. We find that banks transmit shocks from their home countries (where banks' headquarters are located) and that changes in claims on individual host countries (those that receive claims) are correlated with aggregate changes in claims on other countries. However, over time, we observe that foreign bank claims have become less responsive to external factors. Also, we present evidence that the sensitivity of foreign bank claims to host factors diminishes, as banks' aggregate exposure rises. Finally, we find that foreign bank claims react more to positive than to negative host shocks and are not significantly curtailed during crises. [JEL G21, N26]

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The 1990s saw a significant increase in foreign bank claims on developing countries. According to the Bank for International Settlements (BIS), between 1985 and 2000, international banks' total claims on developing countries increased steadily from US\$545.2 billion in 1985 to US\$1,318.8 billion in 2000.^{1,2} By the end of the 1990s, total claims of BIS-reporting banks (internationally active banks that report data to the BIS on their overseas claims) on developing countries represented 31 percent of total local credit in the developing world.³ Among countries in Latin America and in Central and Eastern Europe, foreign bank claims exceeded 50 percent of local credit.

Total claims of BIS-reporting banks on developing countries include *cross-border* claims extended from outside the host countries, along with *local claims* booked with the bank branches or subsidiaries operating in the host countries.⁴ Claims refer primarily to loans and advances but also include holdings of securities and equity participations.

Following the steep decline in foreign bank claims during the 1980s debt crisis, the rapid increase observed during the 1990s fueled a growing interest in the behavior of these claims, and so emerged a new literature on multinational banking.⁵ Because part of the 1990s increase in foreign bank claims went hand in hand with the establishment of foreign bank branches and subsidiaries in developing countries, most existing studies focus on the performance of foreign bank operations in these countries and analyze the impact of foreign bank entry on the efficiency and profitability of domestic banks in developing countries (see Barajas, Steiner, and Salazar, 2000; Claessens, Demirgüç-Kunt, and Huizinga, 2001; Denizer, 2000; Crystal, Dages, and Goldberg, 2001; and Bonin, Hasan, and Wachtel, 2004).

On the other hand, the question of what drives changes in foreign bank claims has received less attention. There are, however, some insightful studies on this issue. Goldberg (2002) examines the determinants of U.S. bank claims abroad and finds that while U.S. economic conditions affect U.S. bank claims abroad, such claims are less affected by economic conditions, including crises, in the host countries. Looking specifically at crises periods, Van Rijckeghem and Weder (2003)

¹Throughout this period international bank claims refer to those from banks headquartered in Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

²This implies a 51 percent increase in real terms.

³Here, total local credit refers to credit provided by *all* banks (both foreign and domestic) with offices in the developing world. Source: *International Financial Statistics*, International Monetary Fund.

⁴"Host country" denotes the country to which a foreign bank extends claims either cross-border or through its branches and/or subsidiaries in that country. "Home country" refers to the country of origin of the foreign bank, that is, the country where the bank's headquarters are located.

⁵Previously, the literature on multinational banking focused primarily on the experience of developed countries (especially the United States) with foreign bank entry and on the internationalization of the activities of banks from these countries during the 1970s and 1980s. For example, Goldberg and Saunders (1981a and b); Cho, Krishnan, and Nigh (1987); and Goldberg and Grosse (1994) investigate the factors driving the extent and type of foreign bank presence in the United States, while Fisher and Molyneux (1996) conduct a similar study of foreign bank activities in London. On the other hand, papers such as Goldberg and Saunders (1980); Nigh, Cho, and Krishnan (1986); Goldberg and Johnson (1990); and Buch (2000) examine the operations of German (in the case of the last paper) and U.S. banks abroad.

investigate the role of international banks in transmitting crises and find evidence that in certain episodes, changes in banks' exposure to crises countries help predict bank flows in other countries. However, their data capture primarily cross-border claims.⁶ On the other hand, taking into account foreign bank local claims to developing countries, Dages, Goldberg, and Kinney (2000); Peek and Rosengren (2000); Goldberg (2002); and De Haas and Van Lelyveld (2003) provide evidence that foreign bank claims did not retrench during recent crises in Latin America and Central and Eastern Europe.

Using a comprehensive data set on foreign bank claims to the private sector in Latin America for the period 1985–2000, we revisit some of the issues examined by previous papers on the determinants of foreign bank claims. More importantly, we explore new questions associated with this issue. The purpose of this study is not to compare the behavior of foreign and domestic banks, but rather to understand what drives changes in foreign bank claims to developing countries and how foreign banks respond to different types of shocks, under various circumstances. These are important issues both for countries already relying heavily on foreign bank financing and for those countries considering a greater role for foreign banks.

Like other papers that have examined the behavior of foreign bank claims, we analyze their reaction to home and host conditions, and, in particular, we investigate whether foreign banks retrench during host crises. One contribution of our paper vis-à-vis others that have looked at these issues is that we consider the behavior of foreign claims for a larger combination of home and host countries, over a longer period of time, including both tranquil and crisis episodes.

Furthermore, we extend the analysis on the determinants of foreign bank claims in some new directions. First, we examine whether the sensitivity of foreign banks to external and host shocks is the same across banks from different home countries. Second, we investigate whether foreign banks respond similarly to positive and negative shocks. Third, we analyze whether foreign bank behavior and the impact of different types of shocks changed over time. Finally, we study how foreign bank claims are affected by factors previously overlooked in the literature. In particular, we evaluate how the level of foreign banks' exposure affects their responsiveness to host country shocks and whether aggregate movements in claims to other countries drive changes in foreign bank claims to individual hosts.

Our analysis focuses on Latin America for at least three reasons. First, foreign banks have had an active presence in the region for an extended period. Second, while for the region as a whole foreign bank claims increased over our period of study, there are still significant differences in the importance of this source of funds across countries in Latin America.⁷ Finally, most countries in the region have been

⁶Van Rijckeghem and Weder (2003) examine a panel of BIS data on flows to 30 emerging markets disaggregated by 11 banking centers, to test the role of bank claims in transmitting currency crises. They find that changes in bank exposures to a crisis country helped predict bank flows in third countries after the Asian crisis, but to a lesser extent during the Mexican 1994 crisis.

⁷For example, international bank claims (cross-border claims and local claims in foreign currency) in 2000 represented more than 55 percent of domestic credit for Argentina and Peru, but they accounted for only 19 percent of domestic credit for Brazil.

subject to pronounced economic cycles and several crises, providing us with a unique opportunity to analyze the impact of these factors on foreign bank claims.

We consider the 1985–2000 period an interesting one to study because during this time frame foreign financing grew significantly across Latin America and the developing world, in general. Furthermore, over this period, many developing countries, and certainly most in the Latin American region, liberalized their financial systems, allowing foreign banks to play a greater role in their local financial sectors. As a result, during this period, the nature of foreign bank financing changed considerably from almost purely cross-border to a mix that also included local lending through foreign bank branches and subsidiaries in the host countries.

Our empirical estimations allow us to corroborate, for a larger combination of home and host countries and over a relatively long period, many of the results found by previous studies. In particular, like Goldberg (2002), we find that home country conditions drive changes in foreign bank lending. Also, controlling for host growth and credit ratings, we find that foreign bank claims do not retrench significantly during crises in the host countries (as found by Dages, Goldberg, and Kinney, 2000; Peek and Rosengren, 2000; and Goldberg, 2002).

More importantly, our work yields interesting new results. First, while foreign banks from different home countries appear to react similarly to host country shocks, their reaction to shocks from their own countries seems to vary by home country. Second, claims on individual host countries are positively associated with aggregate changes in claims to other countries. However, foreign banks' reaction to external shocks (with respect to the host) has diminished over time. Third, foreign banks also respond to host country shocks. However, the higher the aggregate exposure of foreign banks to a given host country, the lower the sensitivity of claims to host country shocks. In other words, foreign bank claims become less procyclical as exposure rises. Finally, we uncover asymmetries regarding foreign banks' response to positive and negative shocks, given that banks appear to react more to the former than to the latter.

I. The Data on Foreign Bank Claims to Latin America

Our data on foreign bank claims to Latin America come from the BIS.⁸ Specifically, the data we obtained are *international financial claims* on the nonbank private sector as reported in the BIS's *Consolidated Banking Statistics*.⁹ These country-level statistics sum the claims extended by the headquarters of foreign banks or by their offices outside the host countries (that is, cross-border claims) with the foreign currency claims provided by the affiliates (that is, branches and subsidiaries) of foreign banks in the host countries. Therefore, in our analysis, foreign bank claims refer to international financial claims to the nonbank private sector as defined by

⁸For a full description of these data see BIS (2003).

⁹The BIS distinguishes among international financial claims directed to the private, public, and banking sectors. Claims on the latter include those on the central bank and on public and private financial institutions. As a result, we study the behavior of claims on the nonbank private sector only.

the BIS.¹⁰ However, the BIS does not typically publish the disaggregation by sector (public, private, or banking) and by country of origin at the same time, so these data are confidential and were provided by the BIS with the authorization of each of the home/lender country's central banks.

We specifically focus on the behavior of claims from banks headquartered in seven industrialized countries (Canada, France, Germany, Japan, Spain, the United Kingdom, and the United States) on the private sector in 10 Latin American countries (Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay, and Venezuela) over the period 1985–2000.¹¹ Our choice of home and host countries is driven by their relative importance as lenders and borrowers to and from the Latin American region, respectively. Banks from the seven home countries account for more than 80 percent of all foreign bank claims to Latin America. In turn, the 10 host countries in our sample receive more than 95 percent of all foreign bank claims to the region.

Our period of analysis was determined by several factors. From a conceptual standpoint, we wanted to look at the behavior of foreign bank claims during a period characterized by greater financial liberalization in the region and by an observed preference by international banks to increase their operations in developing countries. From a practical standpoint, we are unable to look at the period pre-1985, because the BIS started gathering information on foreign bank claims in that year. Also, our analysis ends in 2000 because extending the sample would be worthwhile if we could analyze the case of the 2001 Argentine crisis. However, because during this episode the Argentine government forced the conversion of all foreign currency claims into pesos, we cannot disentangle from the BIS data the impact of the pesification from a true cancellation of claims on the part of foreign banks. As a result, we stop our analysis in the year 2000.

Rather than examine the behavior of total—both public and private—foreign bank claims, we focus on private sector claims exclusively, for several reasons. First, in recent years, foreign bank claims on the private sector have come to represent the bulk of foreign bank claims to developing countries and, in particular, to Latin American economies.¹² Second, foreign bank claims on the public sector may reflect the heterogeneous and particular fiscal policies of different governments. Also, changes in public sector claims may not be driven by the voluntary profit-maximizing choices of foreign banks but rather may be affected by political

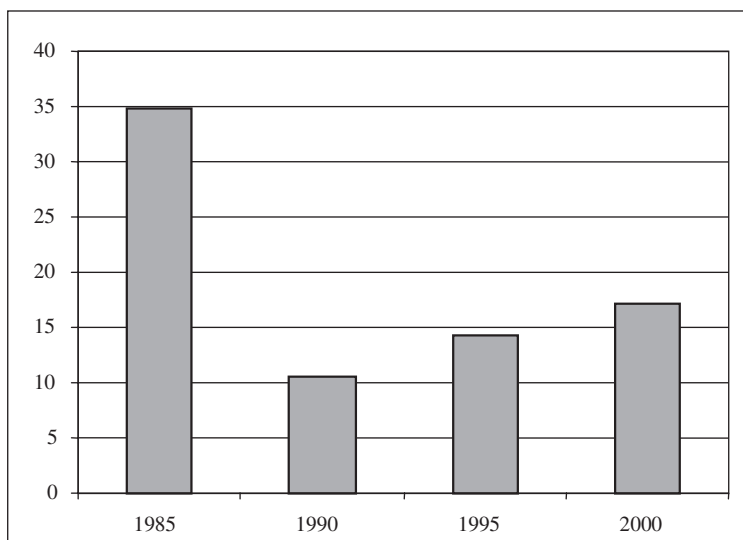
¹⁰Our definition of foreign bank claims ignores the local claims in local currencies extended by foreign banks. The BIS does not report data on these statistics with a sectoral breakdown (that is, there is no discrimination between claims held with the private and public sectors). Nevertheless, we feel that the definition of claims used here, which focuses on foreign currency claims, might be more representative of the actual exposure or potential losses that foreign banks could face from their operations in developing countries, since in general it will be harder for countries to repay claims in foreign currency, especially if some of those claims go to individuals or firms that do not receive dollar incomes.

¹¹Though the BIS statistics are biannual until 2000 and quarterly thereafter, data availability for the remaining variables in our empirical model leads us to focus on annual, end-of-year changes.

¹²By the end of 2000, claims to the nonbank private sector represented 53 percent of all claims to developing countries and 62 percent of all claims to Latin American countries, with the remaining claims evenly split between the public and banking sectors in those countries.

Figure 1. The Exposure of Banks from Selected BIS-Reporting Countries to the Private Sector in Latin America¹

(Claims on Latin America from all banks as percent of these banks' total private sector claims)



Source: Authors' calculations based on Bank for International Settlements (BIS) data.

¹The seven selected BIS-reporting home countries are Canada, France, Germany, Japan, Spain, the United Kingdom, and the United States. Latin America here refers to the 10 largest countries in the region: Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay, and Venezuela.

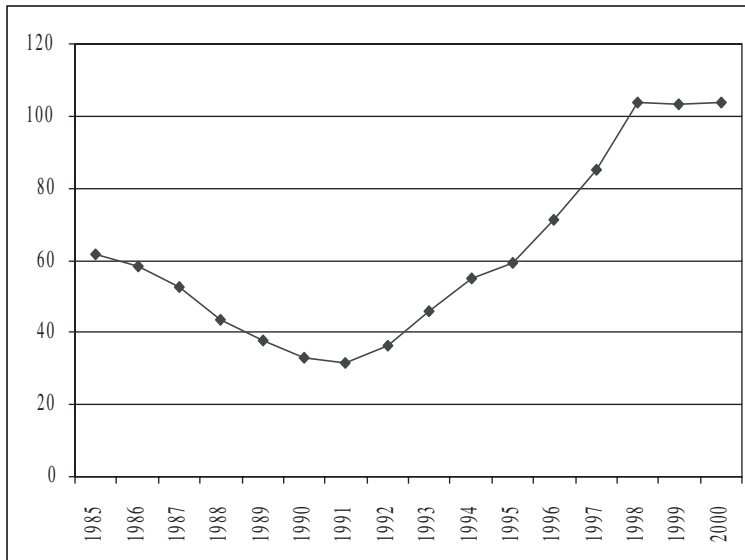
considerations and/or moral suasion on the part of governments.¹³ Finally, claims on the public sector are more likely to take the form of bonds, and public bond markets are more liquid than those for private sector debt. As a consequence, end-of-period valuations of foreign bank claims might not be representative of foreign banks' exposure over a given period.¹⁴

Figures 1 through 4 illustrate the behavior of foreign bank claims to the non-bank private sector in Latin America from 1985 to 2000. In the early to mid-1980s, claims to Latin America accounted for more than one-third of the claims extended by banks from the seven BIS-reporting countries on non-BIS-reporting countries (see Figure 1). Over the second half of the 1980s, foreign banks diversified away from the region, and claims to the 10 selected Latin American economies in the region declined in real terms between 1985 and 1990 (see Figure 2). However, over the 1990s, real claims rebounded, rising rapidly and surpassing the US\$100 billion mark by the end of the decade. Thus, exposure to Latin America remained below

¹³An example is the recent crisis in Argentina, where domestic and foreign banks were coerced into increasing their exposure to the public sector through debt swaps.

¹⁴Also, derivative markets on public sector bonds are reasonably liquid, and the BIS data may not control well for such operations. While the same objections may be raised with respect to claims on the private sector, loans tend to be a much higher percentage of the total claims on the private sector.

Figure 2. The Evolution of Claims from Banks from Selected BIS-Reporting Countries on the Latin American Private Sector¹
(In billions of constant U.S. dollars)



Source: Authors' calculations based on Bank for International Settlements (BIS) data.

¹ The seven selected BIS-reporting home countries are Canada, France, Germany, Japan, Spain, the United Kingdom, and the United States. Latin America here refers to the 10 largest countries in the region: Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay, and Venezuela.

1980s levels but rose steadily over time, reaching 17 percent of all claims (to developing and developed non-BIS-reporting countries) in 2000.¹⁵

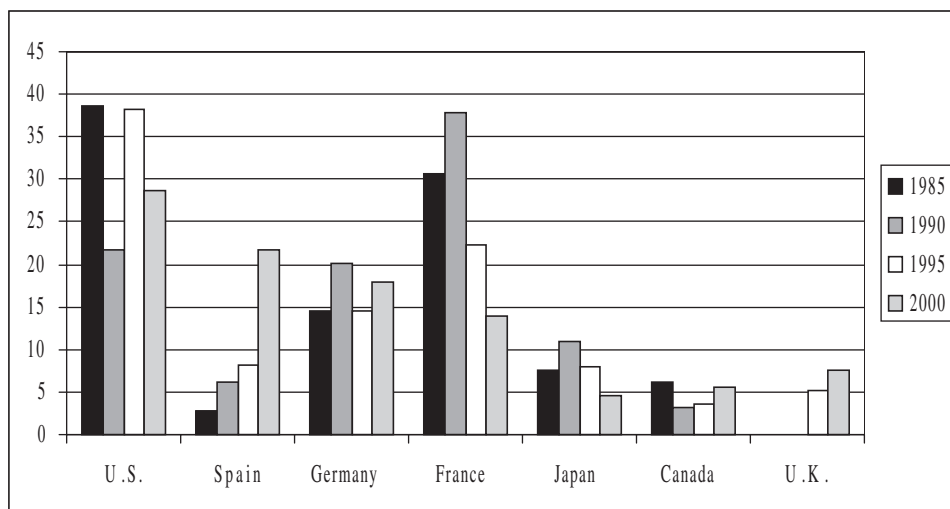
U.S., French, German, and, recently, Spanish banks were the most important sources of bank financing to the region throughout the sample (see Figure 3). U.S. banks almost always held the most claims on the region, accounting for more than 20 percent of all claims to the nonbank private sector throughout the entire period 1985–2000. The exception is France in 1990, when French banks accounted for more than 35 percent of all claims to Latin America. However, French claims to the region have dropped, reaching less than 15 percent of all claims to Latin America in the year 2000. German bank claims on Latin America hovered between 15 and 20 percent of all claims to this region. In the mid-1990s, Spain emerged as the country with the fastest-growing share of claims to the region, accounting for less than 5 percent of claims in 1985 but exceeding 20 percent of total claims to the nonbank private sector in Latin America by 2000.

At the same time, throughout this period, Spanish and U.S. banks had the highest exposure to this region (see Figure 4). Spanish banks' exposure averaged 50 percent of all their total international private claims on non-BIS-reporting countries, while for the United States this figure was 35 percent. However, the trend in exposure

¹⁵As a share of claims on developing countries, claims on Latin America reached 40 percent in 2000.

Figure 3. The Importance of Selected BIS-Reporting Countries' Bank Claims for the Latin American Private Sector¹

(Percent of total selected BIS-reporting countries' claims on Latin America's private sector)



Source: Authors' calculations based on Bank for International Settlements (BIS) data.

¹The seven selected BIS-reporting home countries are Canada, France, Germany, Japan, Spain, the United Kingdom, and the United States. Latin America here refers to the 10 largest countries in the region: Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay, and Venezuela.

across these two countries is very different. While U.S. exposure remained fairly constant throughout the period 1985–2000, Spanish banks' exposure increased significantly from less than 40 percent in the early 1990s to more than 68 percent by 2000.

II. Empirical Methodology

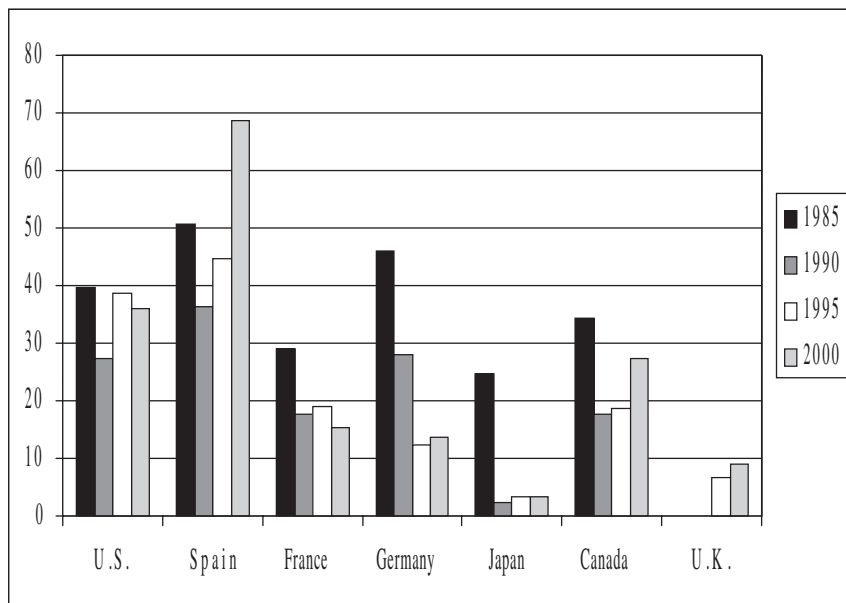
Our general econometric model explaining changes in foreign bank claims is represented by equation (1) below, where $j = 1$ to 7 identifies the seven BIS home countries, $i = 1$ to 10 indicates each individual Latin American host country, and $t = 1985$ to 2000 refers to the time period considered.¹⁶ Equation (1) includes both home and host country individual effects, α_0^j and α_{1i}^j , respectively, and allows the coefficients to vary depending on the home country (this explains the j superscript on all coefficients).¹⁷ However, since it is possible that banks from different home countries react similarly to host and even home country shocks, we test different

¹⁶The United Kingdom is the exception, where data on private sector claims are available only for the period 1993–2000.

¹⁷Alternatively, we could estimate a separate regression for each home (lender) country, using Zellner's Seemingly Unrelated Regressions (SUR), to account for the contemporaneous cross-equation correlation in the error terms. As a robustness check, we estimated separate equations for each lender and compared those results with the results from estimating equation (1). The differences are not significant, and, furthermore, the drawback of the SUR method is that it forces our data into a balanced panel, significantly reducing the number of observations.

Figure 4. The Exposure of Selected BIS-Reporting Countries' Banks to Latin America's Private Sector¹

(Claims to Latin America as a percentage of each country's total international private sector claims)



Source: Authors' calculations based on Bank for International Settlements (BIS) data.

¹The seven selected BIS-reporting home countries are Canada, France, Germany, Japan, Spain, the United Kingdom, and the United States. Latin America here refers to the 10 largest countries in the region: Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay, and Venezuela.

restricted versions of equation (1) to arrive at the baseline specification that we report in the results section.

$$\begin{aligned} \% \Delta \text{Claims}_{j,i,t} = & \alpha_0^j + \alpha_{i,i}^j + \beta^j \text{Home Factors}_{j,t-1} + \lambda^j \text{Host Factors}_{i,t-1} + \\ & \delta^j (\text{Host Factors}_{i,t-1} \times \text{Exposure}_{j,i,t-1}) + \\ & \gamma^j (\% \Delta \text{Private Claims on Other Countries})_{j,i,t-1} + \varepsilon_{j,i,t}. \end{aligned} \quad (1)$$

The dependent variable, $\% \Delta \text{Claims}_{j,i,t}$, is the annual percentage change in real consolidated international claims from banks in home country j to the nonbank private sector in host country i between $t - 1$ and t .¹⁸ The empirical model implemented to analyze the behavior of this variable draws on existing studies on foreign bank

¹⁸Note that while an increase in claims reflects a rise in foreign bank's exposure, it is not necessarily associated solely with new lending to the region. For example, the acquisition of a domestic bank by a foreign bank will lead to a rise in claims (as the loan portfolio of the domestic bank is absorbed by the foreign bank), but it may or may not lead to new lending, depending on the actions of the foreign bank following the acquisition. Nevertheless, based on some rough calculations using the BIS Locational Statistics, we can estimate that more than 70 percent of the international claims to Latin America are in the form of loans. Also, in the robustness tests we try to explicitly control for the impact of mergers and acquisitions.

claims (especially Goldberg, 2002) and on the extensive literature on capital flows.¹⁹ These studies estimate reduced-form models that take into account the role of both *home* or *push* and *host* or *pull* factors. Home or push factors are considered to be exogenous to the host country and refer to structural or cyclical features of the home countries, which affect banks' desire to invest abroad. Home country interest rates and growth rates have been commonly used to proxy for the role of push factors (see, for example, Calvo, Leiderman, and Reinhart, 1993; Chuhan, Claessens, and Mamingi, 1998; Goldberg, 2002; and Hernandez, Mellado, and Valdes, 2001). On the other hand, pull factors refer to host country characteristics that affect the risk-return trade-off of investing in these countries. Country credit ratings and host growth rates are among the most frequently used pull factors (see Chuhan, Claessens, and Mamingi, 1998; Goldberg, 2002; and Hernandez, Mellado, and Valdes, 2001).

Following the literature discussed above, to account for host factors, we include the real GDP growth, the change in country risk rating, and a dummy capturing crisis episodes in each of the Latin American host countries. As home factors, we include the real GDP growth and real interest for each of the seven home countries.²⁰ Growth and interest rate figures come from the *International Financial Statistics (IFS)*, published by the International Monetary Fund. The credit ratings used are those reported by *Institutional Investor* magazine.^{21,22} This rating takes values between 0 to 100, with higher numbers representing a better repayment capacity on the part of the host country. The crisis dummy variable equals 1 during banking, currency, or twin crisis periods. A chronology of crises in the region was obtained from Caprio and Klingebiel (1999) and Bordo and others (2001).²³

Aside from the impact of push and pull factors on foreign bank claims to each host, we also take into account the role of exposure to each host and the potential influence of movements in foreign claims to other countries. To test the impact of exposure on how foreign banks react to host country shocks, we interact variables capturing host factors with an aggregate measure of banks' exposure. *Exposure* is the ratio of home country *j*'s bank claims on the private sector of host country *i* to the total private sector claims extended by country *j*'s banks worldwide. This ratio is calculated from the BIS's *Consolidated Banking Statistics*.

¹⁹See Calvo, Leiderman, and Reinhart (1993); Fernandez-Arias (1996); Chuhan, Claessens, and Mamingi (1998); and Hernandez, Mellado, and Valdes (2001).

²⁰For example, in modeling the behavior of Canadian claims to Latin America, we allow for Canadian GDP and interest rates to affect changes in these claims, but economic conditions from other home countries are not assumed to enter the regression for Canadian claims.

²¹*Institutional Investor* magazine publishes a semiannual survey of country credit ratings. The magazine surveys bankers, money managers, and economists around the world on their evaluations of the relative risk of countries to which they lend. On the basis of their responses, the magazine produces a rating from 0 to 100, with higher numbers representing a better repayment capacity. We use end-of-year ratings.

²²In alternative specifications that are not shown but are available upon request, we replaced the credit risk rating for a number of macro variables (government deficit, current account deficit, and real exchange rate appreciation, among others) that serve as proxies for country risk. Given that results were very similar, we prefer this more parsimonious specification, which allows us to examine interaction effects and positive and negative shocks more easily.

²³See Table A.1 for a list of crises in each host country in the period 1985–2000.

To examine whether movements in claims to other countries spill over to individual hosts, we include as an explanatory variable the aggregate changes in claims from home country banks to all non-BIS-reporting countries other than that individual host ($\% \Delta$ *Private Claims on Other Countries*). This variable is also constructed from the BIS's *Consolidated Banking Statistics*.

Finally, because foreign bank claims are reported in U.S. dollars, we also control for changes in the exchange rate vis-à-vis the dollar for each country.²⁴ Exchange rate data also come from the *IFS*. Table 1 summarizes the definition and sources of all the variables included in equation (1).

Foreign banks are less likely to extend claims abroad if the riskiness or the returns obtained from the host countries worsen. Lower host growth or rating downgrades should then lead to a decline in claims to the affected host country. Hence, we expect to find a positive coefficient on the growth and rating variables, consistent with what the literature on capital flows has found.²⁵

A priori, we might expect banking, currency, and/or twin crisis episodes in a particular host country to be accompanied by a decline in foreign bank claims, since these episodes are typically associated with a fall in the capacity of crisis-stricken countries to repay their obligations. On the other hand, foreign banks might view crises in host countries as an opportunity to expand their operations and increase their market share locally.²⁶ Also, crises might coincide with a deterioration in economic fundamentals such as GDP growth, making their impact indistinguishable from that of other cyclical downturns. In other words, it is possible that the crisis dummy in our regressions may not be significant because the impact of these episodes is being captured by changes in host GDP growth. This, in turn, would suggest that crises are not perceived as different from any other cyclical downturn in output.

In principle, given the overall importance of foreign claims to the region, changes in such claims could affect host countries' right-hand-side variables (for example, host real GDP growth, timing of crises, and credit rating), implying a potential endogeneity problem. However, we believe that the scope for this is limited, since our estimations focus on bilateral claims (that is, changes in real claims

²⁴Because the BIS data are denominated in U.S. dollars and exchange rates vis-à-vis the dollar have been volatile in Latin America, one could be concerned that exchange rate movements are disproportionately affecting the measured behavior of foreign bank claims. However, we believe that this should not be a serious issue for two main reasons. First, our analysis focuses on international claims, which include cross-border claims (denominated in any currency) and local claims (that is, those issued by foreign bank subsidiaries and branches) denominated in foreign currency. Thus, since local claims in local currency are not included in our study, the concern that some of the foreign claims that we analyze might have originated in the volatile host country currency is small in our view. This could occur only if some of the cross-border claims were denominated in the local currency, which seems unlikely. Second, while some of the cross-border claims could have originated in a home currency other than the dollar, some rough estimations, using data from the BIS Locational Statistics, indicate that for all countries in our sample, the average share of assets denominated in dollars was close to 80 percent or higher during the sample period we consider.

²⁵For example, Chuhan, Claessens, and Mamingi (1998) find credit ratings to have a positive impact on portfolio flows to Asia and Latin America. In turn, Hernandez, Mellado, and Valdes (2001) find host GDP growth to have a similar effect on private capital flows to a larger sample of developing countries.

²⁶This argument is made by Peek and Rosengren (2000).

Table 1. Data Definition and Sources

Variable	Definition	Source
Dependent variable		
$\% \Delta \text{claims}_{j,i,t}$	Percentage change in claims from home country j banks on the private sector in host country i at time t .	BIS <i>Consolidated Banking Statistics*</i>
Independent—host country—variables		
<i>Host country real GDP growth</i>	Real GDP growth in host country i at time $t - 1$ where i stands for Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay, and Venezuela, respectively.	<i>IFS**</i>
<i>Host country real GDP growth</i> \times <i>exposure to host</i>	Real GDP growth in host i interacted with home country j banks' exposure to i , where i stands for Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay, and Venezuela and j refers to Canada, France, Germany, Japan, Spain, United Kingdom and United States, respectively.	<i>IFS</i> and BIS
$\% \Delta(\text{Host country rating})$	Percentage change in host country i credit risk rating, where i is defined above.	<i>Institutional Investor</i> magazine
$\% \Delta(\text{Host country rating}) \times \text{exposure to host}$	Percentage change in host i credit rating times home country j banks' exposure to i , where i and j are defined above.	<i>Institutional Investor</i> and BIS
<i>Host crisis dummy</i>	Dummy equal to 1 when host country i has a crisis, where i is defined above. See Table A.1 for a list of crisis episodes.	Caprio and Klingebiel (1999)
<i>Host crisis dummy</i> \times <i>exposure to host</i>	Dummy equal to 1 when host country i has a crisis times home country j banks' exposure to i , where i and j are defined above.	Caprio and Klingebiel (1999) and BIS
$\% \Delta(\text{Host local currency/US\$ exchange rate})$	Percentage change in the dollar exchange rate vis-à-vis host i 's currency, where i is defined above.	<i>IFS</i>
Independent—home country—variables		
<i>Home j real GDP growth</i> \times <i>home country j</i>	Home country j real GDP growth interacted with dummy for home country j , where j is defined above.	<i>IFS</i>
<i>Home j real interest rate</i> \times <i>home country j</i>	Home country j real interest rate interacted with dummy for home country j , where j is defined above.	<i>IFS</i>
$\% \Delta(\text{Home local currency/US\$ exchange rate})$	Percentage change in the dollar exchange rate vis-à-vis home country j 's currency, where j is defined above.	<i>IFS</i>
$\% \Delta(\text{Private real claims on other countries})$	Percentage change in home country j bank claims on countries other than host i , where j and i are defined above.	BIS

Notes: *BIS stands for Bank for International Settlements. **IFS stands for *International Financial Statistics*, an International Monetary Fund publication.

from banks in home country j on host country i), and no bilateral relationship is important enough to warrant such concern. Nonetheless, as a precaution, all right-hand-side variables are lagged one period (one year).²⁷ Also, to mitigate the concern that changes in foreign bank claims from different home countries might be driven by the same events or news (for example, on the health of the world economy), our robustness tests include time dummies to capture such factors.

The impact of host shocks on foreign bank claims might be affected by the degree to which foreign banks are exposed to that host. On the one hand, the larger the exposure of foreign banks to a particular country, the more procyclical (that is, the more responsive to host conditions) foreign claims might become. This might be due to a lack of diversification. On the other hand, as banks' exposure to a country grows, banks might have more incentives to learn about host country conditions and, hence, not to respond as strongly to signals of good or bad future events.²⁸ Alternatively, it could be the case that greater exposure (especially in the case of brick-and-mortar operations) might signal a stronger commitment to the host, which also gets translated into a smaller reaction to host shocks.²⁹ Hence, there are reasons to expect that foreign bank claims might become more stable or less responsive to host shocks as exposure rises.

To test the impact of exposure on host factors, we interact host country variables (the change in ratings, the real growth, and the crisis indicator for host country i) with a measure of foreign banks' exposure to the country. A priori, if indeed higher exposure is translated into more stable financing, we expect these interaction terms to be opposite in sign to that of the host country shock. For example, we expect the interaction between host growth (or changes in host rating) and exposure to be negative and the interaction between host crisis and exposure to be positive.

Studies such as Van Rijckeghem and Weder (2003) have shown that there is scope for contagion in international banking. In particular, they show that changes in foreign bank claims on one country might spill over to other countries that hold claims from the same foreign banks. Furthermore, models of portfolio allocation show that under standard rules of portfolio choice an unexpected decline in the value of one or more assets may provoke a portfolio adjustment across the board.³⁰ Because our data aggregate bank positions at the country level, we cannot conduct a strict test of portfolio effects at the bank level. Nevertheless, we seek to verify whether at least in the aggregate there is evidence that banks' changes in claims on other countries affect individual hosts. If this were the case, we would expect to find that the variable $\% \Delta Private\ Claims\ on\ Other\ Countries$ is positive and significant.

²⁷We also conducted estimations including all regressors contemporaneously and found that our main results do not change. These estimations are available upon request.

²⁸Calvo and Mendoza (2000) argue that as investors become more diversified, and hence their average exposures in any particular asset decrease, they have reduced incentives to learn about the fundamentals of each asset, and hence react more strongly to signals on expected return or risk. This suggests that as foreign banks become more exposed to a particular host country, they may react less to changes in host country variables.

²⁹The argument that foreign bank brick-and-mortar presence signals a greater commitment to the host country is made in Palmer (2000) and Peek and Rosengren (2000).

³⁰Schinasi and Smith (1999) discuss optimal portfolio rebalancing as "contagion" after different types of shocks to expected asset returns and variances.

Home country economic conditions could have a negative or a positive impact on foreign bank lending to host countries. On the one hand, adverse economic conditions and a lack of profit opportunities at home could encourage banks to hold claims abroad. If this were the case, we would expect to find a negative coefficient on home growth. On the other hand, a recession at home could lead to a deterioration in the capital of foreign banks and an overall retrenchment in claims held at home and abroad. Therefore, we remain agnostic regarding the sign of this variable.

Low real interest rates in lender countries tend to signal periods of excess liquidity, and this might increase banks' willingness to extend riskier, higher interest rate claims to developing countries. Therefore, we expect home real interest rates to have a negative impact on the change in claims to countries in Latin America.

To deepen our understanding of the determinants of foreign bank claims under different circumstances, we estimate some modified versions of equation (1). First, we examine whether banks' responsiveness to shocks depends on the type of shock experienced, by allowing the coefficients in equation (1) to vary on the basis of whether the host country undergoes positive or negative shocks.³¹ Second, we explore whether there is evidence that the determinants of foreign bank claims have changed over time by estimating equation (1) over two subsamples: 1985–94 and 1995–2000.³² In particular, we examine whether banks' sensitivity to host and home conditions and to aggregate movements in claims changed over this period. Finally, to summarize the relative importance of home and host conditions and of aggregate shocks in claims, we report the percentage of the variance of claims explained by each of these factors, and we study whether it has changed over time. To the extent that home country conditions and aggregate shocks in claims consistently dominate host country variables in explaining changes in claims, we would conclude that foreign banks have the potential to destabilize host countries by transmitting shocks external to these economies.

III. Empirical Results

Starting from a fully unrestricted model where all regressors are allowed to be different depending on the banks' home country, we tested a number of coefficient restrictions on equation (1) until we arrived at our baseline specifications reported in Table 2.³³ Home and host dummies and exchange rate changes vis-à-vis the U.S. dollar are included in these specifications but are not shown owing to space constraints.

The baseline model accepted in the specification tests reported in the appendix is one where host factors (growth in host GDP, change in credit ratings, the exchange

³¹We do not investigate positive/negative home growth shocks, because for the seven home countries we focus on, there have been virtually no years in which home growth has been negative.

³²These two subsamples are selected on the basis of papers such as Crystal, Dages, and Goldberg (2001) and García (2002) that argue that foreign bank presence in Latin America rose after 1995.

³³Essentially, the fully unrestricted model is equivalent to estimating a separate equation for each lender/home country, including its corresponding home factors, a matrix of host factors, and a variable capturing changes in claims to other countries. The fully unrestricted model is shown in Table A.2 and the restriction tests are shown in Table A.3.

**Table 2. The Determinants of the Percentage Change
in Foreign Bank Claims on Latin America**

Variable	1985–2000 Coefficient (<i>t</i> -Statistic)	1985–1994 Coefficient (<i>t</i> -Statistic)	1995–2000 Coefficient (<i>t</i> -Statistic)
Host country variables			
<i>Host country real GDP growth</i>	2.120 (2.900)***	2.244 (2.990)***	1.157 (0.730)
<i>Host country real GDP growth</i> × <i>exposure to host</i>	-0.210 (2.120)**	-0.242 (2.340)**	0.050 (0.230)
<i>%Δ(Host country rating)</i>	1.142 (2.460)**	0.062 (0.210)	2.279 (1.960)*
<i>%Δ(Host country rating)</i> × <i>exposure to host</i>	-0.093 (1.490)	0.029 (0.560)	-0.380 (2.150)**
<i>Host crisis dummy</i>	-3.409 (0.640)	-6.855 (1.190)	-0.639 (0.060)
<i>Host crisis dummy</i> × <i>exposure to host</i>	0.760 (0.660)	0.013 (0.010)	0.349 (0.180)
Home country variables			
<i>Canadian real GDP growth</i> × <i>Canada</i>	8.544 (2.010)**	1.942 (0.550)	-6.327 (0.290)
<i>French real GDP growth</i> × <i>France</i>	-1.759 (0.860)	-3.501 (1.490)	-1.953 (0.380)
<i>German real GDP growth</i> × <i>Germany</i>	-2.140 (0.840)	-2.822 (1.050)	-22.063 (1.600)
<i>Japanese real GDP growth</i> × <i>Japan</i>	5.370 (1.670)*	-0.809 (0.250)	11.884 (2.460)**
<i>Spanish real GDP growth</i> × <i>Spain</i>	-4.815 (0.720)	-2.185 (0.300)	-4.579 (0.280)
<i>U.K. real GDP growth</i> × <i>U.K.</i>	-2.928 (0.180)		-8.975 (0.510)
<i>U.S. real GDP growth</i> × <i>U.S.</i>	-5.399 (2.200)**	-10.331 (3.760)***	-1.623 (0.190)
<i>Canadian real interest rate</i> × <i>Canada</i>	-15.551 (3.520)***	-7.299 (1.820)*	-6.610 (0.400)
<i>French real interest rate</i> × <i>France</i>	-0.204 (0.130)	-1.631 (0.410)	-11.591 (1.650)*
<i>German real interest rate</i> × <i>Germany</i>	0.468 (0.170)	4.859 (1.230)	-7.393 (0.400)
<i>Japanese real interest rate</i> × <i>Japan</i>	-11.248 (2.090)**	-11.576 (1.010)	-9.544 (0.860)
<i>Spanish real interest rate</i> × <i>Spain</i>	-0.458 (0.180)	1.160 (0.460)	55.259 (2.660)***
<i>U.K. real interest rate</i> × <i>U.K.</i>	17.733 (1.070)		17.890 (0.940)
<i>U.S. real interest rate</i> × <i>U.S.</i>	-7.122 (2.740)***	-8.053 (3.030)***	1.028 (0.110)
<i>%Δ(Private real claims on other countries)</i>	0.146 (3.130)***	0.130 (2.200)**	0.347 (0.680)

Table 2. (Concluded)

Variable	1985–2000 Coefficient (<i>t</i> -Statistic)	1985–1994 Coefficient (<i>t</i> -Statistic)	1995–2000 Coefficient (<i>t</i> -Statistic)
Number of observations	804	426	378
Adjusted <i>R</i> -squared	0.13	0.10	0.19
<i>F</i> -test for significance of the overall regression	5.59***	5.56***	3.84***

Source: Authors' calculations.

Notes: This table reports the estimates from a selected (restricted) version of equation (1), according to the *F*-tests reported in Table A.3. The model assumes that banks' reactions to host conditions is the same across home countries, but that their response to their home conditions is different across home country, hence each home country variable is interacted with a home country dummy. The model estimated is equivalent to estimating a separate equation for each type of bank (that is Canadian, French, German, Japanese, Spanish, U.K. and U.S. banks) where the coefficients on the host variables are constrained to be the same across equations (that is, across home countries). The United Kingdom is omitted for the period 1985–1994, because data on private sector claims are not available prior to 1993. Home dummies and home and host exchange rate changes are included but not shown. Robust *t*-statistics are in parentheses.

*, **, *** denote significance at 10, 5, and 1 percent, respectively.

rate vis-à-vis the dollar, and the crisis dummy) and aggregate changes in claims (on countries other than the host in question) are constrained to affect foreign bank claims from all home countries in the same way. On the other hand, these tests suggest that banks from different home countries respond differently to shocks to their own growth and interest rates. In other words, we cannot impose the restriction that the coefficients on home growth and real interest rates are the same across banks from different home countries (see Table A.3). Thus, in the estimations in Table 2, each home country variable is interacted with the corresponding home country dummy.

The first column in Table 2 presents the selected restricted model for the whole sample period, 1985–2000. We find evidence that foreign banks responded to home, host, and aggregate claims shocks. Focusing on the subset of home country *j* variables, we find that banks from France, Germany, Spain, the United Kingdom, and the United States reduced claims in response to increased profit opportunities at home (that is, in response to higher home growth), but only the coefficient on U.S. growth is significant with a negative sign. Home growth has a positive and significant effect for Canadian bank claims. With the exception of banks from Germany and the United Kingdom, the home real interest rate has the expected negative impact. This variable is statistically significant for Canada, Japan, and the United States.³⁴

³⁴The finding that only some of the home variables are significant might arise from the fact that these variables tend to be significantly correlated within and across home countries.

Among the subset of host country variables, we find that the coefficient on host growth is positive and significant, showing that foreign banks responded to host country growth, increasing and decreasing claims over the cycle. However, we also find strong support for the notion that claims' procyclicality (that is, sensitivity to host growth) falls as foreign banks' exposure to the host rises. The coefficient on host credit rating is positive and significant, while the interaction term of rating with exposure is negative but not significant. Controlling for host country growth and risk ratings, the crisis variable is not significant. Therefore, it does not appear that crisis episodes cause any further decline in foreign bank claims.³⁵ Finally, the coefficient on changes in private claims on other countries is positive and significant, indicating that aggregate changes in foreign bank claims spill over to individual hosts.

Between 1995 and 2000, foreign bank penetration in Latin America—the participation of foreign banks in the local banking market—increased significantly. In 1995, foreign bank loans (in local and foreign currency) represented approximately 15 percent of total bank loans to the region. By 2000 this figure rose to 38 percent.³⁶ Some have speculated that an increase in foreign banks' brick-and-mortar operations in developing countries could signal a stronger commitment to their hosts, since this type of presence makes it both physically and reputationally harder for foreign banks to “run” in the face of adversity at home, in the host country, or elsewhere in their portfolio (see Palmer, 2000; and Peek and Rosengren, 2000).

Ideally, to investigate whether the responsiveness of foreign banks to shocks changed as their brick-and-mortar investment (or local claims) in these countries increased, we would want to control for the ratio of local foreign bank claims to total claims (that is, claims extended through brick-and-mortar operations as a share of overall foreign bank claims). However, since such data are not consistently available, we are able to examine this issue only indirectly, by comparing the estimates of our model over two subsamples: 1985–94, when foreign participation was in general low and in some instances prohibited, and 1995–2000, when foreign bank presence took off.^{37,38} Because this is a very indirect way of exploring this

³⁵This result is robust including both the crisis dummy as well as other regressors contemporaneously rather than lagged. Also, the result holds if we separately control for banking, currency, and twin crises.

³⁶These figures, which include the share of loans held by all foreign banks operating in all of Latin America, come from Salomon Smith Barney (2000).

³⁷BIS statistics lump together local claims in foreign currency with cross-border claims; therefore, it is not possible to calculate the importance of brick-and-mortar operations (that is, the sum of all local claims, in foreign and domestic currency) as a share of total foreign bank claims. Another problem is that local claims in local currency statistics are not broken down by sector (private, public, and so forth). One could in principle construct a series of foreign bank local claims on each Latin American host by aggregating balance sheet data for individual banks from Bankscope or from bank superintendencies in the host countries. The problem with combining this data with the BIS data is that while the latter nets out interoffice positions (the positions of foreign bank offices worldwide), the balance sheet data mentioned above would not. Furthermore, banks' balance sheet information for the period 1985–2000 is generally not available.

³⁸We separate the sample in the period before and after 1995, following Crystal, Dages, and Goldberg (2001) and García (2002), who argue that the increase in foreign bank presence in Latin America occurred after this year.

issue, we need to be cautious in interpreting our results, especially given that many other factors aside from the share of brick-and-mortar presence may have changed in the region over the period 1985–2000. Also, caution is warranted considering that the period of analysis is relatively short. Nevertheless, because the question is an interesting one, we present these estimations to illustrate some of the potential issues that will have to be verified by future research.

For the period 1985–1994, we find that host real growth played a significant role in explaining movements in real claims (see Table 2). The coefficient on the dummy variable capturing crises in the host countries is negative but not significant. Home factors appear to be significant only for Canada and the United States. Finally, the coefficient on the change in real claims on other countries is both positive and significant, indicating that changes in claims on other countries affected specific hosts.

For the period 1995–2000, we find that in contrast to the results for the earlier period, there is no significant evidence that changes in claims elsewhere were transmitted to the host countries we focus on. Home factors continued to be significant, but only for Spain and Japan. As for the host factors, there is no evidence that foreign banks retrenched at times of crises during this period either. On the other hand, changes in credit ratings had a positive and significant impact on foreign bank lending. However, foreign banks' responsiveness to this variable seems to decrease with exposure.

All in all, the findings from splitting the sample into the periods pre- and post-1995 suggest that in recent years foreign banks have become less inclined to cut and run when faced with adversity in the region or abroad. Whether this is the result of the late 1990s increase in foreign bank brick-and-mortar presence will have to be examined more thoroughly and directly in future research.

Not only is it possible that foreign bank behavior changes as their brick-and-mortar presence increases, but it is also feasible that their reaction to shocks depends asymmetrically on the nature of these events. To examine this possibility, we discriminate between positive and negative changes in host GDP growth, host credit ratings, and in other claims. Table 3 presents the results from this estimation for the overall sample, 1985–2000.³⁹ We find that while positive changes in host real GDP growth have a positive and significant sign, the coefficient on negative host GDP growth is negative but not significant. The same is true for credit ratings: claims respond to upgrades and not to downgrades in credit ratings. However, the higher the exposure to a host country, the smaller the response of claims to upgrades in credit ratings, as indicated by the significant and negative coefficient on the interaction term between upgrades and exposure. On the other hand, both positive and negative changes in aggregate claims on other countries are statistically significant, but negative changes have a much stronger impact, and that difference is statistically significant at standard significance levels.

³⁹Note that we define negative changes in absolute terms so that we can interpret a negative coefficient as indicating that larger drops in the variable in question lead to a decline in the growth of claims.

Table 3. The Impact of Positive and Negative Shocks on the Change in Foreign Bank Claims on Latin America

Variable	Coefficient	<i>t</i> -Statistic
Host country variables		
<i>Positive host real GDP growth</i>	1.679	(1.68)*
<i>Negative host real GDP growth</i>	-2.179	(1.59)
<i>Positive host real GDP growth × exposure to host</i>	-0.016	(0.13)
<i>Negative host real GDP growth × exposure to host</i>	0.358	(1.46)
<i>Host country rating upgrade</i>	1.665	(1.88)*
<i>Host country rating downgrade</i>	-0.036	(0.06)
<i>Host country rating upgrade × exposure to host</i>	-0.245	(2.53)**
<i>Host country rating downgrade × exposure to host</i>	-0.117	(2.11)**
<i>Host crisis dummy</i>	-5.385	(0.92)
<i>Host crisis dummy × exposure to host</i>	1.100	(0.87)
Home country variables		
<i>Increase in private real claims on other countries</i>	0.133	(2.79)***
<i>Decrease in private real claims on other countries</i>	-0.922	(1.99)**
<i>Canadian real GDP growth × Canada</i>	8.894	(2.04)**
<i>French real GDP growth × France</i>	-2.291	(1.09)
<i>German real GDP growth × Germany</i>	-2.140	(0.86)
<i>Japanese real GDP growth × Japan</i>	5.483	(1.69)*
<i>Spanish real GDP growth × Spain</i>	-5.889	(0.87)
<i>U.K. real GDP growth × U.K.</i>	-1.136	(0.07)
<i>U.S. real GDP growth × U.S.</i>	-4.618	(1.87)*
<i>Canadian real interest rate × Canada</i>	-14.433	(3.14)***
<i>French real interest rate × France</i>	-0.118	(0.07)
<i>German real interest rate × Germany</i>	-0.333	(0.12)
<i>Japanese real interest rate × Japan</i>	-13.031	(2.43)**
<i>Spanish real interest rate × Spain</i>	-0.110	(0.04)
<i>U.K. real interest rate × U.K.</i>	21.010	(1.20)
<i>U.S. real interest rate × U.S.</i>	-5.372	(1.77)*
Number of observations	804	
Adjusted <i>R</i> -squared	0.13	
<i>F</i> -test for significance of the overall regression	6.15	
Prob > <i>F</i>	0.00	

Source: Authors' calculations.

Notes: This table presents the results from a model where the impact of host GDP changes, rating changes, and changes in other claims is allowed to vary depending on the positive or negative nature of the shocks. The period of estimation is 1985–2000. Home dummies and host and home exchange rate changes are included, but not shown. Growth rates and changes in ratings and claims are expressed in terms of absolute values. *, **, ***denote significance at 10, 5, and 1 percent, respectively. *t*-statistics are obtained on the basis of robust standard errors.

A useful way of summarizing the relative importance of home, host, and aggregate claim shocks is provided in Table 4, which details the percentage of the variance in private sector claims explained by each of these groups of variables. In other words, for each group of variables, we compute the increase in the *R*-squared,

Table 4. Percentage of Variance of Change in Foreign Bank Claims Explained by Home, Host, and Portfolio Shocks

	Home Country Variables	Host Country Variables	<i>%ΔPrivate Real Claims on Other Countries</i>
Entire sample	46.78	31.41	21.81
Positive changes	59.45 ¹	28.43	6.39
Negative changes		1.69	4.03
1985–1994	61.63	17.76	20.61
1995–2000	49.56	48.59	1.85

Source: Authors' calculations.

Notes: This table reports the percentage of the variance of the change in foreign bank claims that can be explained by home, host, and portfolio shocks. The percent variance explained is calculated as $(R^2_{full} - R^2_{constrained}) / R^2_{full} * 100$. The home country variables included are real GDP growth, real interest rates, and the home/dollar exchange rate. Host country variables included are: real GDP growth, credit rating, the host/dollar exchange rate, and the crisis dummy. Positive changes refer to credit rating upgrades, host positive real GDP growth, and increases in other claims. Negative changes refer to credit rating downgrades, negative real host GDP growth, and decreases in other claims. We rescale the percent of the variance explained by each set of variables so that for a given estimation the sum of all three groups adds to 100.

¹We are unable to split home variables into positive and negative shocks, since between 1985–2000 there are no periods when home variables take negative values. So, essentially the negative/positive estimation corresponds to one where host variables and other claims, but not the home variables, are split into positive and negative changes (see Table 3).

as a proportion of the total variance of the percentage change in claims explained by all variables.^{40,41}

We find that while changes in aggregate claims on other countries explain a significant share of the variance in the dependent variable (21 percent) in the 1985–1994 period, this variable plays practically no role in explaining changes in private sector claims on host countries in Latin America during the later period. Similarly, home country conditions explain a large proportion (62 percent) of the variance in private claims in the period 1985–1994, but their importance declines significantly in the late 1990s. On the other hand, host country conditions explain between 20 and 50 percent of the variance in claims in both periods, and, overwhelmingly, it is positive changes (positive growth and credit rating upgrades) that play the most significant role in explaining changes in international financial claims. These patterns are observed comparing two periods over which the brick-and-mortar operations of foreign banks increased significantly in importance. Once again, whether the increase in brick-and-mortar presence is responsible for these patterns will have to be established more conclusively by future research.

⁴⁰We rescale the percentage explained by each group of variables so that the sum of all three is 100.

⁴¹The *R*-squared statistics for these regressions appear to be low, yet they are in line with those obtained in other studies on foreign bank lending flows also using BIS data, as well as in studies that examine capital flows in general. See, for example, Chuhan, Claessens, and Mamingi (1998); Goldberg (2002); and Van Rijckeghem and Weder (2003).

Robustness Checks

We conduct a number of additional estimations to verify the robustness of our main findings. First, we include time dummies to control for the impact of events that can simultaneously affect all home countries (for example, good and bad news about the world economy and crises outside Latin America). Second, we explore whether changes in foreign bank claims to Latin America are driven by the recent wave of mergers and acquisitions of domestic banks by foreign banks. Since the BIS definition of claims includes not only loans but also equity participations, we are interested in determining whether changes in foreign claims are driven by bank consolidation, as opposed to new lending. Finally, we use alternative definitions of exposure and of aggregate changes in claims that take into account the fact that banks do not only hold claims on the nonbank private sector but also extend claims to the public sector and to other financial institutions in the host countries.

The first three columns of Table 5 repeat the baseline specifications in Table 2, including yearly time dummies. With time dummies, we find that host GDP growth continues to be strongly significant for the overall period and the period 1985–1994. On the other hand, the credit rating is significant at only 10 percent now. As before, Canadian and U.S. home factors drive claims on Latin America. Also, we continue to find no support for the argument that foreign banks are likely to cut and run during crises. Finally, changes in claims on other countries are less significant than when the time dummies are excluded.

The last three columns of Table 5 include a dummy to control for recent episodes of mergers and acquisitions between foreign and domestic financial institutions in our sample of countries.⁴² This dummy variable takes the value of 1 for each annual bilateral observation, where there was a purchase of a host country bank by a foreign bank from one of the seven home countries (there are 89 such cases out of our total 804 observations). We find that the coefficient on this dummy is positive but not significant. Most importantly, including this variable does not change our main results.

Finally, Table 6 presents the results for our preferred specification, but with a modified definition of exposure and of aggregate changes in claims. So far, exposure was defined as claims from banks from home j to the nonbank private sector in host i as a ratio of all nonbank private sector claims held by banks from home j . This definition of exposure was driven by the fact that we wanted to focus exclusively on the determinants of the behavior of private sector claims, since claims on the public sector might not always respond purely to risk-return factors. However, this measure of exposure does not reflect the fact that in reality foreign banks lend to the public and banking sectors as well, and that these claims are part of the banks' overall exposure and may affect private sector claims. Therefore, we also report estimations considering private sector claims from banks in home j to host i as a ratio of all international financial claims from banks from home j , regardless of the

⁴²Information on all acquisitions by banks from each of the home countries considered in our study in our 10 host countries (sale or merger of an entity in host country i to an entity from home country j in year t) was obtained from Thomson Financials.

Table 5. The Determinants of the Change in Foreign Bank Claims Including Time Effects and Mergers and Acquisitions

Variables	(5.1) 1985–2000 with Time Dummies Coefficient (<i>t</i> -Statistic)	(5.2) 1985–1994 with Time Dummies Coefficient (<i>t</i> -Statistic)	(5.3) 1995–2000 with Time Dummies Coefficient (<i>t</i> -Statistic)	(5.4) 1985–2000 Controlling for M&As Coefficient (<i>t</i> -Statistic)	(5.5) 1985–1994 Controlling for M&As Coefficient (<i>t</i> -Statistic)	(5.6) 1995–2000 Controlling for M&As Coefficient (<i>t</i> -Statistic)
<i>Mergers and acquisitions (M&As) dummy</i>						
Host country variables						
<i>Host real GDP growth</i>	2.495 (2.98)***	2.432 (3.02)***	0.871 (0.48)	2.199 (2.98)***	2.294 (3.08)***	1.158 (0.73)
<i>Host real GDP growth × exposure to host</i>	-0.178 (1.77)*	-0.228 (2.16)**	0.070 (0.31)	-0.229 (2.31)**	-0.244 (2.35)**	0.037 (0.16)
<i>%Δ(Host country rating)</i>	0.799 (1.70)*	0.117 (0.42)	1.950 (1.77)*	1.113 (2.39)**	0.041 (0.15)	2.275 (1.94)*
<i>%Δ(Host country rating) × exposure to host</i>	-0.080 (1.26)	0.015 (0.27)	-0.394 (2.17)**	-0.093 (1.51)	0.028 (0.55)	-0.383 (2.18)**
<i>Host crisis dummy</i>	-7.615 (1.31)	-5.288 (0.86)	-5.619 (0.48)	-3.439 (0.64)	-6.924 (1.21)	-0.558 (0.05)
<i>Host crisis dummy × exposure to host</i>	0.101 (0.09)	-0.067 (0.06)	0.401 (0.19)	0.619 (0.55)	0.079 (0.08)	0.257 (0.13)
Home country variables						
<i>Canadian real GDP growth × Canada</i>	5.634 (1.28)	2.231 (0.50)	-0.071 (0.00)	8.719 (2.05)**	2.122 (0.59)	-6.111 (0.28)
<i>French real GDP growth × France</i>	2.169 (0.67)	-3.856 (1.01)	18.017 (1.31)	-1.489 (0.72)	-3.605 (1.52)	-1.693 (0.32)
<i>German real GDP growth × Germany</i>	-2.200 (0.60)	-2.742 (0.64)	-2.208 (0.10)	-2.272 (0.90)	-2.841 (1.06)	-22.313 (1.62)
<i>Japanese real GDP growth × Japan</i>	2.804 (0.80)	-0.428 (0.09)	5.976 (1.08)	5.347 (1.66)	-0.864 (0.27)	11.877 (2.46)**

Table 5. (Concluded)

	(5.1)	(5.2)	(5.3)	(5.4)	(5.5)	(5.6)
Variables	1985–2000 with Time Dummies Coefficient (t-Statistic)	1985–1994 with Time Dummies Coefficient (t-Statistic)	1995–2000 with Time Dummies Coefficient (t-Statistic)	1985–2000 Controlling for M&As Coefficient (t-Statistic)	1985–1994 Controlling for M&As Coefficient (t-Statistic)	1995–2000 Controlling for M&As Coefficient (t-Statistic)
<i>Spanish real GDP growth × Spain</i>	-4.779 (0.66)	-2.764 (0.33)	-9.841 (0.45)	-4.826 (0.72)	-1.857 (0.25)	-5.012 (0.31)
<i>U.K. real GDP growth × U.K.</i>	3.949 (0.20)		19.264 (0.60)	-2.95 (0.18)		-8.963 (0.5)
<i>U.S. real GDP growth × U.S.</i>	-9.686 (2.52)**	-11.386 (2.80)***	30.000 (0.97)	-5.624 (2.30)**	-10.006 (3.62)***	-1.577 (0.18)
<i>Canadian real interest rate × Canada</i>	-11.646 (2.47)**	-8.381 (1.87)*	-8.606 (0.54)	-15.502 (3.50)***	-7.247 (1.82)*	-6.716 (0.40)
<i>French real interest rate × France</i>	5.074 (1.96)**	-3.289 (0.54)	-15.900 (1.44)	0.232 (0.14)	-1.965 (0.48)	-11.421 (1.61)
<i>German real interest rate × Germany</i>	7.151 (1.52)	6.037 (0.98)	-13.863 (0.50)	0.661 (0.24)	4.905 (1.24)	-7.166 (0.39)
<i>Japanese real interest rate × Japan</i>	-1.936 (0.31)	-6.638 (0.53)	-9.230 (0.68)	-11.234 (2.08)**	-11.499 (1.00)	-9.484 (0.85)
<i>Spanish real interest rate × Spain</i>	2.222 (0.75)	0.957 (0.32)	32.273 (1.21)	0.001 (0.00)	1.021 (0.39)	55.013 (2.69)***
<i>U.K. real interest rate × U.K.</i>	31.905 (1.32)		60.241 (1.37)	16.43 (0.98)		17.528 (0.91)
<i>U.S. real interest rate × U.S.</i>	-5.746 (1.55)	-6.132 (1.35)	3.436 (0.35)	-7.396 (2.86)***	-8.285 (3.15)***	0.803 (0.08)
<i>%Δ/Private real claims on other countries)</i>	0.090 (1.95)*	0.118 (1.93)*	0.494 (0.77)	0.141 (2.96)***	0.129 (2.18)**	0.35 (0.69)
Number of observations	804	426	378	804	426	378
Adjusted R-squared	0.13	0.09	0.20	0.16	0.16	0.26

Source: Authors' calculations.

Notes: Columns (5.1)–(5.3) report the estimates from the selected (restricted) version of equation (1), according to the *F*-tests reported in Table A.3, including time dummies (not shown). Columns (5.4)–(5.6) report the estimates from the selected version of equation (1), according to the *F*-tests reported in Table A.3, including a dummy to control for known episodes of mergers and acquisitions involving banks from the home countries with banks in the host countries. *t*-statistics are in parentheses (calculated on the basis of robust standard errors). *, **, *** denote significance at 10, 5, and 1 percent, respectively.

Table 6. The Determinants of the Change in Foreign Bank Claims with a Modified Definition of Total Claims

Variable	1985–2000 Coefficient (<i>t</i> -statistic)	1985–1994 Coefficient (<i>t</i> -statistic)	1995–2000 Coefficient (<i>t</i> -statistic)
Host country variables			
<i>Host real GDP growth</i>	1.975 (2.73)	1.888 (2.59)***	1.292 (0.79)
<i>Host real GDP growth × exposure to host</i>	-0.243 (2.28)**	-0.205 (1.84)*	-0.0001 (0.00)
<i>%Δ(Host country rating)</i>	0.843 (1.85)*	-0.301 (0.99)	2.247 (1.97)**
<i>%Δ(Host country rating) × exposure to host</i>	-0.029 (0.48)	0.102 (2.53)**	-0.402 (2.07)**
<i>Host crisis dummy</i>	-3.124 (0.58)	-11.075 (1.87)*	1.934 (0.19)
<i>Host crisis dummy × exposure to host</i>	0.127 (0.16)	0.789 (0.86)	-0.540 (0.40)
Home country variables			
<i>Canadian real GDP growth × Canada</i>	8.003 (1.93)*	1.837 (0.50)	0.596 (0.02)
<i>French real GDP growth × France</i>	-1.626 (0.75)	-3.671 (1.51)	1.349 (0.22)
<i>German real GDP growth × Germany</i>	-1.488 (0.59)	-3.203 (1.22)	-18.246 (1.42)
<i>Japanese real GDP growth × Japan</i>	4.492 (1.42)	-4.028 (1.41)	10.481 (2.06)**
<i>Spanish real GDP growth × Spain</i>	-2.827 (0.43)	0.736 (0.10)	-4.983 (0.30)
<i>U.K. real GDP growth × U.K.</i>	-5.024 (0.29)		-6.662 (0.38)
<i>U.S. real GDP growth × U.S.</i>	-7.577 (2.82)***	-11.256 (3.88)***	-2.103 (0.23)
<i>Canadian real interest rate × Canada</i>	-14.799 (3.64)***	-6.680 (1.61)	-12.221 (0.63)
<i>French real interest rate × France</i>	0.190 (0.11)	-0.829 (0.21)	-10.463 (1.49)
<i>German real interest rate × Germany</i>	-1.560 (0.58)	4.865 (1.20)	-3.686 (0.20)
<i>Japanese real interest rate × Japan</i>	-9.170 (1.86)*	-1.469 (0.16)	-8.697 (0.80)
<i>Spanish real interest rate × Spain</i>	0.069 (0.03)	1.007 (0.39)	50.504 (2.27)**
<i>U.K. real interest rate × U.K.</i>	-6.406 (0.37)	-11.914 (1.58)	18.746 (1.05)
<i>U.S. real interest rate × U.S.</i>	-5.378 (1.77)*	-6.337 (2.01)**	1.768 (0.18)
<i>%Δ(Total claims on other countries)</i>	0.529 (1.83)*	0.551 (1.28)	0.456 (0.73)
Observations	810	435	375
Adjusted <i>R</i> -squared	0.16	0.14	0.26
<i>F</i> -test significance of the overall regression	5.20	5.00	3.61
Prob > <i>F</i>	0.00***	0.00***	0.00***

Source: Authors' calculations.

Notes: This table reports the estimates from the selected model according to the *F*-tests reported in Table A.3. Exposure and other claims are defined not in terms of claims to the private sector, but rather include total (private + public) claims. *t*-statistics are in parentheses (calculated on the basis of robust standard errors). *, **, *** denote significance at 10, 5, and 1 percent, respectively.

sector. Similarly, we replace our measure of aggregate claim shocks ($\% \Delta Private Claims on Other Countries$) for one that considers all international financial claims rather than only those to the private sector ($\% \Delta Total Claims on Other Countries$). As Table 6 shows, our main results are not driven by our definition of exposure or of aggregate changes in claims. Including the revised definition for these variables that considers all claims (public and private) does not alter our main findings in Table 2.

IV. Conclusions

As the trend toward greater international financial integration persists, the debate on the behavior of foreign banks is likely to continue. In this paper, we employed a comprehensive data set to explore the behavior of foreign bank claims to Latin America, a region that witnessed a significant increase in foreign bank financing during the 1990s. Our data set is rich in two dimensions. From a cross-sectional perspective, we captured the behavior of banks from a number of home countries that differ both in their degree of exposure and in their importance as a source of finance to Latin America. From a time-series perspective, our data set allowed us to focus on periods of tranquility as well as on periods of crises, on periods of low foreign bank penetration and on periods of strong brick-and-mortar presence.

Nevertheless, the data used in this paper have limitations. First, the data are aggregated at the country level. Lack of individual bank-level data precludes us from formally testing portfolio-balancing effects, among other things. Second, because we lack separate data on local and cross-border claims, we cannot test the impact of the increase in foreign bank brick-and-mortar presence on the behavior of foreign bank claims directly. Finally, the time period considered, though longer than in some of the previous studies, is still relatively short.

While this paper cannot answer all questions related to the behavior of foreign banks, it contributes to this debate by highlighting some of the consequences of relying on foreign bank financing and allowing foreign bank entry in developing countries. We found that “banking with foreigners” has the potential of making developing countries vulnerable to home country shocks. We also found that movements in claims to other countries may spill over to individual host countries. The good news, though, is that the importance of these external shocks appears to have declined in recent years.

Regarding the impact of host shocks, we found that while foreign banks respond to host conditions, they do not appear to pull out faster at times of crises or during other periods of economic downturn. Furthermore, higher foreign bank exposure appears to be a stabilizing force, since we found that foreign banks’ responsiveness to host conditions becomes less procyclical as exposure increases.

Our results suggest a number of policy implications that will need to be confirmed with further research. First, though further analysis would be required to establish a clear causal relation, it appears that favoring brick-and-mortar presence over cross-border lending might be a sensible policy to limit the scope for external shocks that may result from relying on foreign bank financing. Second, regarding the issue of claims’ procyclicality, our results suggest that countries dependent on

foreign bank financing might benefit more from dealing with a small number of foreign banks with high exposures than with a large number of banks with low exposure and no commitment to the country. Finally, our finding that foreign bank claims do not retrench during crises is consistent with the view that foreign bank financing and entry should be promoted on the basis that it can have a stabilizing influence on credit growth during crisis periods and in their aftermath.

Table A.1. Crises Classification: Banking and Currency Crises in the 10 Latin American Hosts, 1985–2000

Host Country	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Argentina			CC		BC, CC	BC	CC				BC, CC					
Brazil			CC			BC, CC				BC	BC	BC			CC	
Chile																
Colombia	BC	BC	BC											BC, CC		
Costa Rica			BC							BC	BC	BC	BC			
Ecuador				CC			CC					BC	BC	BC	BC,	BC
Mexico					CC						BC, CC	BC			CC	
Peru	BC	BC	BC	BC, CC		BC, CC		CC			BC, CC	BC				
Uruguay			CC													
Venezuela	BC	BC, CC			CC					BC, CC	BC, CC	BC	BC			

Note: BC denotes banking crises, while CC denotes currency crises.

Banking crises: chronology follows Caprio and Klingebiel (1999), which documents episodes where much or all of bank capital was exhausted.

Currency crises: includes episodes of forced changes in parity, abandonment of fixed exchange rate regimes, and those episodes identified by an index of exchange market pressure. The index is a standard deviation weighted average of exchange rate changes, short-term interest rate changes, and reserve changes. A currency crisis is recorded when the index exceeds the critical threshold of 1.5 standard deviations above its mean.

Table A.2. Unrestricted Model of the Determinants of the Change in Foreign Bank Claims on Latin America

Variable	Coeff.	t-Statistic
Host country variables		
<i>Host real GDP growth</i> × Canada	0.561	(0.14)
<i>Host real GDP growth</i> × France	0.760	(0.84)
<i>Host real GDP growth</i> × Germany	1.101	(0.72)
<i>Host real GDP growth</i> × Japan	2.316	(2.00)**
<i>Host real GDP growth</i> × Spain	4.203	(1.93)*
<i>Host real GDP growth</i> × U.K.	3.435	(0.76)
<i>Host real GDP growth</i> × U.S.	2.414	(2.61)***
<i>Host real GDP growth</i> × exposure to host × Canada	-0.011	(0.02)
<i>Host real GDP growth</i> × exposure to host × France	-0.199	(0.88)
<i>Host real GDP growth</i> × exposure to host × Germany	-0.112	(0.62)
<i>Host real GDP growth</i> × exposure to host × Japan	-4.349	(2.43)**
<i>Host real GDP growth</i> × exposure to host × Spain	-0.285	(1.22)
<i>Host real GDP growth</i> × exposure to host × U.K.	-0.599	(0.24)
<i>Host real GDP growth</i> × exposure to host × U.S.	-0.160	(1.16)
%Δ(<i>Host country rating</i>) × Canada	2.852	(1.20)
%Δ(<i>Host country rating</i>) × France	-0.779	(2.39)**
%Δ(<i>Host country rating</i>) × Germany	0.170	(0.35)
%Δ(<i>Host country rating</i>) × Japan	1.537	(2.27)**
%Δ(<i>Host country rating</i>) × Spain	1.207	(1.12)
%Δ(<i>Host country rating</i>) × U.K.	0.919	(0.37)
%Δ(<i>Host country rating</i>) × U.S.	1.735	(3.35)***
%Δ(<i>Host country rating</i>) × exposure to host × Canada	-0.313	(1.16)
%Δ(<i>Host country rating</i>) × exposure to host × France	0.224	(2.54)**
%Δ(<i>Host country rating</i>) × exposure to host × Germany	-0.009	(0.13)
%Δ(<i>Host country rating</i>) × exposure to host × Japan	-0.127	(0.17)
%Δ(<i>Host country rating</i>) × exposure to host × Spain	-0.172	(1.18)
%Δ(<i>Host country rating</i>) × exposure to host × U.K.	-0.983	(0.61)
%Δ(<i>Host country rating</i>) × exposure to host × U.S.	-0.050	(0.82)
<i>Host crisis dummy</i> × Canada	9.459	(0.48)
<i>Host crisis dummy</i> × France	-6.435	(0.92)
<i>Host crisis dummy</i> × Germany	-6.303	(0.72)
<i>Host crisis dummy</i> × Japan	5.304	(0.26)
<i>Host crisis dummy</i> × Spain	16.369	(0.79)
<i>Host crisis dummy</i> × U.K.	-38.074	(0.75)
<i>Host crisis dummy</i> × U.S.	-15.390	(1.53)
<i>Host crisis dummy</i> × exposure to host × Canada	2.375	(0.53)
<i>Host crisis dummy</i> × exposure to host × France	-1.605	(0.73)
<i>Host crisis dummy</i> × exposure to host × Germany	-0.469	(0.36)
<i>Host crisis dummy</i> × exposure to host × Japan	-4.761	(0.19)
<i>Host crisis dummy</i> × exposure to host × Spain	0.017	(0.00)
<i>Host crisis dummy</i> × exposure to host × U.K.	12.441	(0.35)
<i>Host crisis dummy</i> × exposure to host × U.S.	1.152	(0.82)
Home country variables		
<i>Canadian real GDP growth</i> × Canada	3.358	(0.67)
<i>French real GDP growth</i> × France	-4.572	(2.43)**

(continued)

Table A.2. (Concluded)

Variable	Coeff.	<i>t</i> -Statistic
<i>German real GDP growth</i> × <i>Germany</i>	-3.492	(1.31)
<i>Japanese real GDP growth</i> × <i>Japan</i>	5.725	(1.87)*
<i>Spanish real GDP growth</i> × <i>Spain</i>	-3.618	(0.65)
<i>U.K. real GDP growth</i> × <i>U.K.</i>	-17.058	(1.32)
<i>U.S. real GDP growth</i> × <i>U.S.</i>	-5.564	(2.08)**
<i>Canadian real interest rate</i> × <i>Canada</i>	-0.167	(0.03)
<i>French real interest rate</i> × <i>France</i>	-0.188	(0.10)
<i>German real interest rate</i> × <i>Germany</i>	2.640	(0.85)
<i>Japanese real interest rate</i> × <i>Japan</i>	-12.073	(2.16)**
<i>Spanish real interest rate</i> × <i>Spain</i>	-1.263	(0.44)
<i>U.K. real interest rate</i> × <i>U.K.</i>	-16.455	(0.64)
<i>U.S. real interest rate</i> × <i>U.S.</i>	-0.679	(0.19)
%Δ(<i>Private real claims on other countries</i>) × <i>Canada</i> × <i>Canada</i>	1.632	(1.95)*
%Δ(<i>Private real claims on other countries</i>) × <i>France</i>	-0.011	(0.03)
%Δ(<i>Private real claims on other countries</i>) × <i>Germany</i>	0.501	(1.46)
%Δ(<i>Private real claims on other countries</i>) × <i>Japan</i>	0.132	(2.29)**
%Δ(<i>Private real claims on other countries</i>) × <i>Spain</i>	-0.214	(0.68)
%Δ(<i>Private real claims on other countries</i>) × <i>U.K.</i>	2.048	(1.43)
%Δ(<i>Private real claims on other countries</i>) × <i>U.S.</i>	0.583	(2.41)**
Number of observations	804	
Adjusted <i>R</i> -squared	0.11	
<i>F</i> -test significance of the overall regression	2.59	
Prob > <i>F</i>	0.00	

Source: Authors' calculations.

Notes: This table presents the results of estimating equation (1) for the change in private sector claims. The model estimated is equivalent to estimating a separate equation for each home/lender country where home and host countries are allowed to have a different coefficient for each home or lender country. Home and host exchange rate changes and home and host dummies are included but not shown. *, **, *** denote significance at 10, 5, and 1 percent, respectively. *t*-statistics are calculated on the basis of robust standard errors.

Table A.3. *F*-tests for Coefficient Restrictions Across Home Countries

Restricted Coefficients	Unrestricted Coefficients	<i>F</i> -test of Coefficient Restrictions
Model A3.1		
<i>Host real GDP growth</i>	<i>Home real GDP growth</i>	$F(96,658) = 1.14$
<i>Host real GDP growth</i> × <i>exposure to host</i>	<i>Home real interest rate</i>	Prob > $F = 0.1785$
$\% \Delta(\text{Host local currency/US\$ exchange rate})$	$\% \Delta(\text{Home local currency/US\$ exchange rate})$	
$\% \Delta(\text{Host rating})$	$\% \Delta(\text{Private real claims on all other countries})$	
$\% \Delta(\text{Host rating})$ × <i>exposure to host</i>	<i>Home dummies</i>	
<i>Host crisis dummy</i>		
<i>Host crisis dummy</i> × <i>exposure to host</i>		
<i>Host dummies</i>		
Model A3.2		
<i>Host real GDP growth</i>	<i>Home real GDP growth</i>	$F(101,658) = 1.10$
<i>Host real GDP growth</i> × <i>exposure to host</i>	<i>Home real interest rate</i>	Prob > $F = 0.2559$
$\% \Delta(\text{Host local currency/US\$ exchange rate})$	$\% \Delta(\text{Private real claims on all other countries})$	
$\% \Delta(\text{Host country rating})$	<i>Home dummies</i>	
$\% \Delta(\text{Host country rating})$ × <i>exposure to host</i>		
<i>Host crisis dummy</i>		
<i>Host crisis dummy</i> × <i>exposure to host</i>		
<i>Host dummies</i>		
$\% \Delta(\text{Home local currency/US\$ exchange rate})$		
Model A3.3		
<i>Host real GDP growth</i>	<i>Home real GDP growth</i>	$F(107,658) = 1.14$
<i>Host real GDP growth</i> × <i>exposure to host</i>	<i>Home real interest rate</i>	Prob > $F = 0.1793$
$\% \Delta(\text{Host local currency/US\$ exchange rate})$	<i>Home dummies</i>	
$\% \Delta(\text{Host country rating})$		
$\% \Delta(\text{Host country rating})$ × <i>exposure to host</i>		
<i>Host crisis dummy</i>		
<i>Host crisis dummy</i> × <i>exposure to host</i>		
<i>Host dummies</i>		
$\% \Delta(\text{Home local currency/US\$ exchange rate})$		
$\% \Delta(\text{Private real claims on all other countries})$		
Model A3.4		
<i>Host real GDP growth</i>	<i>Home real GDP growth</i>	$F(112,658) = 1.20$
<i>Host real GDP growth</i> × <i>exposure to host</i>	<i>Home dummies</i>	Prob > $F = 0.0916^*$
$\% \Delta(\text{Host local currency/US\$ exchange rate})$		
$\% \Delta(\text{Host country rating})$		
$\% \Delta(\text{Host country rating})$ × <i>exposure to host</i>		
<i>Host crisis dummy</i>		
<i>Host crisis dummy</i> × <i>exposure to host</i>		
<i>Host dummies</i>		
$\% \Delta(\text{Home local currency/US\$ exchange rate})$		
$\% \Delta(\text{Private real claims on all other countries})$		
<i>Home real interest rate</i>		

Notes: This table presents the results from estimating a number of tests on equation (1), where we constrain coefficients across home countries. Starting from the specification reported in Table A.2 we present a series of tests in which we try constraining several combinations of coefficients. * denotes significance at 10 percent. Source: Authors' calculations.

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