

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

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Abstract

This paper documents the changing international exposures of U.S. bank balance sheets since the mid-1980s. U.S. banks have foreign positions heavily concentrated in Europe, with more volatile flows to other regions of the world. In recent years some cross-border claims on Latin American countries have declined, while claims extended locally by the branches and subsidiaries of U.S. banks have grown. The foreign exposures of larger U.S. banks tend to be less volatile than claims of smaller banks, and locally-issued claims tend to be more stable than cross-border flows. Business cycle variables have mixed influence on U.S. bank cross-border and local claims. While the cross-border claims of U.S. banks on European customers tend to be procyclical, claims on Latin American customers are not robustly related to either U.S. or country-specific business cycle variables. U.S. banks do not appear to be strong conduits for transmitting U.S. cycles to these smaller markets, and may instead serve a positive role in stabilizing the amplitude of foreign country cycles.

Keywords: Bank, Foreign exposure, claims, derivatives, business cycle, interest rates

JEL Classification: F3, G2

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I. 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 who undermine local financial markets. The debate on whether foreign lenders are fickle continues 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,¹ the form of these exposures (cross border claims and local claims, i.e. claims extended by the affiliates of U.S. banks located in

¹ The use of 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.

foreign markets), valuations of derivative positions held, some maturity composition details, and broad categories of recipients of U.S. claims by destination market.

Four interesting findings arise in our current examination of data which spans 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 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, either in 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 since the 1980s, with fewer banks overall, and the remaining banks 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 these exposures were nonetheless attributable to a few large banks. Lending by the larger banks also is less volatile than lending by the smaller banks.

Our findings of weak and variable cyclical transmission from the United States 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 Van Ricjkeghem and Weder (2001), who find more transmission when banks have a presence across multiple markets.³ U.S. banks do not appear as 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

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

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 II 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 III 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 IV discusses the implications of our results, on balance emphasizing that foreign banks may contribute to aggregate stability in emerging markets.

II. 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 US territories and possessions, or its 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 (one year and under, 1 to 5 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.

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 make be fickle lenders in times of local crises, sharply reducing credit extension to local markets. We do not find general support for this argument in U.S. bank data.

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 in local claims denominated in both foreign and local currencies. As shown in the first data column of Table 1, 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.

Table 1 U.S. and Other Foreign Bank Claim Shares in Local Economies, 2003

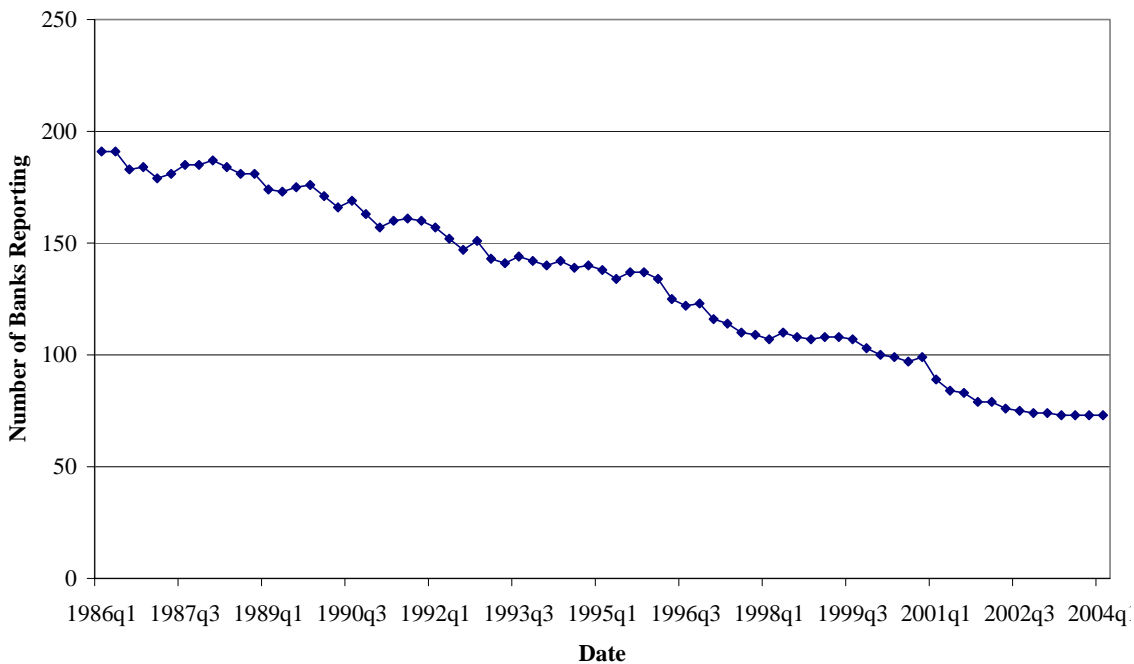
	Ratio of Total Foreign Claims to Country GDP	Ratio of U.S. Claims to Total Foreign Claims	Ratio of Total U.S. Claims to Country GDP
Europe	6.37	0.06	0.26
Austria	2.25	0.05	0.12
Belgium	3.87	0.06	0.22
Denmark	2.12	0.09	0.19
Finland	1.46	0.04	0.06
France	1.83	0.05	0.10
Germany	1.90	0.08	0.15
Greece	2.31	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

* 2003 data, except where indicated by an asterisk. Venezuela (2002 for all ratios), Sweden (2000 for total foreign claims ratios only), and Iceland, Norway, Colombia, and Jamaica (2002 for total foreign claims ratios only). Source: BIS Quarterly Review, BIS Consolidated Banking Statistics for All Reporting Banks; and BIS Consolidated Banking Statistics for U.S.-owned bank claims. For this chart, 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.

As shown in the second data column, the U.S. accounts for a relatively small portion of the foreign claims on European countries, typically close to 5 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 U.S. within these foreign claims, from Costa Rica at less than 20 percent of total foreign claims to Mexico, where this ratio exceeds 95 percent.

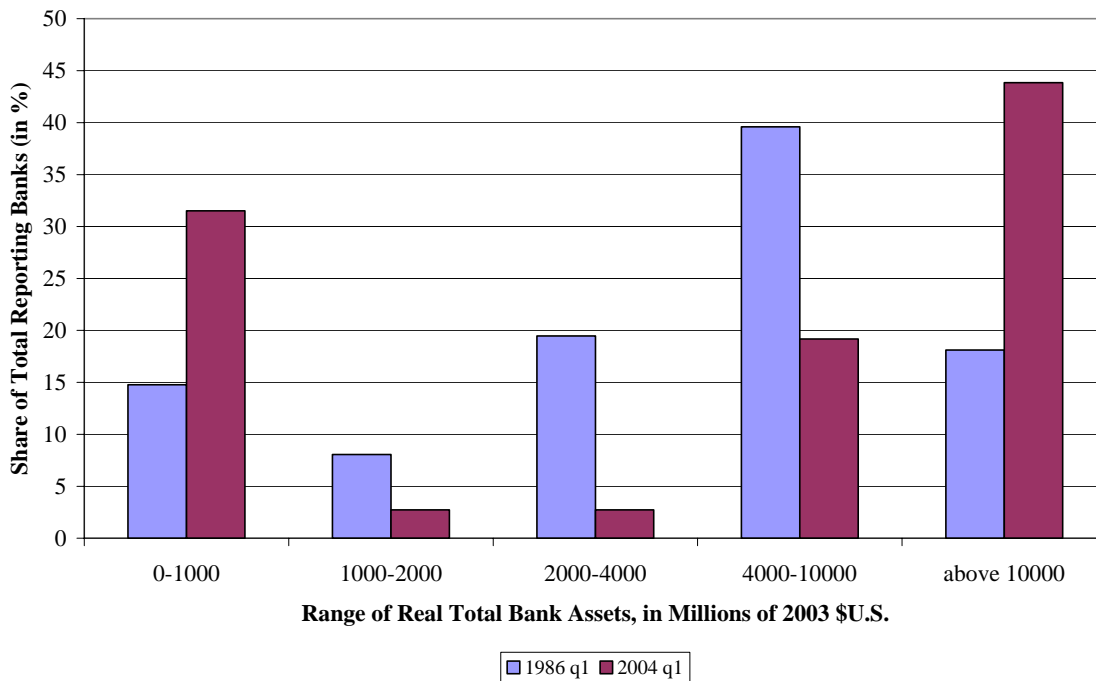
Consolidation in U.S. Banks with Foreign Exposures. Industry consolidation, observed elsewhere across banking and financial services industries, is clearly evident in the changing number of banks (or bank holding companies) with exposures to foreign markets. Chart 1 shows the number of U.S. banks that have filed foreign exposure reports each quarter since 1986. Starting from highs 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.

Chart 1: Number of Banks Reporting Exposure data 1986-2004



As the number of banks declined, the size distribution of remaining banks changed considerably over time. Chart 2 shows the share of reporting banks in five different asset size ranges, contrasting size distributions for 1986q1 and 2004q1.⁵ 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 well under \$1 billion, while more than 60 percent of banks have total assets in excess of \$10 billion.

Chart 2: Size Distribution of U.S. Banks Reporting Foreign Exposures

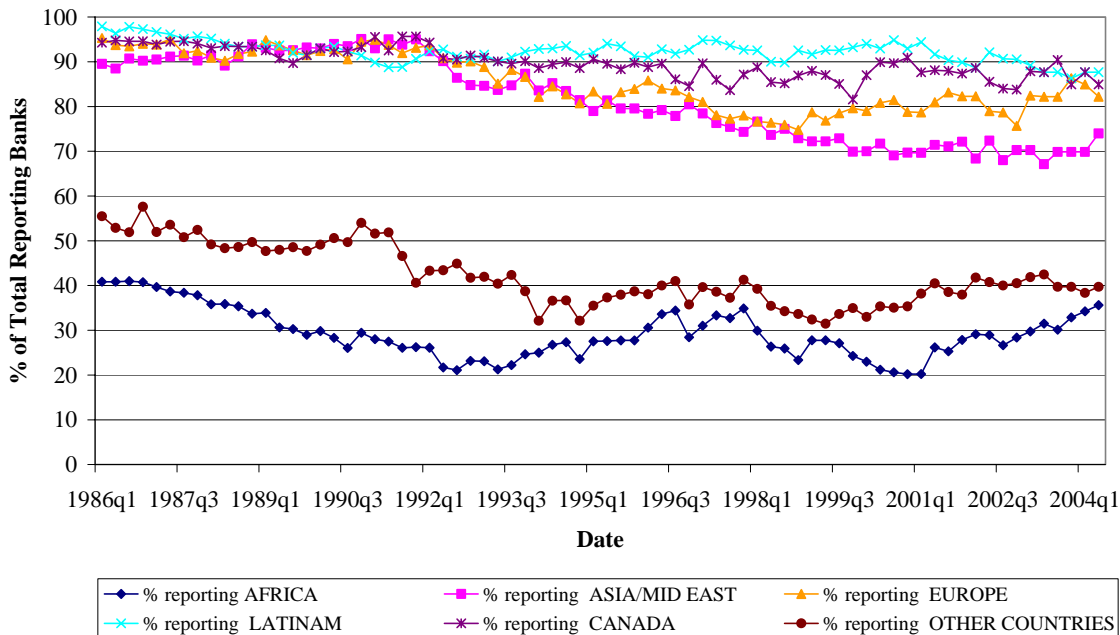


As the total number of banks declined, so did the number of U.S. banks with exposures across different foreign regions. Among Europe, Canada, Asia and the Middle East, Africa, and Latin America, Latin America has the most U.S. banks reporting exposure (66 banks in mid 2004), with similar numbers participating in European and Canadian markets. Asia and the Middle East (AME) have 56 banks, while about 30 U.S. banks have some claims on Africa and Other Countries.

⁵ The ranges use 2003q1 dollars as the base year.

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/Middle East (AME) in the 1980s through the early part of the 1990s. As shown in Chart 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 the Asia/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.

Chart 3: Percent of Total Reporting Banks that Report Exposure to Each Region



Very few banks have foreign exposures only in one region. The number of banks exclusively focused on Latin America was 3 or 4 through the 1980s, rising to 8 sporadically in the early 1990s, and declining again to few specialty operations. Typically, between 1 and 3 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.

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 Chart 4 for cross-border claims and Chart 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 in 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 Chart 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 US average ratios of bank claims on Latin America. These average claims on Latin American counterparties fluctuated substantially through 2000 before sharply declining between mid 2001 through 2004 when our data end. These ratios shown in Chart 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.

Chart 4: Total Value of Cross-Border Claims, by Region

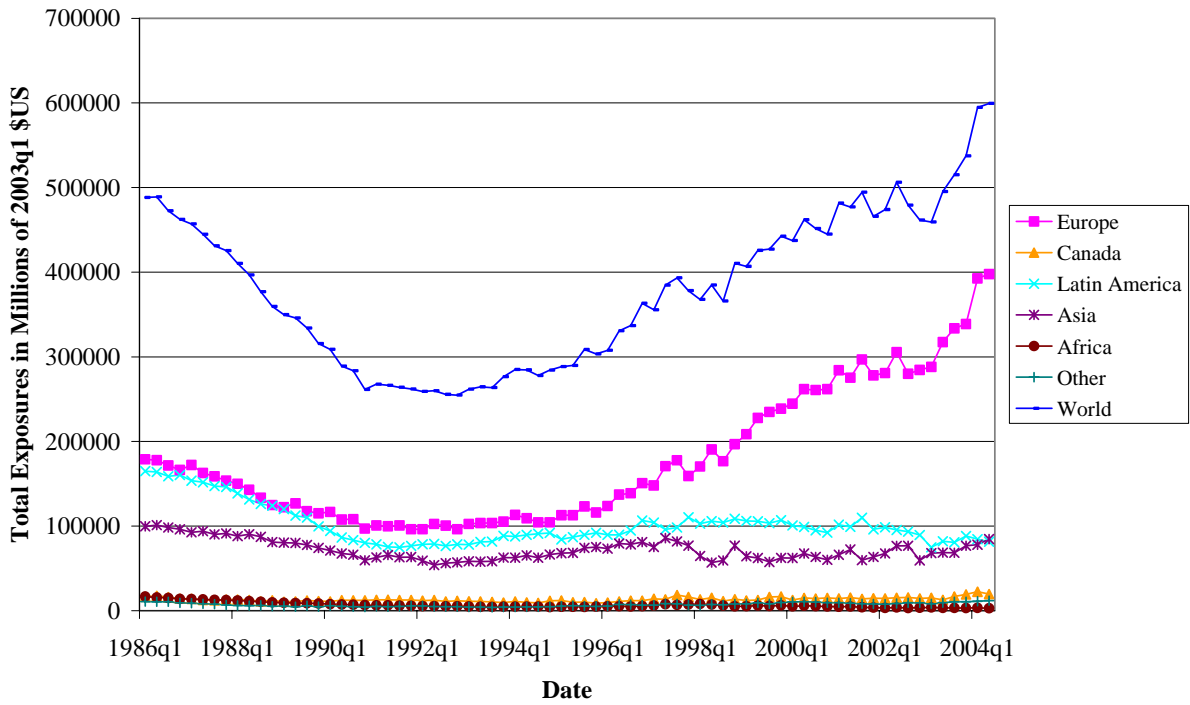
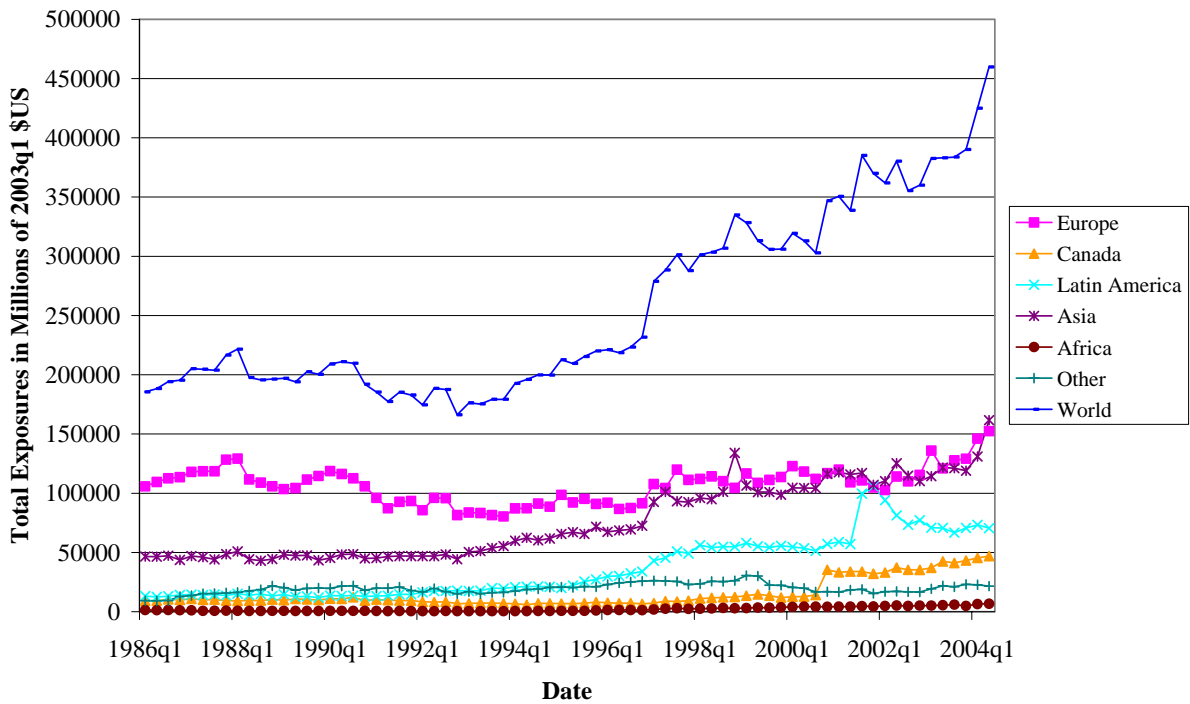


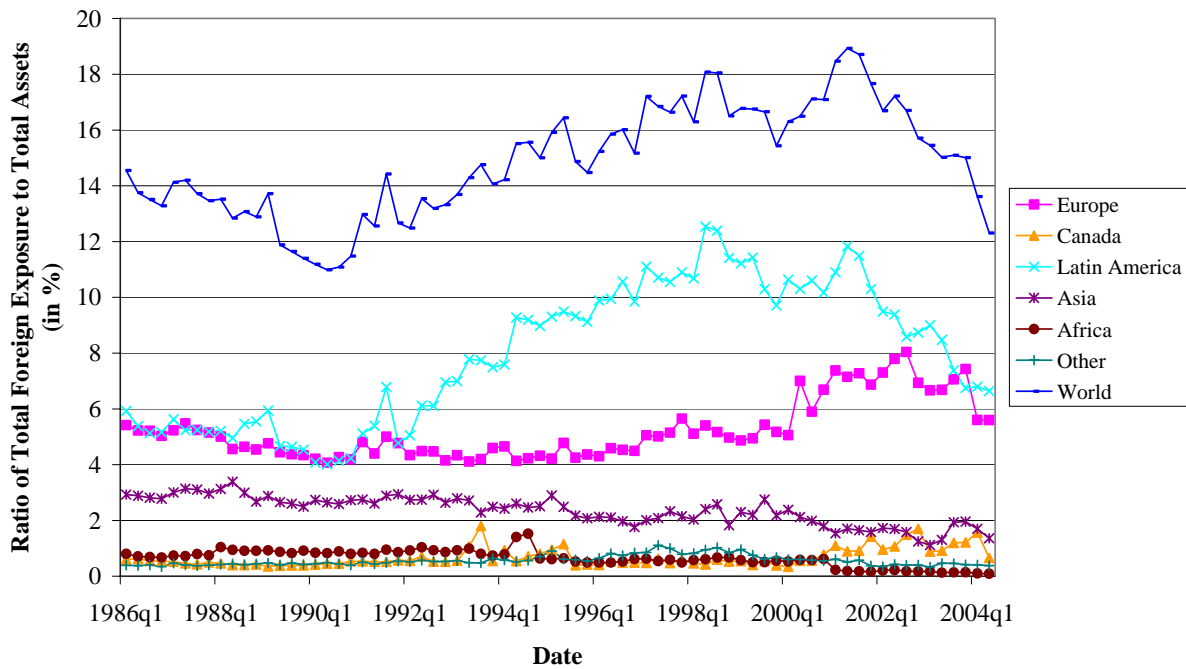
Chart 5: Total Value of Local Claims, by Region



Our examination of U.S. bank exposure data leads to more nuanced conclusions that some other studies of international capital flows which 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 (2002) had argued 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.

Chart 6: Average Bank-Specific Ratios of Regional Foreign Exposure to Bank Total Assets



The Composition of U.S. Bank Foreign Clients. The exposure data shows the relative importance of banks, public sector borrowers, and all other borrowers in U.S. bank cross-border claims on each country. Charts 7 and 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 increasingly 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 also were characterized by a declining relative importance of bank-to-bank lending. Even more dramatic were the reductions in the share of cross-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 non-bank private borrowers has continued to rise over past decades, reaching almost 60 percent in 2003 and 2004. By 1999 private non-bank activity displaced bank-to-bank lending as the primary client in U.S. bank cross-border claims on Latin America customers.

Chart 7: Breakdown of European Cross-Border Claims by Client

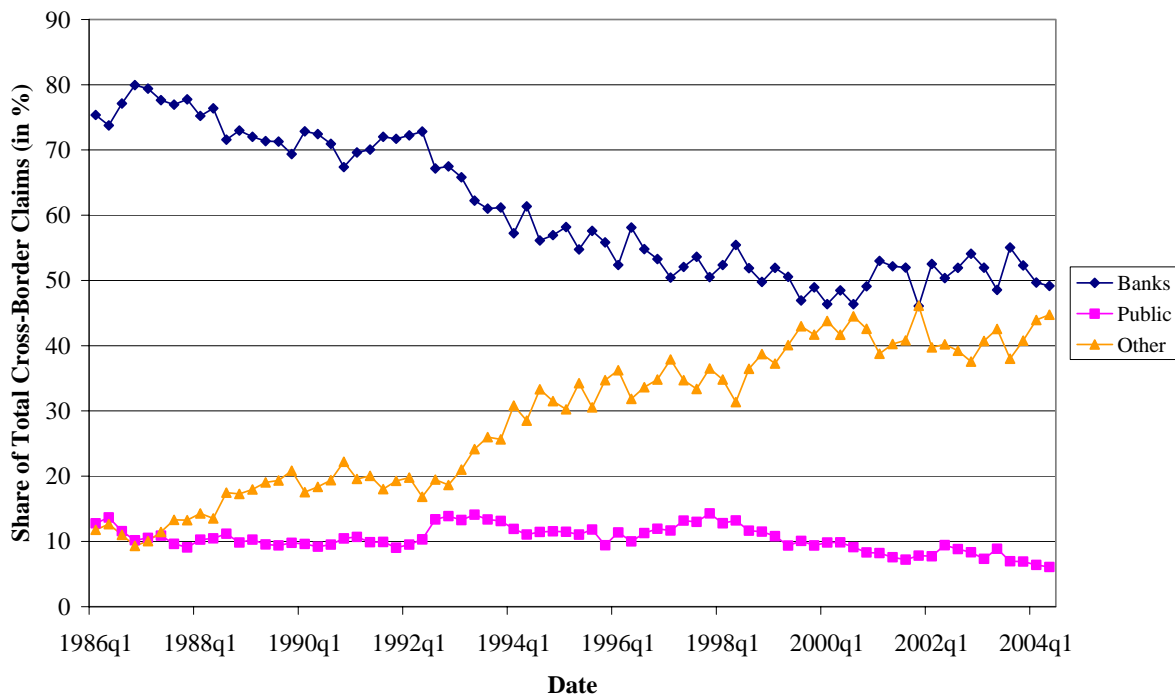
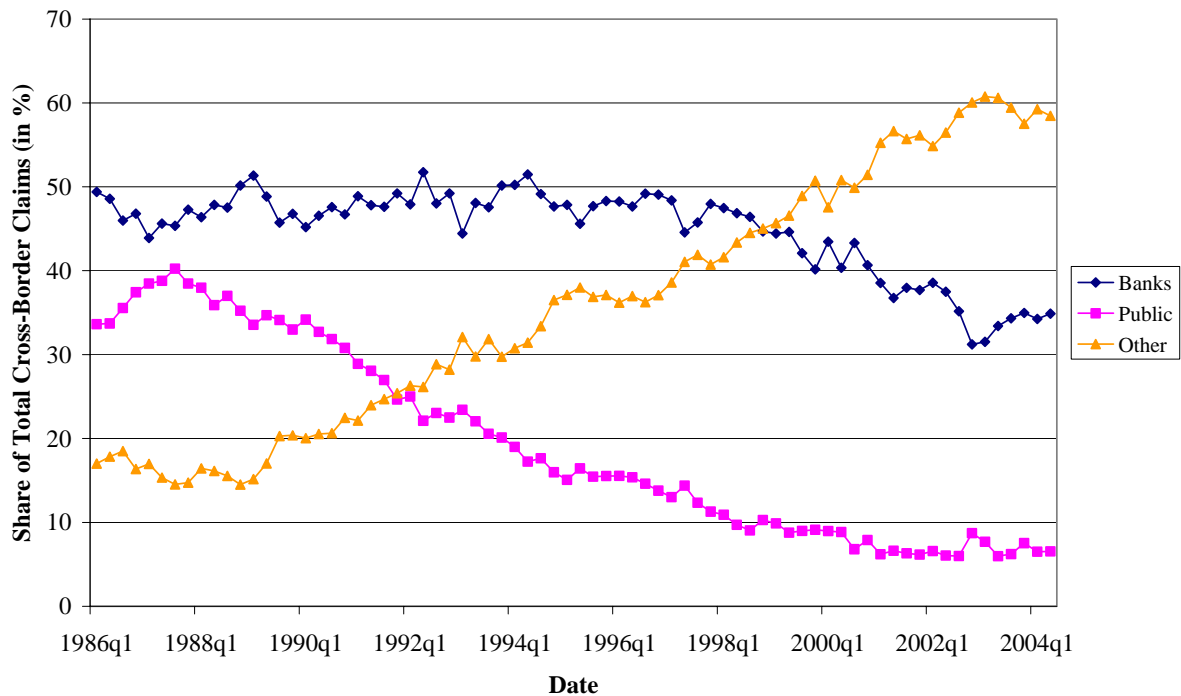


Chart 8: Breakdown of Latin American Cross-Border Claims by Client



III. U.S. Bank Foreign Exposures and Business Cycle Transmission

International banks entering into foreign markets can potentially change the transmission of international shocks to local markets (Peek and Rosengren 1997, 2000a) and spur contagion across markets (vanRijckeghem 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

⁶ The top five money center banks are Bank of America Corp., Bank One Corp., Taunus Corp., J.P. Morgan Chase Bank, Citigroup. Taunus is the US holding company subsidiary of Deutsche Bank. These banks are, in part, formed 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

other parts of our analysis exploit the rich time-series panel nature of the bank exposure data⁷.

III.1 Exposures to European and Latin American countries

Europe accounts for 40 percent of total U.S. bank foreign exposures (Table 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 countries 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 3, the volatility of cross border claims in recent data (2000Q1 through 2004Q2),⁸ is similar for Europe and Latin American regions. Iceland and 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 claims volatility is driven by recent purchases of

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 Corporation, J.P. Morgan Chase & Co., Wells Fargo & Company, Wachovia Corporation, Bank One Corporation, US Bancorp, National City Corporation, Suntrust Banks, Inc.

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

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.

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.

Table 2 Foreign Exposure of U.S. Reporting Banks, 2004q1
(Country Share in Total U.S. Bank Foreign Exposures)

	Cross Border Claims	Local Claims	Total		Cross Border Claims	Local Claims	Total
<i>Europe</i>	25.55	8.91	39.98	<i>Latin America</i>	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
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				

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

Table 3 Volatility of Foreign Exposures of U.S. Banks

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 2000q1-2004q2, in 2003q1 millions of U.S. dollars)

	Cross Border Claims	Local Claims	Total		Cross Border Claims	Local Claims	Total
<i>Europe</i>	<i>0.15</i>	<i>0.11</i>	<i>0.13</i>	<i>Latin America</i>	<i>0.17</i>	<i>0.23</i>	<i>0.15</i>
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	Colombia	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
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				

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 (5 money center) vis-a-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 4 a value greater than one 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 one implies

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

Table 4 Relative Volatility of U.S. Bank Foreign Exposures: Top 5 U.S. Banks and Other U.S. Reporting Banks Compared. 2000q1-2004q2

	Cross Border Claims	Local Claims	Total		Cross Border Claims	Local Claims	Total
<i>Europe</i>	0.84	0.38	0.60	<i>Latin America</i>	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
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				

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

The preponderance of cells with values less than one in the left-most panel of Table 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 both in 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.

III.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 rates⁹, 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, $GGDP_t^{us}$). The (log) exposure of bank i to country c at time t , Exp_t^{ic} , is expressed as:

$$Exp_t^{ic} = a_0^i + a_1^i t + a^r + a_2^r t + b \cdot i_t^c + c \cdot i_t^{us} + d \cdot GGDP_t^c + e \cdot GGDP_t^{us} \quad (1)$$

plus a random error term. In this specification the terms $a_0^i + a_1^i t$ allow for bank-specific variation in mean and trend-growth in their foreign exposures. The terms $a^r + a_2^r t$ 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).

$$\Delta Exp_t^{ic} = a_1^i + a_2^r + b \cdot \Delta i_t^c + c \cdot \Delta i_t^{us} + d \cdot \Delta GGDP_t^c + e \cdot \Delta GGDP_t^{us} \quad (2)$$

⁹ The data used, in general, are country lending rates (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.

This basic testing specification states that the percentage change in a U.S. bank's claims on any country has: 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 1986Q1 to 2004Q2 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, 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 individual bank exposures, alternatively applying fixed effects estimators or random effects estimators to time-series panels. Hausman 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.

Table 5 Estimation Intervals, Data Types, and Parameter Stability Tests

Sample Periods	Types of Foreign Exposure	Parameter tests
<ul style="list-style-type: none"> • 1986:Q1 through 2004:Q2 • 1986:Q1 through 2001:Q2 • 2001:Q3 through 2004:Q2 	<ul style="list-style-type: none"> • Total Foreign Exposure • Cross-Border Claims • Local Claims 	<ul style="list-style-type: none"> • Equality across types of banks (five money center vs. all others) • Equality across destination markets (European vs. Latin American countries) • 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.

Regression Results

The panels of Table 6 present regression results using aggregates across all U.S. banks in their foreign exposures to individual countries. The top panel presents findings for cross-border claims. The lower panel presents findings for the local claims of U.S. banks. There are 18 European countries and 11 Latin American countries represented in each data quarter. The top panel shows that macroeconomic variables are significant drivers of U.S. bank *cross-border* claims on European countries. More specifically, these claims exhibit procyclicality vis-a-vis US GDP growth and negative correlations with destination market interest rates (as indicated by boldface type). However, these cyclical forces have low explanatory power for the overall regression analysis, and are particularly weak as determinants of the pattern of cross-border flows from U.S. banks to their Latin American counterparties.

¹⁰ For these regressions, crisis dates include: 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 6 Regressions on U.S. Bank Foreign Exposures, with exposures aggregated across all U.S. reporting banks

Elasticities of response of Cross-Border Claims , with and without trend terms					
	trend	Country real GDP	U.S. real GDP	Country real interest rate	U.S. real interest rate
1986:Q1-2001:Q2					
European countries	1.02 (0.94)	0.00 (0.24)	2.6** (1.16)	-1.27*** (0.43)	-0.60 (1.14)
		0.02 (0.24)	3.50*** (0.82)	-1.27*** (0.43)	-0.88 (1.11)
Latin American countries	-2.11 (1.30)	0.10 (0.19)	2.08 (1.61)	0.00 (0.00)	-1.41 (1.58)
		0.08 (0.19)	0.19 (1.12)	0.00 (0.00)	-0.86 (1.54)
2001:Q2-2004:Q2					
European countries	5.12** (2.18)	1.27** (0.59)	-0.79 (2.41)	-1.13 (1.87)	2.42 (2.22)
		1.35** (0.59)	3.42** (1.61)	-0.43 (1.86)	0.40 (2.06)
Latin American countries	-2.83 (3.07)	0.20 (0.4)	0.66 (3.41)	0.08 (0.31)	3.90 (2.95)
		0.14 (0.40)	-1.64 (2.34)	0.06 (0.31)	4.89* (2.77)
comments	1986:Q1-2001:Q2: Observations = 1492, adj. R ² = 0.012, adj. R ² (no trend) = 0.015 2001:Q2-2004:Q2: Observations = 309, adj. R ² = 0.039, adj. R ² (no trend) = 0.031				
Elasticities of response of Local Claims					
	trend	Country real GDP	U.S. real GDP	Country real interest rate	U.S. real interest rate
1986:Q1-2001:Q2					
European countries	7.82 (4.9)	-0.93 (1.32)	9.81 (6.03)	2.49 (2.45)	5.93 (6.0)
		-0.61 (1.31)	16.55*** (4.31)	2.51 (2.45)	3.83 (5.86)
Latin American countries	10.77 (6.73)	-1.05 (0.98)	1.50 (8.35)	0.00 (0.00)	3.55 (8.11)
		-0.91 (0.98)	11.24** (5.72)	0.00 (0.00)	0.81 (7.94)
2001:Q2-2004:Q2					
European countries	11.7 (9.31)	0.22 (2.52)	-4.77 (10.26)	4.03 (8.33)	-13.46 (9.71)
		0.46 (2.51)	4.84 (6.83)	6.34 (8.12)	-18.46** (8.85)
Latin American countries	7.48 (12.7)	-1.01 (1.66)	-6.54 (14.11)	-0.34 (1.28)	5.72 (12.21)
		-0.85 (1.64)	-0.46 (9.62)	-0.27 (1.27)	3.12 (11.39)
comments	1986:Q1-2001:Q2: Observations = 1425, adj. R ² = -0.001, adj. R ² (no trend)=0.009 2001:Q2-2004:Q2: Observations = 299, adj. R ² = -0.015, adj. R ² (no trend)=-0.005				

*, **, *** indicates statistical significance at the 10, 5, 1 level.

In the bottom panel of Table 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 7 and 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 29 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 sub-periods 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 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

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.

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.

Table 7 Regressions on U.S. Bank Cross-Border Claims, sum across Larger Banks and sum across Smaller Banks

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	5.52***	0.04	-1.19	-0.95*	-0.98
	(1.27)	(0.33)	(1.57)	(0.58)	(1.54)
On Latin America, Smaller Banks	-1.44	0.22	3.62***	-0.93	-2.45*
	(1.75)	(0.33)	(1.11)	(0.58)	(1.51)
On Europe, Larger banks	0.94	0.20	1.50	0.00	0.96
	(1.26)	(0.25)	(2.17)	(0.00)	(2.13)
On Latin America, Larger Banks	9.28**	0.18	0.20	0.00	1.34
	(3.77)	(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)
On Latin America, Larger Banks	9.28**	0.20	4.45***	-0.91	0.11
	(3.77)	(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)
comments		0.10	3.04	-0.95	-7.93*
		(0.83)	(3.28)	(1.31)	(4.49)
Number of Observations = 2985, adjusted R ² = 0.007, adjusted R ² (no trend)=0.009					

Elasticities of response of Cross-Border Claims, 2001:Q2-2004:Q3					
	trend	Country real GDP	U.S. real GDP	Country real interest rate	U.S. real interest rate
On Europe, Smaller banks	3.04	1.27*	4.67	-0.71	4.19
	(2.85)	(0.77)	(3.13)	(2.44)	(2.89)
On Latin America, Smaller Banks	-0.80	1.32*	7.17***	-0.29	2.99
	(4.00)	(0.77)	(2.09)	(2.42)	(2.68)
On Europe, Larger banks	-0.80	0.77	-0.71	-0.12	1.72
	(4.00)	(0.52)	(4.44)	(0.40)	(3.84)
On Latin America, Larger Banks	9.01***	0.75	-1.36	-0.13	2.00
	(2.85)	(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)
On Latin America, Larger Banks	-3.61	1.06	3.89*	0.65	0.26
	(8.52)	(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)
comments		0.71	9.72	-1.06	9.18
		(1.88)	(6.37)	(5.44)	(7.88)
Number of Observations = 618, adjusted R ² = 0.023, adjusted R ² (no trend)=0.024					

*, **, *** indicates statistical significance at the 10, 5, 1 level.

Table 8 Regressions on U.S. Bank Local Claims, sum across Larger Banks and sum across Smaller Banks

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	52.29*** (12.91)	-3.76 (4.32)	-34.94** (15.9)	6.95 (9.37)	33.74** (15.64)
		-1.04 (4.28)	9.64 (11.52)	7.06 (9.4)	17.51 (15.17)
On Latin America, Smaller Banks	0.10 (19.73)	-6.06 (4.3)	43.17* (24.6)	0.00** (0.00)	-37.30 (22.45)
		-6.06 (4.28)	43.27*** (16.7)	0.00** (0.00)	-37.32 (22.16)
On Europe, Larger banks	7.98 (8.88)	-0.70 (2.40)	10.39 (10.93)	2.38 (4.44)	5.87 (10.88)
		-0.37 (2.38)	17.26** (7.84)	2.39 (4.46)	3.73 (10.65)
On Latin America, Larger Banks	107.3*** (35.83)	-1.82 (10.11)	-121.97*** (44.34)	11.53 (19.27)	102.4** (42.63)
		3.44 (10.03)	-29.95 (31.31)	11.72 (19.33)	69.34 (41.64)
comments	Number of Observations = 2079, adjusted R ² = 0.003, adjusted R ² (no trend)=0.004				

Elasticities of response of Local Claims, 2001:Q2-2004:Q3					
	trend	Country real GDP	U.S. real GDP	Country real interest rate	U.S. real interest rate
On Europe, Smaller banks	121.64*** (33.56)	8.23 (8.38)	-84.32** (37.2)	10.75 (27.93)	-22.61 (34.99)
		9.84 (8.45)	16.94 (24.79)	33.8 (27.46)	-75.07** (32.17)
On Latin America, Smaller Banks	-23.44 (74.78)	-1.28 (14.69)	7.41 (97.29)	0.21 (4.64)	12.72 (78.11)
		-1.72 (14.77)	-12.56 (74.25)	0.01 (4.65)	20.32 (74.99)
On Europe, Larger banks	8.39 (30.67)	-1.90 (8.24)	0.79 (33.67)	-1.12 (27.25)	-7.20 (31.78)
		-1.73 (8.3)	7.68 (22.56)	0.47 (26.88)	-10.78 (29.25)
On Latin America, Larger Banks	266.7** (112.98)	18.60 (24.39)	-184.08 (135.15)	22.05 (62.47)	-44.69 (116.65)
		22.26 (24.55)	38.32 (97.42)	66.83 (61.48)	-156.53 (109.7)
comments	Number of Observations = 490, adjusted R ² = -0.006, adjusted R ² (no trend)=-0.014				

*, **, *** indicates statistical significance at the 10, 5, 1 level.

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 2000q1, and robust across regression specifications using individual bank data instead of data aggregated across groups of banks.

IV. 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. Post-crisis 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.

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Data Appendix.

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		

Banking exposure data

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

Background: The report was initiated in 1977 as the 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 FDIC and OCC collected similar information from institutions under their supervision. In March 1984, the FR 2036 became a Federal Financial Institutions Examination Council (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 3/4 of 1 percent and 1 percent of total assets or between 15 and 20 percent of capital. Participation is required.

Appendix Table 1 Value of Foreign Exposures of 5 Money Center Banks relative to the Value of Foreign Exposures of All Other U.S. Banks, 2004q1

	Cross Border Claims	Local Claims	Total		Cross Border Claims	Local Claims	Total
<i>Europe</i>	<i>4.2</i>	<i>3.1</i>	<i>4.1</i>	<i>LatinAm</i>	<i>3.3</i>	<i>233.6</i>	<i>10.2</i>
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
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 Table 2 Cross-Border Claim Regressions using individual U.S. Bank Data (Bank-specific random effects, maximum-likelihood estimation)

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*** (4.52)	0.79 (1.09)	7.32 (4.64)	2.78 (1.99)	0.25 (4.49)
		1.72 (1.09)	27.75*** (4.15)	2.94 (1.99)	-6.37 (4.44)
On Latin America, Smaller Banks	11.21*** (4.71)	0.37 (0.6)	-0.08 (5.14)	0.00** (0.00)	-6.87 (4.87)
		0.29 (0.6)	-5.99 (4.25)	0.00** (0.00)	-5.17 (4.8)
On Europe, Larger banks	16.79* (9.89)	-0.94 (1.79)	5.32 (8.29)	-0.83 (3.19)	-3.66 (8.22)
		-0.7 (1.78)	11.57 (7.3)	-0.79 (3.2)	-5.55 (8.14)
On Latin America, Larger Banks	65.51*** (14.73)	2.27 (3.2)	11.78 (17.81)	6.4 (5.11)	8.15 (17.39)
		3.9 (3.19)	45.17*** (12.98)	6.67 (5.11)	-2.87 (17.02)
comments	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 U.S. 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 = 34650, 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				
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*** (26.12)	11.17* (6.19)	27.35 (25.24)	-20.54 (20.14)	-3.99 (23.7)
		11.93** (6.19)	67.2*** (19.38)	-11.73 (19.84)	-24.36 (22.22)
On Latin America, Smaller Banks	14.38 (27.91)	0.36 (3.46)	-4.73 (28.58)	-0.28 (2.45)	1.48 (24.89)
		0.38 (3.45)	-3.60 (21.37)	-0.27 (2.44)	0.81 (23.55)
On Europe, Larger banks	171.19*** (52.45)	12.49 (10.89)	-109.2*** (45.36)	58.84* (35.59)	36.48 (42.3)
		14.41 (10.88)	-20.3 (37.17)	76.74** (35.22)	-7.99 (40.27)
On Latin America, Larger Banks	-46.11 (91.33)	9.41 (18.58)	172.93* (99.05)	-99.62* (54.11)	-42.51 (89.11)
		7.88 (18.52)	116.3* (68.31)	-100.42* (53.35)	-18.1 (82.65)
comments	Larger banks reversed their path of trend 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 = 6844, 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.				

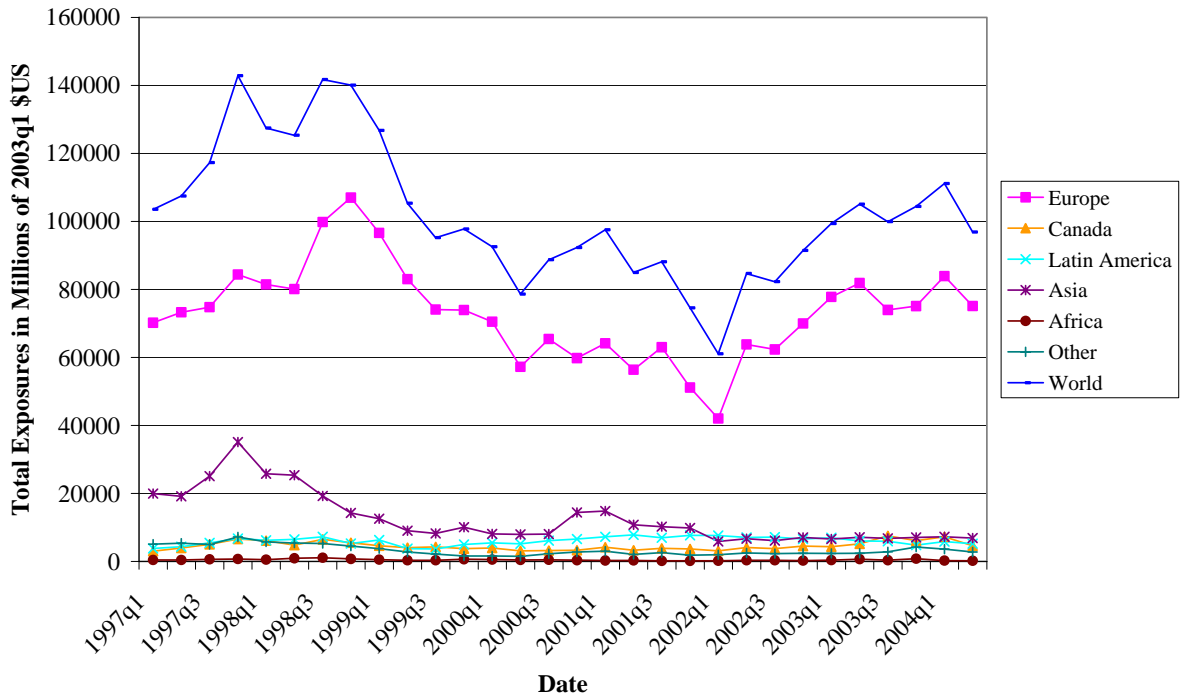
*, **, *** indicates statistical significance at the 10, 5, 1 level.

**Appendix Table 3 Local Claims Regressions using individual U.S. Bank Data
(Bank-specific random effects, maximum-likelihood estimation)**

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 (8.85)	0.53 (3.86)	13.12 (11.01)	2.38 (5.33)	4.71 (10.39)
		0.47 (3.8)	12.43 (8.09)	2.39 (5.33)	4.94 (10.09)
On Latin America, Smaller Banks	-1.02 (16.28)	-1.27 (3.43)	27.57 (20.16)	0.00 (0.00)	-24.61 (19.06)
		-1.30 (3.41)	26.64** (13.81)	0.00 (0.00)	-24.37 (18.69)
On Europe, Larger banks	5.58 (5.37)	0.22 (1.74)	6.59 (6.53)	1.50 (3.15)	3.00 (6.46)
		0.60 (1.7)	11.25*** (4.75)	1.46 (3.15)	1.51 (6.30)
On Latin America, Larger Banks	1.51 (25.98)	2.48 (8.73)	11.47 (32.18)	3.27 (11.13)	41.63 (30.57)
		2.13 (8.60)	13.28 (22.85)	3.31 (11.13)	41.34 (29.82)
comments	None of the portfolio terms appear statistically significant in the local claims regressions for the first 15 years of the data sample. Number of Observations = 5501, 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				
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*** (44.21)	0.75 (10.2)	-59.58 (37.96)	10.17 (30.19)	-15.49 (34.97)
		2.55 (10.19)	-8.24 (32.76)	18.72 (30.06)	-41.66 (33.57)
On Latin America, Smaller Banks	-27.14 (96.58)	1.19 (16.22)	8.59 (118.04)	0.28 (6.63)	10.76 (93.41)
		0.98 (16.25)	-20.81 (94.32)	-0.11 (6.56)	21.27 (91.58)
On Europe, Larger banks	7.71 (43.46)	-2.92 (9.53)	35.26 (30.13)	11.26 (24.81)	-4.55 (28.25)
		-2.78 (9.53)	38.92 (25.66)	12.17 (24.53)	-6.45 (27.12)
On Latin America, Larger Banks	238.14* (135.6)	2.95 (28.25)	-135.57 (149.28)	8.5 (65.73)	-47.01 (125.22)
		6.5 (28.23)	-11.15 (117.71)	25.04 (65.35)	-106.19 (120.56)
comments	Number of Observations = 1154, 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				

*, **, *** indicates statistical significance at the 10, 5, 1 level.

Appendix Chart 1: Total Value of Derivative Claims, by Region



Appendix Chart 2: Average Across Banks of Ratios of Total Cross Border Claims to Total Assets, by Region

