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The International Exposure of U.S. Banks
Europe and Latin America Compared

Linda S. Goldberg

5.1 Introduction

As a major player in international capital markets, the United States often receives attention as a source of global macroeconomic fluctuations and, more recently, a destination for global savings resources. Since banks play a central role in the financial systems of many economies, they may be active in transmitting these fluctuations. Within banking, recent years have been marked by the dramatic rise in foreign ownership of banks, especially in emerging market economies. This compositional shift has raised questions about associated bank claims altering the extent of financial-sector depth in markets, expanding opportunities for international risk sharing and consumption smoothing in response to idiosyncratic country shocks, leading to altered international transmission of disturbances, and altering the institutions in the source and destination markets. Supporters see the foreign banks as key sources of otherwise scarce capital, with broader positive spillovers on the stability and efficiency of local financial markets. Critics of industrialized-country banks participating in emerging markets sometimes argue that these banks are unstable lenders that undermine local financial markets. The debate on whether foreign lenders are fickle con-

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tinues to rage (Galindo, Micco, and Powell 2004) and underscores the importance of fact finding and communications on the international lending practices of industrialized-country banks.

This paper explores patterns in U.S. bank claims on foreign partners. U.S. banks have emerged as key participants in international banking and are particularly active in European and Latin American countries, with the latter group having faced tumultuous periods in recent decades. This motivates our contrast between the determinants and trends in international capital flows from U.S. banks to European and Latin American counterparties. As in Goldberg (2002), these capital flows are analyzed using data from a time series panel of individual U.S. banks that report exposures to foreign markets. These reports are filed quarterly by each U.S. bank (or bank holding company) to support the bank supervisory process of the Federal Reserve, Federal Depository Insurance Corporation, and Office of Comptroller of the Currency. The banks report the country-by-country distribution of their foreign exposures, the form of these exposures (cross-border claims and local claims—i.e., claims extended by the affiliates of U.S. banks located in foreign markets), valuations of derivative positions held, some maturity composition details, and broad categories of recipients of U.S. claims by destination market.[1]

Four interesting findings arise in our current examination of data, which extends through mid-2004. First, claims extended by larger U.S. reporting banks tend to be less volatile than claims by smaller U.S. banks. Second, while there have been some declines in cross-border flows to Latin American counterparties, larger U.S. banks have had robust trend growth in local claims on Latin America. Third, local claims tend to be more stable than cross-border claims. Finally, there is at best mixed evidence in support of the idea that U.S. international claims are cyclically driven, where cyclical forces are proxied by gross domestic product (GDP) growth rates and interest rates. While U.S. bank cross-border claims on European counterparties tend to expand with European growth performance, these sensitivities are not robust, and the explanatory power of these forces is low. We do not observe stable transmission of U.S. or destination market cycles into either Latin American or European partners, in either cross-border or local claims.[2]

These findings build on Goldberg (2002), wherein it was observed that the U.S. banks engaged in international lending had become more diverse

1. The term "U.S. banks" in this paper generally includes U.S.-owned banks, bank holding companies, and U.S. subsidiaries of foreign banks. The reported data also are combined with similar data from other countries to form the consolidated data on international bank lending reported by the Bank for International Settlements (BIS).

2. BIS (2004) provides a thoughtful overview of issues from the perspective of source and host countries of financial-sector FDI. Goldberg (2007) surveys the host-country implications of financial-sector foreign direct investment and draws parallels between the effects of financial-sector FDI and FDI in manufacturing and extractive resource industries.

since the 1980s, with fewer banks overall, and the remaining banks becoming increasingly polarized in terms of size and portfolio allocations. By the late 1990s, while a substantial share of the U.S. banks reporting foreign exposures were smaller banks, the vast majority of U.S. exposures were nonetheless attributable to a few large banks. Lending by the larger banks is less volatile than lending by the smaller banks.

Our findings of weak and variable cyclical transmission from the U.S. banks contrast with stronger results by Peek and Rosengren (1997, 2000a) on Japanese business-cycle transmission to the United States. Our results also contrast with those of Van Rijckeghem and Weder (2001), who find more transmission when banks have a presence across multiple markets.[3] U.S. banks do not appear particularly fickle in emerging markets, in contrast to some of the conclusions on international banks of Galindo, Micco, and Powell (2004). Indeed, while our results support the view that foreign banks *can* transmit international business cycles into host-country financial markets, this result is neither strong or robust. U.S. banks also may reduce the extent to which locally sourced real shocks and interest rates (i.e., local business cycles) are amplified by banking intermediaries. Consequently, the U.S. banks engaged in this type of credit extension abroad may reduce the highly procyclical credit cycles in some foreign markets.[4]

Section 5.2 of this paper discusses the U.S. bank foreign exposure data and provides background on the extensive changes that have occurred since 1986 in U.S. bank lending abroad and in the form and scale of their exposures. Data on the relative importance of U.S. bank and other foreign bank claims relative to GDP across European and Latin American countries provide context for the importance of this financial activity. Section 5.3 econometrically explores the volatility of the panel data on U.S. bank international claims. We contrast the cyclical properties of claims on industrialized countries in Europe versus on Latin American countries. Section 5.4 discusses the implications of our results, on balance emphasizing that foreign banks may contribute to aggregate stability in emerging markets.

5.2 Broad Patterns in U.S. Bank Foreign Exposures

The Federal Financial Institutions Examinations Council (FFIEC) Country Exposure Report (FFIEC 009) must be filed by every U.S. chartered, insured, commercial bank in the United States, including the District of Columbia, Puerto Rico, and U.S. territories and possessions, or its

3. See also Goldberg (2002), Dages, Goldberg, and Kinney (2000), and Peek and Rosengren (2000b).

4. Galindo, Micco, and Powell (2004) argue that foreign banks may be fickle lenders in times of local crisis, sharply reducing credit extension to local markets. We do not find general support for this argument in U.S. bank data.

holding company, provided that the bank (or holding company) has, on a fully consolidated bank basis, total outstanding claims on residents of foreign countries exceeding $30 million in aggregate. In these reports, bank claims are itemized by country and separately encompass claims on banks, public entities, and other recipients, including individuals and businesses. In addition to direct international flows, bank claims include the fair value of interest rate, foreign exchange, equity, commodity, and other derivative contracts. Banks provide some details on time remaining to maturity of claims (one year and under, one to five years, and over five years) as well as on direct claims versus ultimate risk claims. Other quarterly reports filed by banks contain information on bank total assets located in the United States and abroad. Some reporting conventions have changed over time, but much of this confidential data has been consistently filed by banks since 1986.

5.2.1 Foreign Claims Relative to Local Economies

Foreign lending can constitute a substantial fraction of claims in recipient countries. In this context, foreign claims are the sum of cross-border claims and local claims denominated in both foreign and local currencies. As shown in the first data column of table 5.1 and indicated by values exceeding one, European countries often have total foreign claims in excess of 100 percent of their GDP. This large fraction in part reflects volumes of back-and-forth financial flows across borders, heavy use of banking-sector finance, and the role of European financial centers in intermediation of some flows. For Latin American countries, foreign claims represent a much smaller share of GDP: across the region, the ratio of foreign claims to country GDP is closer to 70 percent.

As shown in the second data column, the United States accounts for a relatively small portion of the foreign claims on European countries, typically close to 6 percent overall. Intra-European flows dominate the foreign claims on European countries. By contrast, U.S. banks account for a large portion of overall foreign claims on Latin American countries. There is considerable cross-country variation in the share of the United States within these foreign claims, from Costa Rica, at less than 20 percent of total foreign claims, to Mexico, where this ratio exceeds 95 percent.

5.2.2 Consolidation in U.S. Banks with Foreign Exposures

Industry consolidation, observed elsewhere across banking and financial services industries, is clearly evident in the changing number of banks (or bank holding companies) with exposures to foreign markets. Figure 5.1 shows the number of U.S. banks that have filed foreign exposure reports each quarter since 1986. Starting from a high of 185 reporting banks in the mid-1980s, the number of U.S. banks with foreign exposures declined to 140 by the mid-1990s and further declined to 75 banks by 2004.

As the number of banks declined, the size distribution of remaining banks changed considerably over time. Figure 5.2 shows the share of re-

Table 5.1 **U.S. and other foreign bank claim shares in local economies, 2003**

	Ratio of total foreign claims to country GDP	Ratio of U.S. claims to total foreign claims	Ratio of total U.S. claims to country GDP
Europe	6.37	0.06	0.26
Austria	2.25	0.05	0.12
Belgium	3.87	0.06	0.22
Denmark	2.12	0.09	0.19
Finland	1.46	0.04	0.06
France	1.83	0.05	0.10
Germany	1.90	0.08	0.15
Greece	2.31	0.07	0.15
Iceland*	2.24	0.02	0.04
Ireland	8.45	0.03	0.24
Italy	1.85	0.05	0.09
Luxembourg	61.80	0.03	1.94
Netherlands	4.89	0.06	0.30
Norway*	1.36	0.11	0.14
Portugal	4.48	0.02	0.08
Spain	1.59	0.05	0.08
Sweden*	1.42	0.07	0.11
Switzerland	5.90	0.04	0.26
United Kingdom	4.97	0.08	0.40
Latin America	0.68	0.40	0.24
Argentina	0.84	0.28	0.24
Brazil	0.71	0.27	0.19
Chile	1.15	0.39	0.44
Colombia*	0.50	0.36	0.13
Costa Rica	0.84	0.18	0.15
Ecuador	0.30	0.27	0.08
Jamaica*	0.53	0.66	0.31
Mexico	0.41	0.97	0.40
Peru	0.32	0.40	0.13
Uruguay	1.02	0.43	0.44
Venezuela*	0.83	0.22	0.18

Source: BIS *Quarterly Review,* BIS Consolidated Banking Statistics for all reporting banks; and BIS Consolidated Banking Statistics for U.S.-owned bank claims.

Notes: 2003 data, except where indicated by an asterisk. Venezuela data are 2002 for all ratios; Sweden data are 2000 for total foreign claims ratios only; and Iceland, Norway, Colombia, and Jamaica data are 2002 for total foreign claims ratios only. For this table we use the BIS definition of foreign claims, meaning the sum of cross-border claims and local claims in both foreign currency and domestic currency.

porting banks in five different asset size ranges, contrasting size distributions for 1986:Q1 and 2004:Q1.[5] In the 1980s banks were broadly distributed across small, medium, and large asset ranges. By 2004 the distribution was more bimodal. Currently more than 30 percent of banks have assets

5. The ranges use 2003Q1 dollars as the base year.

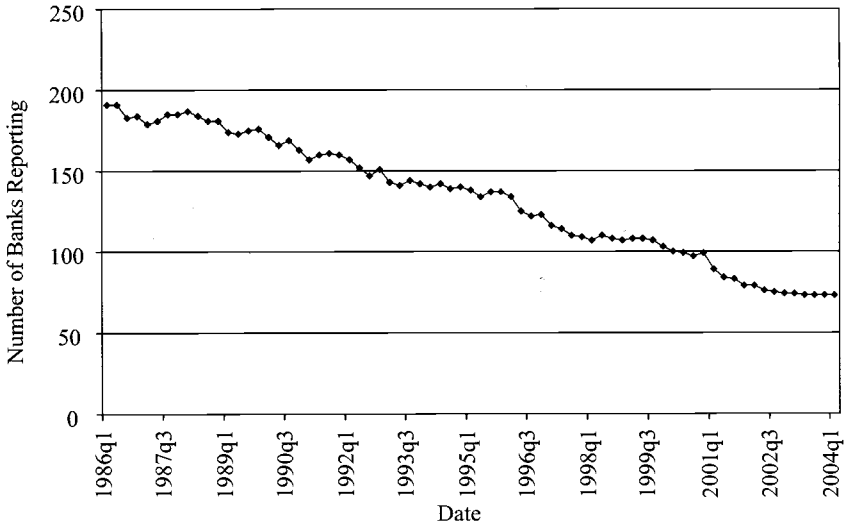

Fig. 5.1 Number of banks reporting exposure data 1986–2004

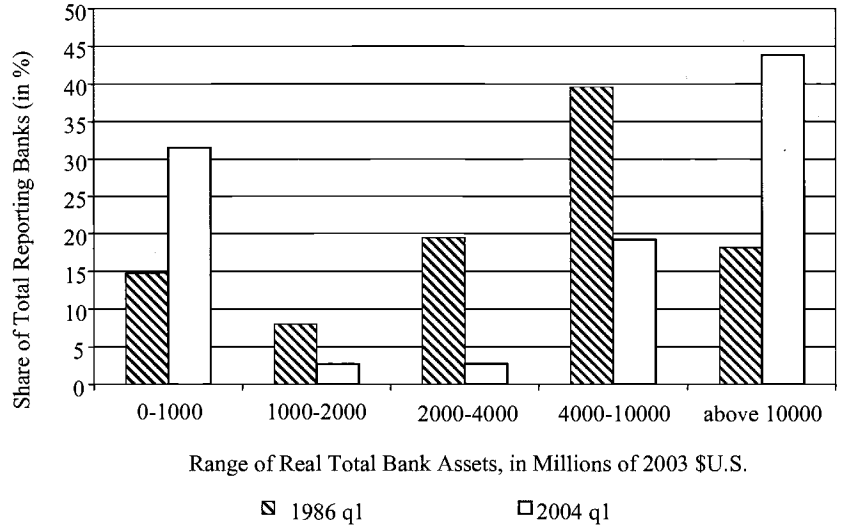

Fig. 5.2 Size distribution of U.S. banks reporting foreign exposures

well under $1 billion, while more than 40 percent of banks have total assets in excess of $10 billion.

As the total number of banks declined, so did the number of U.S. banks with exposures across different foreign regions. Among Europe, Canada, Asia and the Middle East, Africa, and Latin America, Latin America has

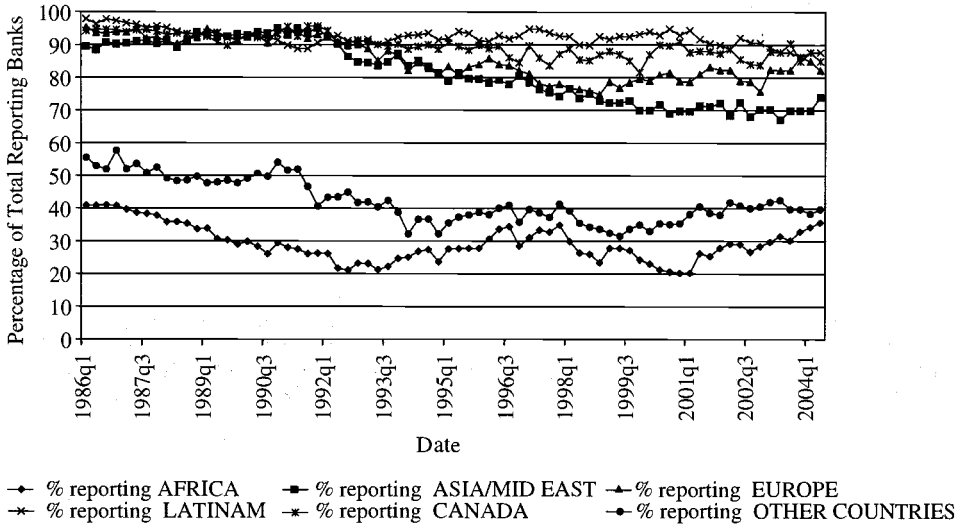

Fig. 5.3 Percent of total reporting banks that report exposure to each region

the most U.S. banks reporting exposure (sixty-six banks in mid-2004), with similar numbers participating in European and Canadian markets. Asia and the Middle East have fifty-six banks, while about thirty U.S. banks have some claims on Africa and other countries.

As a share of all banks reporting these foreign exposures, a similarly large proportion of banks—over 90 percent—maintained positions in Latin America, Canada, Europe, and Asia and the Middle East in the 1980s through the early part of the 1990s. As shown in figure 5.3, the 1990s was a decade of increasing differentiation across U.S. banks in terms of their regional exposures. While participation of U.S. banks in Canadian and in Latin American markets remained high, participation rates in Asia and the Middle East and Europe declined. By 2004, some of this differentiation was reduced: participation in European markets recovered to over 80 percent of reporting banks, and the share of banks participating in Latin American countries declined from highs observed prior to the Argentine crisis. During this period, the proportion of reporting banks with Asia/Middle East exposure stayed at near 70 percent.

Very few banks have foreign exposures in only one region. The number of banks exclusively focused on Latin America was three or four through the 1980s, rising to eight sporadically in the early 1990s, and declining again to a few specialty operations. Typically, between one and three banks specialize in other regions, generally in claims on either Europe or Asia. Banks with this sort of regional specialization are usually within the smallest quartile of banks by asset size.

5.2.3 Magnitudes of U.S. Bank Foreign Claims

The trend toward consolidation in the banking sector has not led to a decline in the total foreign exposures across U.S. banks. The increasing values over past decades of total foreign exposure of U.S. banks (in 2003 dollars) are depicted in figure 5.4 for cross-border claims and figure 5.5 for local claims. After sharp declines over the late 1980s, U.S. bank foreign exposures had persistent expansion from 1993 through 2004. This growth occurred both in total cross-border claims and in total local claims, even when evaluated relative to the growth in total assets of U.S. banks reporting foreign exposures.

These observations are drawn from data aggregated across all U.S. banks reporting foreign exposures. Next, we instead utilize the source data, at the level of individual reporting banks, and construct bank-specific measures of foreign exposure–to-asset position. We then average this foreign exposure ratio across all individual reporting banks. The resulting averages, shown in figure 5.6, are unweighted by bank size and therefore place greater (relative) weight on the exposures of smaller banks. Trend increases in average foreign exposure ratios occurred through late 1998, driven strongly by growth in U.S. average ratios of bank claims on Latin America.

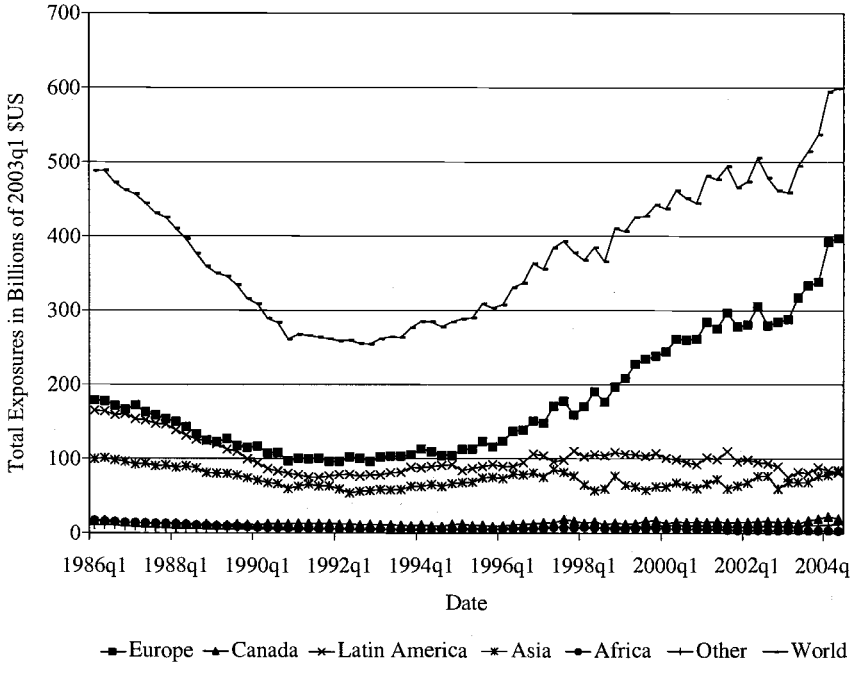

Fig. 5.4 Total value of U.S. bank cross-border claims, by region

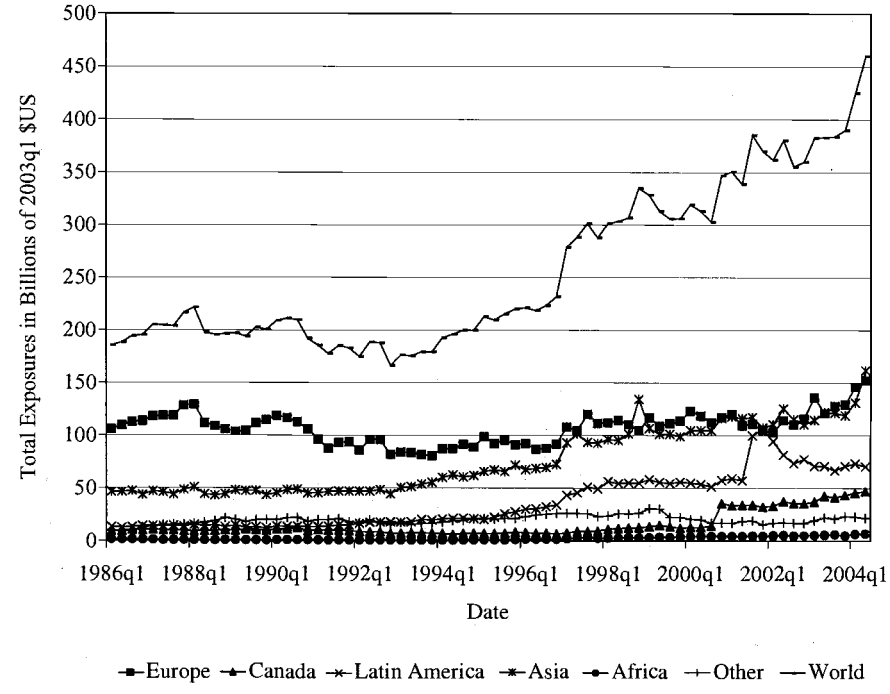

Fig. 5.5 Total value of U.S. bank local claims, by region

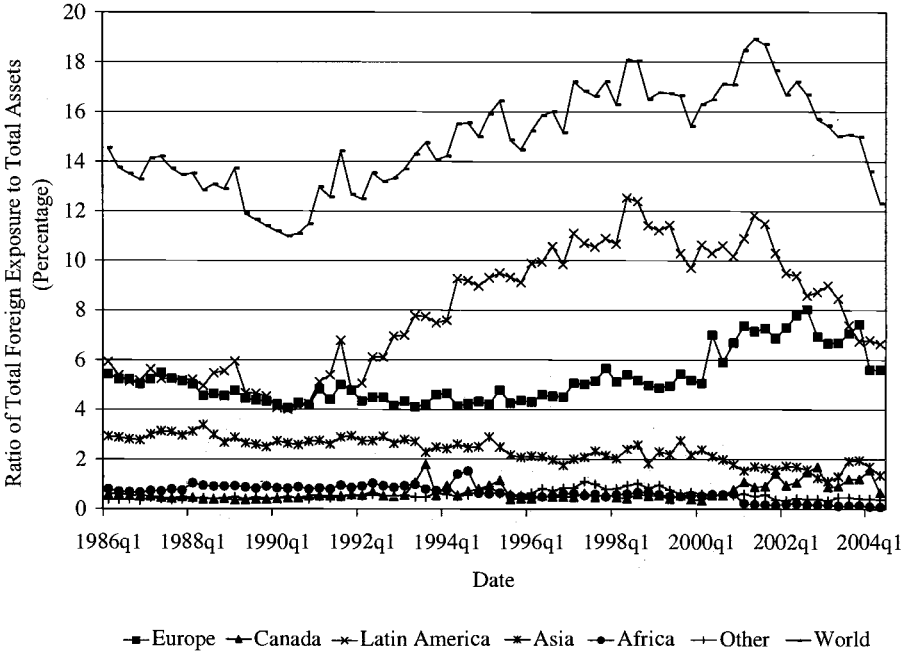

Fig. 5.6 Average bank-specific ratios of regional foreign exposure to bank total assets

These average claims on Latin American counterparties fluctuated substantially through 2000 before sharply declining between mid-2001 and 2004 when our data end. These ratios shown in figure 5.6 contrast sharply with patterns in total flows from all U.S. banks reporting foreign exposures. The difference demonstrates that smaller U.S. banks with foreign exposures both had higher-than-average exposures to Latin America and reduced these exposures (relative to their asset bases) more dramatically than their larger bank counterparts.

Our examination of U.S. bank exposure data leads to more nuanced conclusions than some other studies of international capital flows that argue that the 1999 to 2000 credit crunch was common throughout Latin America. Braun and Hausmann (2002), for example, using data through 2001, find that bank credit in many Latin American countries collapsed in the aftermath of the Asian and especially the Russian crises. The strong rates of real credit growth, sometimes described as credit booms, that characterized the early and mid-1990s generally decreased since 1998 and stayed at lower levels through 2001. We find that this type of credit crunch in claims on Latin American countries was more a feature of the cross-border flows than of the local claims of U.S.-owned banks. Moreover, this credit crunch seems to better describe banks other than the largest U.S. banks with foreign exposures to countries in the region. This interesting set of observations may be relevant for discussions of overall banking-sector stability. Crystal, Dages, and Goldberg (2001) argue that the mix of foreign versus domestically owned banks within Latin America was important for the growth rates and stability of credit flows: credit growth and credit stability were enhanced when strong foreign partners were participating in local markets. Here we confirm this finding, and extend it with the observation that the size as well as the form of foreign bank claims on a market also may matter for sustained intermediation by the banking sector.

5.2.4 The Composition of U.S. Bank Foreign Clients

The exposure data show the relative importance of banks, public-sector borrowers, and all other borrowers in U.S. bank cross-border claims on each country. Figures 5.7 and 5.8 show these broad details for cross-border claims on Europe and Latin America, respectively. In U.S. bank cross-border claims on Europe, the share of public-sector borrowers was in the area of 10 percent since the 1980s, rising as high as 14 percent in the early 1990s and again in 1998, but recently falling to below 7 percent. Other private-sector borrowers became increasing active in total cross-border claims on Europeans over the past two decades, ultimately rising to be comparable in size to bank borrowers.

U.S. bank cross-border claims on Latin American counterparties were also characterized by a declining relative importance of bank-to-bank lending. Even more dramatic were the reductions in the share of cross-

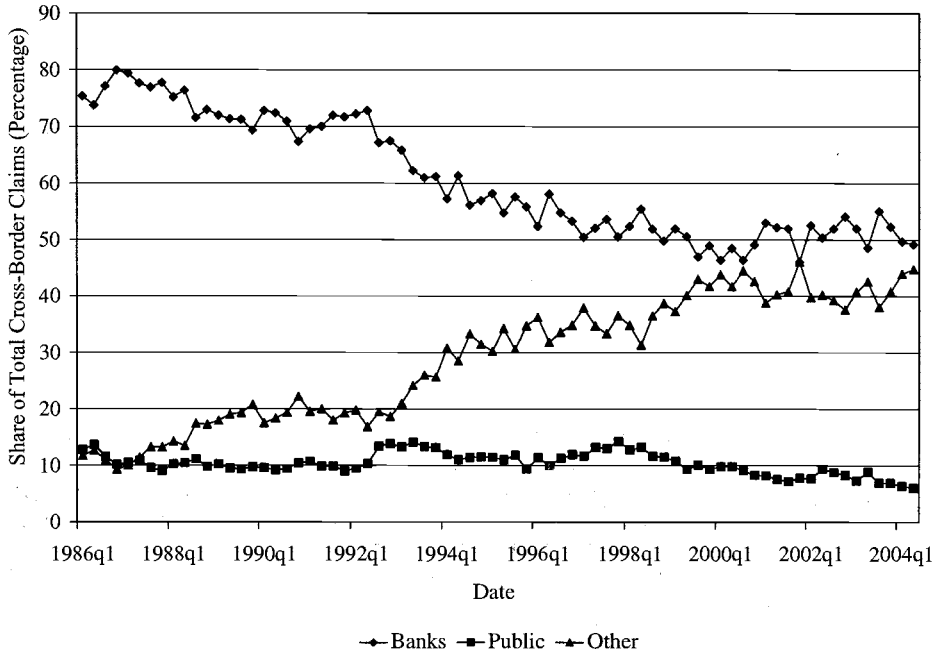

Fig. 5.7 Breakdown of European cross-border claims by client

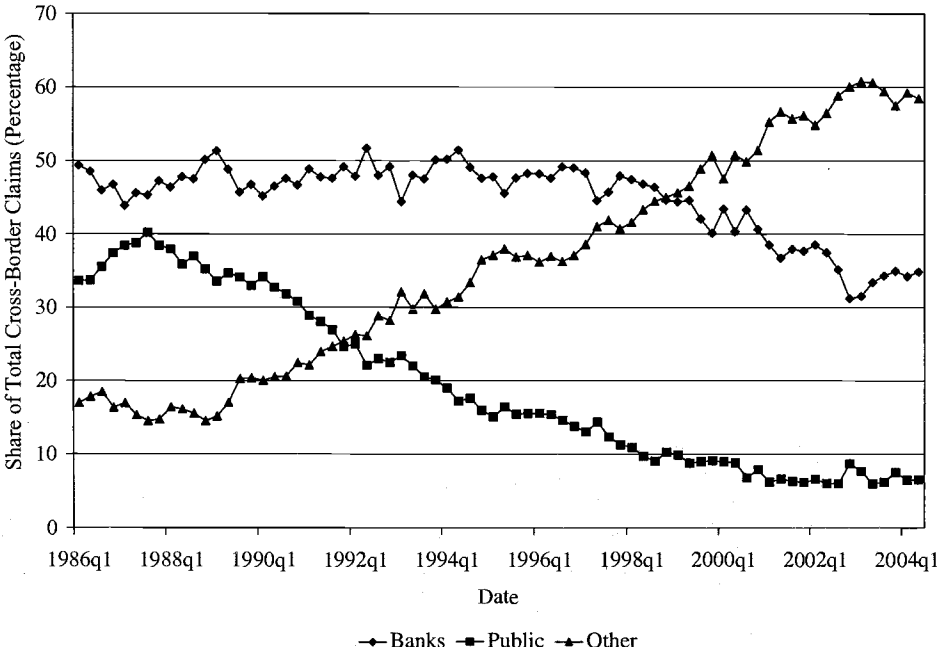

Fig. 5.8 Breakdown of Latin American cross-border claims by client

border claims accounted for by the public sector, moving from 40 percent in the late 1980s to under 10 percent in 2004. The share accounted for by nonbank private borrowers has continued to rise over past decades, reaching almost 60 percent in 2003 and 2004. By 1999 private nonbank activity displaced bank-to-bank lending as the primary client in U.S. bank cross-border claims on Latin American customers.

5.3 U.S. Bank Foreign Exposures and Business-Cycle Transmission

International banks entering into local markets can potentially change the transmission of international shocks to local markets (Peek and Rosengren 1997, 2000a) and spur contagion across markets (Van Rijckeghem and Weder 2001). These banks can also have different risk management systems and sources of funds, raising the prospect that they may change the typically procyclical response of the host-country banking system to local shocks. In this section we provide evidence relevant for the debate on shock transmission by exploring the sensitivity of U.S. bank foreign exposures to local country and U.S. business-cycle variables. In order to have a benchmark for comparison, we contrast the patterns in U.S. bank claims on European countries with the patterns in U.S. bank claims on Latin American countries. Delving further into this issue, we ask whether larger banks—here taken to be the five largest money center banks—are more stable in credit extension and differ from smaller banks in the sensitivity of this credit to business-cycle variables.[6] Some of the analysis uses aggregated claims across banks, while other parts of our analysis exploit the rich time series panel nature of the bank exposure data.[7]

5.3.1 Exposures to European and Latin American Countries

Europe accounts for 40 percent of total U.S. bank foreign exposures (table 5.2), with U.S. bank cross-border claims three times as large as U.S. bank local claims (i.e., claims extended by their branches and subsidiaries abroad). The United Kingdom, Germany, France, and the Netherlands account for most of the U.S. bank claims on Europe. Latin American coun-

6. The top five money center banks are Bank of America Corp., Bank One Corp., Taunus Corp., JPMorgan Chase Bank, and Citigroup. Taunus is the U.S. holding company subsidiary of Deutsche Bank. These banks are formed in part by smaller banks that consolidated. Thus, for each of these five large money center banks we create *a synthetic construct going back in time that includes the exposures of smaller banks that eventually merged together into the current five money center banks.* This approach may impart a survivorship bias to the empirical results that follow. Note that Taunus is not domestically owned. An alternative group of large banks could be geared toward large domestic lenders and be broader. Such a grouping could include Citigroup Inc., Bank of America Corp., JPMorgan Chase and Co., Wells Fargo and Co., Wachovia Corp., Bank One Corp., U.S. Bancorp, National City Corp., and Suntrust Banks, Inc.

7. See also recent work by Santor (2004) applying portfolio theory to Canadian bank exposure data.

Table 5.2 **Foreign exposure of U.S. reporting banks, 2004:Q1 (country share in total U.S. bank foreign exposures)**

	Cross-border claims	Local claims	Total		Cross-border claims	Local claims	Total
Europe	25.55	8.91	39.98	*Latin America*	2.77	4.69	7.57
Austria	0.39	0.01	0.47	Argentina	0.19	0.22	0.42
Belgium	0.78	0.26	1.15	Brazil	0.67	0.82	1.54
Denmark	0.64	0.01	0.70	Chile	0.21	0.34	0.57
Finland	0.23	0.00	0.27	Colombia	0.08	0.07	0.15
France	2.72	0.11	3.35	Costa Rica	0.04	0.01	0.04
Germany	4.62	1.58	7.23	Ecuador	0.02	0.01	0.03
Greece	0.15	0.17	0.37	Jamaica	0.03	0.02	0.05
Iceland	0.00	0.00	0.00	Mexico	1.32	3.06	4.41
Ireland	0.47	0.07	0.65	Peru	0.04	0.07	0.12
Italy	1.63	0.42	2.58	Uruguay	0.04	0.04	0.08
Luxembourg	0.57	0.07	0.86	Venezuela	0.13	0.03	0.16
The Netherlands	2.45	0.02	2.93				
Norway	0.49	0.02	0.57				
Portugal	0.09	0.04	0.17				
Spain	0.75	0.40	1.29				
Sweden	0.56	0.04	0.66				
Switzerland	1.12	0.12	1.62				
United Kingdom	7.89	5.57	15.10				

Note: The total exposure column includes derivative positions, and typically exceeds the sum of cross-border and local claims.

tries account for less than 8 percent of the total foreign exposures of U.S. banks. In contrast to the pattern vis-à-vis Europe, where cross-border claims dominate, U.S. bank exposures to Latin American countries now occur more through local claims, by a ratio of nearly two to one. Looking across countries, the largest U.S. banks with foreign exposures typically dominate local claims more than they dominate cross-border claims. In some Latin American countries, most notably Costa Rica, Ecuador, Jamaica, and Uruguay, smaller U.S. banks account for more of the cross-border claims than do the larger U.S. banks (appendix table 1).

To gain perspective on the fluctuations in different types of U.S. bank foreign exposures, we construct volatility measures by country and across types of claims (cross border, local). "Volatility" is the standard deviation of these claims on each country (summed across banks), normalized by the associated mean U.S. bank claims on that country. As shown in table 5.3, the volatility of cross-border claims in recent data (2000:Q1 through 2004:Q2) is similar for Europe and Latin American regions.[8] Iceland and

8. This time frame both captures the dynamics surrounding the Argentine crisis and has the technical advantage of minimizing the adjustments to account for bank mergers needed as the analysis goes further back in time.

Table 5.3 **Volatility of foreign exposures of U.S. banks**

	Cross-border claims	Local claims	Total		Cross-border claims	Local claims	Total
Europe	0.15	0.11	0.13	*Latin America*	0.17	0.23	0.15
Austria	0.22	1.11	0.19	Argentina	0.51	0.62	0.57
Belgium	0.20	0.17	0.16	Brazil	0.21	0.19	0.19
Denmark	0.18	0.47	0.17	Chile	0.15	0.06	0.06
Finland	0.27	1.16	0.23	Columbia	0.31	0.17	0.25
France	0.24	0.38	0.15	Costa Rica	0.11	0.26	0.09
Germany	0.15	0.14	0.10	Ecuador	0.25	0.44	0.15
Greece	0.18	0.34	0.21	Jamaica	0.15	0.14	0.11
Iceland	0.54	3.74	0.51	Mexico	0.11	0.54	0.37
Ireland	0.32	0.20	0.25	Peru	0.35	0.08	0.17
Italy	0.16	0.13	0.10	Uruguay	0.35	0.32	0.31
Luxembourg	0.32	0.37	0.29	Venezuela	0.20	0.34	0.21
The Netherlands	0.16	0.46	0.14				
Norway	0.30	0.22	0.27				
Portugal	0.16	0.49	0.16				
Spain	0.22	0.09	0.10				
Sweden	0.16	0.35	0.11				
Switzerland	0.25	0.15	0.20				
United Kingdom	0.25	0.14	0.19				

Notes: Standard deviation of total U.S. bank foreign exposures in each category (cross-border claims, local claims, or total claims) divided by the average value of those foreign exposures. Data used for 2000:Q1–2004:Q2, in 2003:Q1 millions of U.S. dollars.

Argentina had similar and particularly high coefficients of variation in the cross-border claims. While the average variation in local claims appears higher for countries in Latin America compared with Europe, this observation masks the high volatility of claims on some individual European countries with relatively small volumes of such claims. Finally, abstracting from Mexico, where local claim volatility is driven by recent purchases of Mexican banks, and Argentina, which was in crisis during part of this period, local claims issued by U.S. banks have tended to be more stable than cross-border claims in most Latin American countries.

The next pair of tables compares patterns in the foreign claims of larger versus smaller U.S. banks reporting foreign exposures. For these calculations, we sum across the claims of larger U.S. reporting banks (five money center) vis-à-vis individual countries and compare these sums with similar constructs using data summed across all other banks reporting foreign exposures. We compute the relative coefficients of variation across large versus smaller banks for a specific type of claim and for a specific country or region. In the results reported in each cell of table 5.4 a value greater than 1 can be interpreted as showing that claims extended by larger U.S. banks were relatively more volatile than claims extended by smaller U.S. banks. Analogously, a cell value less than 1 implies relatively less volatil-

Table 5.4 **Relative volatility of U.S. bank foreign exposures: Top five U.S. banks and other U.S. reporting banks compared, 2000:Q1–2004:Q2**

	Cross-border claims	Local claims	Total		Cross-border claims	Local claims	Total
Europe	0.84	0.38	0.60	*Latin America*	1.30	0.42	0.96
Austria	1.17	0.46	0.97	Argentina	0.79	0.52	0.88
Belgium	0.67	0.05	0.42	Brazil	0.82	0.12	0.60
Denmark	1.34	2.24	1.17	Chile	0.66	0.09	0.33
Finland	0.83	0.22	0.63	Colombia	2.69		2.05
France	1.44	0.64	0.58	Costa Rica	1.01	0.09	0.97
Germany	0.57	0.28	0.35	Ecuador	4.03		2.11
Greece	0.86	0.08	0.98	Jamaica	0.56		0.44
Iceland	0.55	1.03	0.53	Mexico	1.80	1.54	4.08
Ireland	0.93	0.74	0.64	Peru	1.14		0.48
Italy	0.66	0.06	0.52	Uruguay	2.77	0.47	1.53
Luxembourg	0.24	0.31	0.26	Venezuela	3.89		3.77
The Netherlands	0.59	0.67	0.45				
Norway	1.31	5.28	1.45				
Portugal	0.96		0.90				
Spain	0.56	0.06	0.22				
Sweden	0.35	1.09	0.34				
Switzerland	2.14	0.23	0.78				
United Kingdom	1.65	0.53	1.04				

Note: Mexican local claims appear more volatile due to acquisition events during this interval.

ity in the foreign exposures of the larger U.S. banks vis-à-vis a particular country.

The preponderance of cells with values less than 1 in the leftmost panel of table 5.4 suggests that, on average, the cross-border and local claims on European countries by larger U.S. banks are less volatile than the claims extended by smaller U.S. banks. There is clearly country-specific variation, with larger U.S. banks having higher volatility of claims than smaller U.S. banks in their transactions with financial centers such as Switzerland and the United Kingdom. Differences across larger and smaller U.S. banks are most pronounced in local claims in both European countries and Latin American countries (right panel): the claims by larger banks tend to be substantially less volatile than the claims by smaller banks. Evidence on cross-border claims to Latin American countries is mixed. For Argentina, Brazil, Chile, and Jamaica, cross-border claims from larger banks clearly were more stable, contrasting with patterns for Colombia, Ecuador, Mexico, and Uruguay.

5.3.2 Foreign Exposures of U.S. Banks and Business Cycles

As another window into the volatility of U.S. bank foreign exposures, we conduct regression analysis starting from a model of a bank's exposure to

any country as dependent on local business-cycle variables (real local interest rates, i_t^c, and real GDP growth rates, GGDP_t^c) and U.S. business-cycle variables (U.S. real interest rates, i_t^{US}, and U.S. real GDP growth, $\text{GGDP}_t^{\text{US}}$).[9] The (log) exposure of bank i to country c at time t, Exp_t^{ic}, is expressed as

$$(1) \qquad \text{Exp}_t^{ic} = a_0^i + a_1^i t + a^r + a_2^r t + b \cdot i_t^c + c \cdot i_t^{\text{US}} + d \cdot \text{GGDP}_t^c + e \cdot \text{GGDP}_t^{\text{US}},$$

plus a random error term. In this specification the terms a_0^i and $a_1^i t$ allow for bank-specific variation in mean and trend growth in their foreign exposures. The terms a^r and $a_2^r t$ introduce region-specific variation and allow for the possibility that, regardless of the role of other observable fundamentals, some regions are more popular destinations for U.S. bank foreign exposures.

To reduce estimation problems arising from unit root properties of GDP growth, real interest rates, and U.S. bank external exposures, we first-difference equation (1). The bank and region constant terms drop out, leaving equation (2) specified in log-differences with bank-specific and region-specific fixed effects to capture trends in claims on specific countries (and with a random error term assumed).

$$(2) \qquad \Delta\text{Exp}_t^{ic} = a_1^i + a_2^r + b \cdot \Delta i_t^c + c \cdot \Delta i_t^{\text{US}} + d \cdot \Delta\text{GGDP}_t^c + e \cdot \Delta\text{GGDP}_t^{\text{US}}$$

This basic testing specification states that the percentage change in a U.S. bank's claims on any country has the following: a bank-specific component common across all regions, a region-specific component shared by banks, components correlated with changes in foreign and U.S. real interest rates, and components correlated with changes in foreign and U.S. GDP growth rates. Regression specifications are run over quarterly data for the period 1986:Q1 to 2004:Q2 using percent changes in the bank exposures against changes in interest rates and against percent changes in real GDP growth rates.

As detailed in table 5.5, we performed many variations on this basic specification. Many regression results were starkly different for the full data period compared with a sample break at 2001:Q2. To capture the flavor of these changes, we present the earlier and latter results for contrast, fully aware of the limitations of using a small number of quarters in the latter period. Some regressions use data on claims aggregated across U.S. banks. Other regressions take greater advantage of the rich data of indi-

9. The data used for real local interest rates are, in general, country lending rates (*International Financial Statistics* [IFS] 60p), "the lending rate to meet the short and medium term financing needs of the private sector, differentiated by credit worthiness of borrowers and objectives of financing." If this rate is unavailable for a country, we use deposit rates (IFS 60l) or Treasury bill rates (IFS 60c). See the data appendix.

Table 5.5 Estimation intervals, data types, and parameter stability tests

Sample periods	Types of foreign exposure	Parameter tests
1986:Q1 through 2004:Q2	Total foreign exposure	Equality across types of banks (five money center vs. all others)
1986:Q1 through 2001:Q2	Cross-border claims	Equality across destination markets (European vs. Latin American countries)
2001:Q3 through 2004:Q2	Local claims	Latin American Sample, with and without Mexico included
		Equality across by bank type and destination market
		Random effects estimators versus fixed effects estimators
		Claims aggregated across banks, versus disaggregated by bank

vidual bank exposures, alternatively applying fixed effects estimators or random effects estimators to time-series panels. Hausmann tests favor the random coefficients model over fixed effects estimators. Other specifications compare the growth in U.S. bank foreign exposures across "crisis" versus "normal" periods.[10] We have run the regression specification with and without regional trend terms, with different intervals specified, and with cross-border claims aggregated across all reporting banks, disaggregated to larger versus smaller reporting banks, and as robustness checks, containing adjustments for the ultimate counterparty on transactions instead of just direct counterparties and excluding either U.S. GDP or U.S. interest rates from the regressions. Only a subset of our findings is reported in the tables of this section. Distinctions in the results generated across specifications are discussed if these are statistically or economically important.

Regression Results

Table 5.6 presents regression results using aggregates across all U.S. banks in their foreign exposures to individual countries. Panel A presents findings for cross-border claims. Panel B presents findings for the local claims of U.S. banks. There are eighteen European countries and eleven Latin American countries represented in each data quarter. Panel A shows that macroeconomic variables are significant drivers of U.S. bank *cross-border* claims on European countries. More specifically, these claims exhibit procyclicality vis-à-vis U.S. GDP growth and negative correlations with destination market interest rates (as indicated by boldface type).

10. For these regressions, crisis dates include the following: the exchange rate mechanism (ERM) crisis, 1992:Q3–1993:Q1; Tequila crisis, 1994:Q4–1995:Q1; Asia crisis, 1997:Q3–1997:Q4; Russian default, 1998:Q3–1998:Q4; and Argentine crisis dated here at 2001:Q4–2002:Q1.

Table 5.6 **Regressions on U.S. bank foreign exposures, with exposures aggregated across all U.S. reporting banks**

	Trend	Country real GDP	U.S. real GDP	Country real interest rate	U.S. real interest rate
			A. Elasticities of response of cross-border claims		
1986:Q1–2001:Q2					
European countries	1.02	0.00	**2.6****	**–1.27*****	–0.60
	(0.94)	(0.24)	(1.16)	(0.43)	(1.14)
		0.02	**3.50*****	**–1.27*****	–0.88
		(0.24)	**(0.82)**	(0.43)	(1.11)
Latin American countries	–2.11	0.10	2.08	0.00	–1.41
	(1.30)	(0.19)	(1.61)	(0.00)	(1.58)
		0.08	0.19	0.00	–0.86
		(0.19)	(1.12)	(0.00)	(1.54)
2001:Q2–2004:Q2					
European countries	**5.12****	**1.27****	–0.79	–1.13	2.42
	(2.18)	(0.59)	(2.41)	(1.87)	(2.22)
		1.35**	**3.42****	–0.43	0.40
		(0.59)	(1.61)	(1.86)	(2.06)
Latin American countries	–2.83	0.20	0.66	0.08	3.90
	(3.07)	(0.4)	(3.41)	(0.31)	(2.95)
		0.14	–1.64	0.06	**4.89***
		(0.40)	(2.34)	(0.31)	(2.77)
			B. Elasticities of response of local claims		
1986:Q1–2001:Q2					
European countries	7.82	–0.93	9.81	2.49	5.93
	(4.9)	(1.32)	(6.03)	(2.45)	(6.0)
		–0.61	**16.55*****	2.51	3.83
		(1.31)	(4.31)	(2.45)	(5.86)
Latin American countries	10.77	–1.05	1.50	0.00	3.55
	(6.73)	(0.98)	(8.35)	(0.00)	(8.11)
		–0.91	**11.24****	0.00	0.81
		(0.98)	(5.72)	(0.00)	(7.94)
2001:Q2–2004:Q2					
European countries	11.7	0.22	–4.77	4.03	–13.46
	(9.31)	(2.52)	(10.26)	(8.33)	(9.71)
		0.46	4.84	6.34	**–18.46****
		(2.51)	(6.83)	(8.12)	(8.85)
Latin American countries	7.48	–1.01	–6.54	–0.34	5.72
	(12.7)	(1.66)	(14.11)	(1.28)	(12.21)
		–0.85	–0.46	–0.27	3.12
		(1.64)	(9.62)	(1.27)	(11.39)

Notes: In panel A, 1986:Q1–2001:Q2 period, observations = 1,492, adjusted $R^2 = 0.012$, adjusted R^2 (no trend) = 0.015; in 2001:Q2–2004:Q2 period, observations = 309, adjusted $R^2 = 0.039$, adjusted R^2 (no trend) = 0.031. In panel B, 1986:Q1–2001:Q2 period, observations = 1425, adjusted $R^2 = –0.001$, adjusted R^2 (no trend) = 0.009; in 2001:Q2–2004:Q2 period, observations 299, adjusted $R^2 = –0.015$, adjusted R^2 (no trend) = –0.005.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

However, these cyclical forces have low explanatory power for the overall regression analysis, and they are particularly weak as determinants of the pattern of cross-border flows from U.S. banks to their Latin American counterparties.

In panel B of table 5.6, regression results for U.S. bank *local claims* on European and Latin American countries also show very low overall explanatory power of these macroeconomic forces. Additionally, the estimated relationships are not robust over time. Local claims of U.S. banks were procyclical with U.S. GDP in the data extending through 2000 or 2001 (as in Goldberg 2002), but these procyclical patterns are not sustained in 2001 through 2004.

In other regression specifications we explore whether these cyclical forces play different roles in the foreign exposures of larger U.S. banks versus smaller U.S. banks. Recall that claims from larger U.S. reporting banks tend to be less volatile than claims from smaller U.S. banks, and local claims tend to be more stable than cross-border flows. Tables 5.7 and 5.8 explore this theme for cross-border claims and local claims, respectively, using ordinary least squares regressions. As in the prior sections, the aggregate called "larger banks" is the sum of foreign exposures across five money center banks. The aggregate called "smaller banks" consists of the sum across all other banks of claims on each country at each date.[11] In these regressions the *i* superscript from equation (2) covers two aggregates, larger and smaller banks, while the regional superscript distinguishes between the regional location of the twenty-nine countries in the regression each quarter and spanning European and Latin American countries.

The relationships between business cycle variables and U.S. bank foreign exposures appear unstable over time and differentiated by region. U.S. bank claims on Europe exhibit positive growth in the cross-border and local claim components, with this growth alternatively attributable to trend or to U.S. GDP cyclical transmission. Cyclical transmission to European countries, to the extent to which it is present, is more robustly a feature of larger bank lending. Other cyclical variables do not enter these regressions with consistent signs or significance ranges. Larger U.S. banks had robust trend growth *in local claims* on Latin American countries across the different subperiods of our sample, including in the period following the Argentine crisis. These trends likely reflect strategic expansions by the U.S. banks that entered local markets by setting up branches and subsidiaries. Quarterly cyclical fundamental variables explain very little of the patterns of

11. Appendix tables 2 and 3 explore similar concepts but individually introduce individual bank claims on individual countries in the regressions, instead of claims aggregated by type of bank. While we report specifications using random effects estimators, we also have performed fixed effect regressions, with fixed effects defined over individual banks, yielding similar results. The random effects estimators provide a better description of the trend differences across banks in their claims on different regions.

Table 5.7 **Regressions on U.S. bank cross-border claims, sum across larger banks and sum across smaller banks**

	Trend	Country real GDP	U.S. real GDP	Country real interest rate	U.S. real interest rate
A. Elasticities of response of cross-border claims, 1986:Q1–2001:Q2					
On Europe, smaller banks	**5.52*****	0.04	–1.19	**–0.95***	–0.98
	(1.27)	(0.33)	(1.57)	(0.58)	(1.54)
		0.22	**3.62*****	–0.93	**–2.45***
		(0.33)	(1.11)	(0.58)	(1.51)
On Latin America, smaller banks	–1.44	0.20	1.50	0.00	0.96
	(1.75)	(0.25)	(2.17)	(0.00)	(2.13)
		0.18	0.20	0.00	1.34
		(0.25)	(1.51)	(0.00)	(2.09)
On Europe, larger banks	0.94	0.17	**3.62****	–0.92	0.36
	(1.26)	(0.33)	(1.56)	(0.58)	(1.54)
		0.20	**4.45*****	–0.91	0.11
		(0.33)	(1.10)	(0.58)	(1.51)
On Latin America, larger banks	**9.28****	–0.20	–5.05	–0.99	–5.44
	(3.77)	(0.83)	(4.67)	(1.31)	(4.59)
		0.10	3.04	–0.95	**–7.93***
		(0.83)	(3.28)	(1.31)	(4.49)
B. Elasticities of response of cross-border claims, 2001:Q2–2004:Q3					
On Europe, smaller banks	3.04	**1.27***	4.67	–0.71	4.19
	(2.85)	(0.77)	(3.13)	(2.44)	(2.89)
		1.32*	**7.17*****	–0.29	2.99
		(0.77)	(2.09)	(2.42)	(2.68)
On Latin America, smaller banks	–0.80	0.77	–0.71	–0.12	1.72
	(4.00)	(0.52)	(4.44)	(0.40)	(3.84)
		0.75	–1.36	–0.13	2.00
		(0.52)	(3.05)	(0.40)	(3.61)
On Europe, larger banks	**9.01*****	0.92	–3.52	–0.58	3.83
	(2.85)	(0.77)	(3.13)	(2.44)	(2.89)
		1.06	**3.89***	0.65	0.26
		(0.77)	(2.09)	(2.42)	(2.68)
On Latin America, larger banks	–3.61	0.77	12.69	–0.65	7.78
	(8.52)	(1.87)	(9.42)	(5.48)	(8.46)
		0.71	9.72	–1.06	9.18
		(1.88)	(6.37)	(5.44)	(7.88)

Notes: In panel A, observations = 2,985, adjusted $R^2 = 0.007$, adjusted R^2 (no trend) = 0.009; In panel B, observations = 618, adjusted $R^2 = 0.023$, adjusted R^2 (no trend) = 0.024.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 5.8 **Regressions on U.S. bank local claims, sum across larger banks and sum across smaller banks**

	Trend	Country real GDP	U.S. real GDP	Country real interest rate	U.S. real interest rate
A. Elasticities of response of local claims, 1986:Q1–2001:Q2					
On Europe, smaller banks	**52.29*****	–3.76	–**34.94****	6.95	**33.74****
	(12.91)	(4.32)	(15.9)	(9.37)	(15.64)
		–1.04	9.64	7.06	17.51
		(4.28)	(11.52)	(9.4)	(15.17)
On Latin America, smaller banks	0.10	–6.06	**43.17***	**0.00****	–37.30
	(19.73)	(4.3)	(24.6)	(0.00)	(22.45)
		–6.06	**43.27*****	**0.00****	–37.32
		(4.28)	(16.7)	(0.00)	(22.16)
On Europe, larger banks	7.98	–0.70	10.39	2.38	5.87
	(8.88)	(2.40)	(10.93)	(4.44)	(10.88)
		–0.37	**17.26****	2.39	3.73
		(2.38)	(7.84)	(4.46)	(10.65)
On Latin America, larger banks	**107.3*****	–1.82	–**121.97*****	11.53	**102.4****
	(35.83)	(10.11)	(44.34)	(19.27)	(42.63)
		3.44	–29.95	11.72	69.34
		(10.03)	(31.31)	(19.33)	(41.64)
B. Elasticities of response of local claims, 2001:Q2–2004:Q3					
On Europe, smaller banks	**121.64*****	8.23	**–84.32****	10.75	–22.61
	(33.56)	(8.38)	(37.2)	(27.93)	(34.99)
		9.84	16.94	33.8	**–75.07****
		(8.45)	(24.79)	(27.46)	**(32.17)**
On Latin America, smaller banks	–23.44	–1.28	7.41	0.21	12.72
	(74.78)	(14.69)	(97.29)	(4.64)	(78.11)
		–1.72	–12.56	0.01	20.32
		(14.77)	(74.25)	(4.65)	(74.99)
On Europe, larger banks	8.39	–1.90	0.79	–1.12	–7.20
	(30.67)	(8.24)	(33.67)	(27.25)	(31.78)
		–1.73	7.68	0.47	–10.78
		(8.3)	(22.56)	(26.88)	(29.25)
On Latin America, larger banks	**266.7****	18.60	–184.08	22.05	–44.69
	(112.98)	(24.39)	(135.15)	(62.47)	(116.65)
		22.26	38.32	66.83	–156.53
		(24.55)	(97.42)	(61.48)	(109.7)

Notes: In panel A, observations = 2,079, adjusted R^2 = 0.003, adjusted R^2 (no trend) = 0.004; in panel B, observations = 490, adjusted R^2 = –0.006, adjusted R^2 (no trend) = –0.014.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

foreign exposure expansions in recent years. While cross-border claims have a greater tendency toward comovement with the U.S. cycle, this pattern is not robust across larger and smaller U.S. banks, and we do not observe stable rates of transmission of U.S. or destination market cycles in cross-border or local claims.

As further robustness checks, we consider whether simultaneously including U.S. real GDP and U.S. real interest rates in specifications biases each individual term toward insignificance. Such misspecification might arise, for example, because U.S. real interest rates are endogenous to the business cycle, following a policy reaction function, or because interest rates play a role in investment growth, a key component of GDP fluctuations. Alternative regression specifications using either but not both of the country fundamentals (not shown) do not qualitatively change our conclusions. Likewise, our qualitative findings are robust to the choice of different break point dates post-2000:Q1 and are robust across regression specifications using individual bank data instead of data aggregated across groups of banks.

5.4 Concluding Remarks

This paper has explored recent patterns in the international exposures of U.S. banks. Despite continued consolidation in the financial services industry, reflected in the sharply reduced total number of U.S. banks with foreign exposures, the total foreign exposure of these banks has continued to grow. U.S. bank claims represent a large fraction of foreign claims on Latin American countries, as well as being large relative to local GDP. This role is stronger than in individual European countries, where other European banks tend to dominate foreign claims. Public-sector recipients of these claims account for less than 10 percent of the total cross-border claims on European countries, consistent with how bank lending has been allocated in Europe in recent decades. While a similar ratio now applies for Latin American countries, this represents a sharp departure from allocations in the early 1990s, when the public debt share exceeded 30 percent of U.S. bank claims on the region.

The largest U.S. banks increasingly dominate the total volumes of foreign transactions of U.S. banks, with the composition of transactions evolving differently for larger banks than smaller banks involved in foreign exposures. Cross-border claims have soared with respect to European counterparts but more recently have been flat or declining in the Latin American region. Instead of representing declines in the related foreign exposures of larger U.S. banks, these cross-border claims have been replaced by claims from U.S. bank branches and subsidiaries located in Latin American markets. Such local claims soared after 1997 and later stabilized at high levels, even in the aftermath of the Argentine crisis. Postcrisis declines

in U.S. bank positions in Latin America were more heavily concentrated among the smaller U.S. banks with foreign exposures. Smaller banks' positions have been concentrated in cross-border claims, with these claims exhibiting slower and more volatile overall credit growth than claims emanating from the largest banks.

The final empirical section of the paper uses data on individual U.S. bank foreign exposures to investigate the claim that such banks may be highly cyclical lenders and transmit foreign shocks to local markets. We find evidence of procyclical cross-border flows from U.S. banks to European markets. However, U.S. bank claims on Latin American countries tend to have weak and unstable relationships with both U.S. business-cycle variables and local business variables. We do not present a structural model of portfolio theory as a determinant of the behavior of U.S. banks in selecting markets for extending claims and for determining quantities of these claims. However, our regression results do not bode well for such an application, especially if the application will rely on U.S. and counterpart country GDP growth rates and interest rates.

Overall, we find that cyclical variables explain very little of the movements observed in cross-border claims or the growth in local claims. The evidence certainly does not support strong U.S. business-cycle transmission. Indeed, the lack of importance of local business-cycle variables as determinants of U.S. bank foreign exposures may have direct policy relevance. These claims of foreign banks may dampen the strong procyclicality of overall credit issuance by local financial systems, ultimately reducing the amplitude of local cycles. This hypothesis is worth future investigation. U.S. banks, and in particular the larger U.S. banks that have been heavily involved in local claims, may play a role in stabilizing the business cycles of the foreign host markets.

Appendix A

Data

Banking Exposure Data

U.S. FFIEC 009 and 009a reports are filed quarterly by all U.S. banks with significant exposures.

Background

The FFIEC report was initiated in 1977 as the Federal Reserve (FR) 2036 report and was used to collect data on the distribution, by country, of claims on foreigners held by U.S. banks and bank holding companies. The

Table 5A.1 Data sources

Countries	Source	Type	Currency
GDP			
All but those below	IFS	Nominal	Millions of local currency
The Euro-zone countries, Denmark, Iceland	OECD	Nominal	Millions of local currency
Jamaica (1986)	IFS	Real	Millions of local currency
Argentina (1993), Brazil (1990), Chile (1996), Colombia (1994), Ecuador (1975)	INTL	Real	Millions of local currency
Venezuela	INTL	Nominal	Millions of local currency
Interest rates			
All other countries	IFS	Lending rate (60p)	
Denmark, Finland, Germany, Spain	IFS	Money market rate (60b)	
Argentina, Brazil, Mexico, Greece	IFS	Deposit rate (60l)	
Sweden	IFS	Repurchase rate (60a)	
Austria, Luxembourg	EuroStat	Government long-term Interest rate	
Portugal	OECD	Government long-term Interest rate	
CPI			
All countries	IFS		

FDIC and OCC collected similar information from institutions under their supervision. In March 1984, the FR 2036 became an FFIEC report and was renumbered FFIEC 009. It was revised in March 1986 to provide more detail on guaranteed claims. In 1995, the report was revised to add a schedule for the fair value of derivative contracts, and several items were combined.

Respondent Panel

The panel consists of U.S. commercial banks and bank holding companies holding $30 million or more in claims on residents of foreign countries. Respondents file the FFIEC 009a if exposures to a country exceed 1 percent of total assets or 20 percent of capital of the reporting institution. FFIEC 009a respondents also furnish a list of countries in which exposures were between .75 percent and 1 percent of total assets or between 15 and 20 percent of capital. Participation is required.

Appendix B

Table 5B.1 **Value of foreign exposures of five money center banks relative to the value of foreign exposures of all other U.S. banks, 2004:Q1**

	Cross-border claims	Local claims	Total		Cross-border claims	Local claims	Total
Europe	4.2	3.1	4.1	*Latin America*	3.3	233.6	10.2
Austria	0.9		1.3	Argentina	5.7		13.5
Belgium	1.3	322.8	2.3	Brazil	2.8		7.6
Denmark	0.8	5.5	1.0	Chile	1.8		6.3
Finland	10.7	12.20	11.7	Colombia	3.8		8.2
France	6.9	7.4	5.8	Costa Rica	0.7		1.0
Germany	4.4	379.2	6.2	Ecuador	0.4		1.2
Greece	8.7		22.8	Jamaica	0.9		1.9
	0.7		1.2	Mexico	5.0	160.8	17.5
Ireland	1.9	0.9	2.0	Peru	2.8		9.6
Italy	19.2	313.9	22.2	Uruguay	0.7	37.2	2.2
Luxembourg	32.4	4.5	25.3	Venezuela	1.9		2.5
The Netherlands	5.1	14.6	5.0				
Norway	10.7	2.4	10.5				
Portugal	2.1		4.5				
Spain	10.8	42.3	14.9				
Sweden	2.4	9.7	2.7				
Switzerland	5.7	174.4	5.0				
United Kingdom	3.6	1.7	2.8				

Appendix C

Regressions Using Individual U.S. Bank Data (Bank-Specific Random Effects, Maximum-Likelihood Estimation)

Table 5C.1 Elasticities of response of cross-border claims, 1986:Q1–2001:Q2

	Trend	Country real GDP	U.S. real GDP	Country real interest rate	U.S. real interest rate
On Europe, smaller banks	46.02***	0.79	7.32	2.78	0.25
	(4.52)	(1.09)	(4.64)	(1.99)	(4.49)
		1.72	27.75***	2.94	–6.37
		(1.09)	(4.15)	(1.99)	(4.44)
On Latin America, smaller banks	11.21***	0.37	–0.08	0.00**	–6.87
	(4.71)	(0.6)	(5.14)	(0.00)	(4.87)
		0.29	–5.99	0.00**	–5.17
		(0.6)	(4.25)	(0.00)	(4.8)
On Europe, larger banks	16.79*	–0.94	5.32	–0.83	–3.66
	(9.89)	(1.79)	(8.29)	(3.19)	(8.22)
		–0.7	11.57	–0.79	–5.55
		(1.78)	(7.3)	(3.2)	(8.14)
On Latin America, larger banks	65.51***	2.27	11.78	6.4	8.15
	(14.73)	(3.2)	(17.81)	(5.11)	(17.39)
		3.9	45.17***	6.67	–2.87
		(3.19)	(12.98)	(5.11)	(17.02)

Notes: Positive trend growth to Europe, with even higher trend growth to Latin America. Procyclical lending with U.S. GDP, but not significant. Low interest rates in United States increase claims abroad, but not with statistical significance. In general, destination country interest rates economically unimportant for claims. While statistically significant differences are often observed across banks, we focus our attention on the elasticities reporting instead of the differences reporting. Number of observations = 34,650; number of groups = 89. With constant, log-likelihood = –248690.9, pseudo $R^2 = 0.000$; without constant, log-likelihood = –248735.4; pseudo $R^2 = 0.000$.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 5C.2 Elasticities of response of cross-border claims, 2001:Q3–2004:Q2

	Trend	Country real GDP	U.S. real GDP	Country real interest rate	U.S. real interest rate
On Europe, smaller banks	66.82***	11.17*	27.35	–20.54	–3.99
	(26.12)	(6.19)	(25.24)	(20.14)	(23.7)
		11.93**	67.2***	–11.73	–24.36
		(6.19)	(19.38)	(19.84)	(22.22)
On Latin America, smaller banks	14.38	0.36	–4.73	–0.28	1.48
	(27.91)	(3.46)	(28.58)	(2.45)	(24.89)
		0.38	–3.60	–0.27	0.81
		(3.45)	(21.37)	(2.44)	(23.55)
On Europe, larger banks	171.19***	12.49	–109.2***	58.84*	36.48
	(52.45)	(10.89)	(45.36)	(35.59)	(42.3)
		14.41	–20.3	76.74**	–7.99
		(10.88)	(37.17)	(35.22)	(40.27)
On Latin America, larger banks	–46.11	9.41	172.93*	–99.62*	–42.51
	(91.33)	(18.58)	(99.05)	(54.11)	(89.11)
		7.88	116.3*	–100.42*	–18.1
		(18.52)	(68.31)	(53.35)	(82.65)

Notes: Larger banks reversed their trend of cross-border credit growth to Latin America, while cross-border flows from smaller banks had more pronounced trends. Slowdowns in the United States reinforced this pattern with respect to Latin America, but cross-border claims accelerated instead with respect to European countries. Number of observations = 6,844; number of groups = 62. With constant, log-likelihood = –55020.58, pseudo $R^2 = 0.000$; without constant, log-likelihood = –55029.28, pseudo $R^2 = 0.000$.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 5C.3 Elasticities of response of local claims, 1986:Q1–2001:Q2

	Trend	Country real GDP	U.S. real GDP	Country real interest rate	U.S. real interest rate
On Europe, smaller banks	–0.82	0.53	13.12	2.38	4.71
	(8.85)	(3.86)	(11.01)	(5.33)	(10.39)
		0.47	12.43	2.39	4.94
		(3.8)	(8.09)	(5.33)	(10.09)
On Latin America, smaller banks	–1.02	–1.27	27.57	0.00	–24.61
	(16.28)	(3.43)	(20.16)	(0.00)	(19.06)
		–1.30	26.64**	0.00	–24.37
		(3.41)	(13.81)	(0.00)	(18.69)
On Europe, larger banks	5.58	0.22	6.59	1.50	3.00
	(5.37)	(1.74)	(6.53)	(3.15)	(6.46)
		0.60	11.25***	1.46	1.51
		(1.7)	(4.75)	(3.15)	(6.30)
On Latin America, larger banks	1.51	2.48	11.47	3.27	41.63
	(25.98)	(8.73)	(32.18)	(11.13)	(30.57)
		2.13	13.28	3.31	41.34
		(8.60)	(22.85)	(11.13)	(29.82)

Notes: None of the portfolio terms appear statistically significant in the local claims regressions for the first fifteen years of the data sample. Number of observations = 5,501; number of groups = 25. With constant, log-likelihood = –36787.49, pseudo $R^2 = 0.000$; without constant, log-likelihood = –36788.48, pseudo $R^2 = 0.000$.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

Table 5C.4 Elasticities of response of local claims, 2001:Q3–2004:Q2

	Trend	Country real GDP	U.S. real GDP	Country real interest rate	U.S. real interest rate
On Europe, smaller banks	110.16***	0.75	–59.58	10.17	–15.49
	(44.21)	(10.2)	(37.96)	(30.19)	(34.97)
		2.55	–8.24	18.72	–41.66
		(10.19)	(32.76)	(30.06)	(33.57)
On Latin America, smaller banks	–27.14	1.19	8.59	0.28	10.76
	(96.58)	(16.22)	(118.04)	(6.63)	(93.41)
		0.98	–20.81	–0.11	21.27
		(16.25)	(94.32)	(6.56)	(91.58)
On Europe, larger banks	7.71	–2.92	35.26	11.26	–4.55
	(43.46)	(9.53)	(30.13)	(24.81)	(28.25)
		–2.78	38.92	12.17	–6.45
		(9.53)	(25.66)	(24.53)	(27.12)
On Latin America, larger banks	238.14*	2.95	–135.57	8.5	–47.01
	(135.6)	(28.25)	(149.28)	(65.73)	(125.22)
		6.5	–11.15	25.04	–106.19
		(28.23)	(117.71)	(65.35)	(120.56)

Notes: Number of observations = 1,154; number of groups = 18. With constant, log-likelihood = –8446.80, pseudo R^2 = 0.000; without constant, log-likelihood = –8449.85, pseudo R^2 = 0.000.

***Significant at the 1 percent level.

*Significant at the 10 percent level.

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Comment Matías Braun

Linda Goldberg presents an interesting analysis of the international exposure of U.S. banks since the mid-1980s. The very rich data set allows a more direct look at how this key component of cross-country flows behaves across a number of important dimensions. Touching upon the debate over the costs and benefits of foreign lending, special attention is paid to the cyclical properties of these exposures. Her stylized facts of U.S. banks' foreign claims may be summarized as follows:

- Across countries, U.S. banks' foreign claims are concentrated in Europe, where they primarily take the form of cross-border claims. Claims on Latin American countries, where the local component is much larger than in Europe, comprise a much smaller fraction of total exposures. Foreign claims in Latin America are dominated by U.S. banks' claims.
- Foreign exposures have been growing strongly since the early 1990s, even relative to total banking system assets in the United States. As time passes, bank-to-bank and public borrowing are being displaced by lending to nonbank borrowers. During the first half-decade of the twenty-first century, claims of small banks on Latin America, particularly the cross-border component, exhibited large reductions.
- Claims of large banks and local claims tend to be relatively more

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stable. The volatility of claims does not appear to be much larger in Latin America than in Europe.
- U.S. banks' foreign claims are not robustly related to either U.S. or client country business cycle variables such as GDP growth and interest rates. This pattern does not seem to be significantly different when comparing across regions, bank size, and type of claims. If anything, claims on Latin American countries tend to be *less procyclical* than those on European nations.

The background question of this paper may be what role foreign bank lending plays in the transmission and amplification of shocks. The major strengths of the paper are, first, that it addresses the issue by taking a *direct* look at what very rich data on U.S. bank foreign claims can say, and second, that it does do so in a relatively model-free way. The analysis shows that the volatility and cyclical properties of foreign bank lending are not at all easy to explain. In particular, the findings contrast sharply with the idea that foreign lending is critical in the understanding of the high volatility present in emerging markets. Given the nature of the data and the simple approach, the results are hard to pass by, opening the door for new, interesting questions that the microdata approach may be able to answer.

International capital integration remains a contentious issue within both the academic and the policy communities. The evidence of a positive effect of capital account openness on growth is far from unquestionable. On the one hand, Quinn (1997), Klein and Olivei (2000), Edwards (2001), and Bekaert, Harvey, and Lumsdaine (1999) have all argued that an empirical link between growth and openness is indeed present and relevant in economic terms. However, Grilli and Milesi-Ferretti (1995), Rodrik (1998), and Kraay (1998) have questioned this finding. Even if capital account openness turns out to be positively associated with *average* growth rates and causality can be established, allowing free flow of capital may not be welfare enhancing if it brings about instability and the possibility of serious crises. While Demirguc-Kunt and Detragiache (1999) argue that this is indeed the case empirically, Glick and Hutchison (2005) not only cast doubt on that finding but argue that the data actually show that openness helps avoid crises. Also, the effect that capital flows may have on the recipient countries seems to be quite heterogeneous. Of course the discussion is not limited to academia. The potential effect of cross-country capital flows on volatility and the deepening of internal disequilibria has been one of the reasons capital controls were imposed in otherwise liberal, outward-oriented countries such as Chile.

This is, of course, not the first time the role of foreign lending has been studied. The effects of foreign bank lending on the host country have attracted a lot of attention in academic and policy circles. On the bright side, aside from being a source of scarce capital, foreign banks are viewed as

helping to smooth country-specific shocks, and even changing local institutions in a way that improves the efficiency of credit allocation (Levine 1996). On the negative side, they are seen as conduits for the amplification and international transmission of shocks. This last mechanism seems to be real, at least in some contexts. Peek and Rosengren (2000), Van Rijckeghem and Weder (2001), and Galindo, Micco, and Powell (2004) provide interesting empirical evidence in this respect. Studies like these, however, have important shortcomings in that in general they either represent very particular situations in which the aggregate magnitude of the effects is unclear or base their conclusions on indirect evidence. One of the biggest strengths of Goldberg's paper is to tackle the issues at hand by taking a direct look at the microdata and asking how foreign banks (in this case, U.S.-based ones) actually behave. To this purpose the author has compiled (in Goldberg 2002) a very rich set of data consisting of a time series panel of individual U.S. banks that report exposures to foreign markets to U.S. regulators. Without getting into a particular mechanism the paper asks very generally whether the behavior of the claims of these banks on Latin America differ from those on European countries in terms of volatility and cyclicality. The evidence turns out to be unsupportive of the view that foreign lending has an important role in explaining the higher volatility that Latin American economies exhibit. None of the patterns one would expect under that view seem to be found in the data in a clear or robust way. Foreign exposures on Latin American countries are not significantly more volatile than those on European ones, nor are cross-border claims relative to local ones. It is not clear that smaller, supposedly less informed banks exhibit higher volatility either. In terms of cyclical behavior, foreign claims on Latin America (especially of the cross-border type) are not more procyclical with respect to local factors.

Given the generality of the analysis and the data used, it is difficult to argue against these findings. However, this generality does not come for free, in the sense that it can mask important features of the credit market that average out in the portfolio-type specification used. Consider, for instance, the effect of foreign lending in the local credit market, depicted in figure 5C.1.

In an integrated market, agents face a perfectly elastic supply of funds at the global real interest rate. Changes in the local demand for credit or investment opportunities trigger quick and large responses in the form of foreign capital flows. In this case, foreign claims would be procyclical with respect to GDP growth if this is thought to be a proxy for the state of the demand for credit. Unless one is prepared to argue that these changes in the demand for credit do not reflect fundamentals in a consistent way (not an uncommon assertion), it is clear that volatility per se is not necessarily bad, since swings in foreign claims reflect rapid adjustment to new fundamentals rather than fickle reactions. Even if that were the prevalent case,

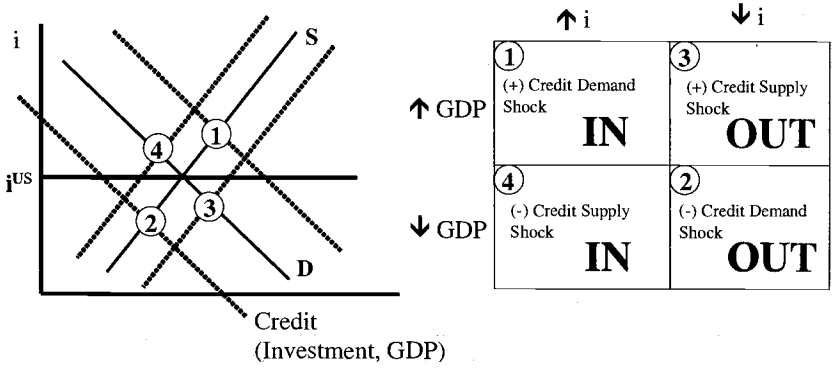

Fig. 5C.1 Foreign lending and the local credit market

one still needs to consider that the reaction of foreign capital to local credit supply shocks also manifests itself as volatility. In this case the countercyclical nature would actually reduce overall volatility.

The paper bases most of its conclusions on the comparison between the behaviors of claims on European vis-à-vis Latin American countries. A more primitive question to ask is whether foreign lender claims are different from domestic lender ones in any significant dimension. Figure 5C.1 suggests that a more appropriate benchmark would be the behavior of local banks in each country. The point is that one can explore further the main issues in this paper by distinguishing credit supply from credit demand shocks, and by looking at how foreign claims correlate with local credit (or GDP growth) under different states. The simplest extension of the empirical model in the paper would be to allow the coefficients of GDP growth to vary with the level of (risk-adjusted) local interest rates via the inclusion of interactive terms. A second step would allow for asymmetries in the effect of each variable. Extensions such as these could shed greater light on the desirability of foreign participation in local credit markets under different assumptions about the extent to which local market conditions reflect fundamentals rather than *animal spirits.* For instance, it could be the case that foreign claims are only responsive to positive credit demand shocks (box 1 in second panel of figure 5C.1). Under the assumption that those situations reflect primarily credit booms, the evidence would be supportive of the negative view of foreign bank participation. The conclusions and policy implications would be quite different if foreign flows were particularly responsive to local supply shocks (boxes 3 and 4) and there was indication that these are the result of deficiencies in local institutions.

Other (small) issues in the paper deserve some attention. First, the dependent variable is not net capital flows; it also includes revaluations. Under interest rate parity, movements of interest rates and exchange rates are

linearly related. This implies a mechanical relationship between the dependent and independent variables in the paper's empirical model. Also, deviations from interest parity are probably not unrelated to the volatility or cyclicality of foreign claims, which makes interpretation of differences across Europe and Latin America troublesome. Allowing for a richer dynamic structure in the empirical model could be helpful. The static approach runs into some difficulties. For instance, while interest rates are forward looking, GDP growth is not. Also, only unexpected movements should matter, unless there are important adjustment costs.

When the claims of all banks are aggregated, the endogeneity of local GDP and interest rates makes it even more problematic to interpret the results in a causal way. Once the analysis focuses on bank-level data (particularly for small banks), the interpretation of the results can shift from simple correlations to causality. When computing significance levels, the potential correlation of the many observations for each bank and country should be taken into account.

Finally, the micro approach Goldberg's paper suggests opens a number of ways in which the literature on capital flows and capital controls can be expanded and deepened. Exploring specific mechanisms in the context of bank-level data allows easing the endogeneity and omitted-variable bias concerns typically present in macro studies. For instance, the within-country, cross-bank dimension of the data should be informative of whether herd behavior is indeed a typical outcome, as would be expected under informational asymmetries. Contagion may be assessed by exploiting the within-bank, cross-country data. Bank characteristics can inform on learning and its effect on the decision to focus or diversify operations. The interaction of these characteristics with the host-country dimension of the data speaks to the importance of relationships, and the choice of whether to lend across borders or to set up local operations.

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II

Country Studies