ESSAYS ON FOREIGN BANKING AND INTERNATIONAL SHOCK TRANSMISSION

By

Daniel Joseph Belton

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Economics—Doctor of Philosophy

2016

ABSTRACT

ESSAYS ON FOREIGN BANKING AND INTERNATIONAL SHOCK TRANSMISSION

By

Daniel Joseph Belton

Foreign banking has grown considerably over the past two decades, as has interest in its costs and benefits by academics and policymakers alike. The flow of bank capital and liquidity across borders can transmit a domestic shock globally or mitigate the effects a domestic shock. In this dissertation, I contribute to the literature on the costs and benefits of foreign banking in three chapters.

In the first chapter, I analyze the responses of banks in the United States to a funding shock generated by the 2011 FDIC assessment base change. Following the shock, insured banks found wholesale funding more costly, while uninsured branches of foreign banks enjoyed cheaper access to these funding sources. Using quarterly bank balance sheet statements and hand-matched borrowers and lenders from a syndicated loan-level database, we create a novel dataset with rich borrower and lender data. Uninsured banks which faced a relatively positive shock accumulated more reserves, but extended fewer loans and became more passive in the syndicated loan deals in which they participated. This contradicts much of the literature on internal capital markets of banks which find that foreign banks can insulate an economy from a domestic shock by extending loans.

The second chapter addresses the issue of inadequate bank-level data capturing global foreign banking exposures. Despite the rising importance and growing interest in global foreign banking, comprehensive bank-level datasets measuring cross-border banking remain elusive. I construct a novel dataset covering foreign-owned banks between the United States and the European Union, Latin America, and Japan. My dataset contains detailed balance sheet information for individual depository institutions operating abroad. I compare the coverage of my dataset to that of an existing global foreign bank ownership database to show that my dataset improves in its coverage of pertinent foreign banks. I discuss some trends in foreign banking by U.S.-owned banks in Europe, Latin America, and Japan and banks operating in the U.S. owned by institutions in these regions.

The third chapter analyzes the dataset compiled in chapter 2 as well as a complementary aggregate country-level dataset in order to examine foreign banking trends. Specifically, these datasets inform several stylized facts regarding the drivers between foreign banking between the United States and three regions: Europe, Latin America, and Japan. This level of data is necessary to distinguish between three main types of foreign banking: direct cross-border lending, the establishment or acquisition of foreign subsidiary banks, and the establishment of foreign branches.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

Bank Reserve and Lending Responses to Funding Shocks amidst High Liquidity

1.1 Introduction

The flow of capital within multinational banks has seen growing interest over the past fifteen years alongside a rise in global banking activity. Capital and liquidity allocation across borders can determine the extent to which a bank transmits a domestic shock internationally or insulates an economy from a shock by maintaining credit supply. Foreign banks have been shown to propagate shocks originating abroad by recalling capital to their home offices, contracting credit supply in host countries in which they operate [for instance, Peek and Rosengren (2000)]. On the other hand, foreign banks have also been shown to maintain credit amidst a negative shock to a host country in which it operates [for instance, Cetorelli and Goldberg (2008)]. In this paper we contribute to this literature by exploiting a shock to bank funding in the United States in a unique environment of large excess reserves in the banking system, with interest paid on these reserves. Using a hand-matched dataset from the market for syndicated loans, we show that foreign banks which undergo a relatively favorable funding shock react by increasing their holdings of reserves, but that this does not lead to an expansion in lending, as previous literature might suggest. In fact, we find evidence of decreased lending by this group of banks on both the intensive and extensive margins. That is, the group of banks which accumulate more reserves as a result of a favorable funding shock both became more passive as lenders in the deals in which they participated, and participated in fewer deals.

In April 2011, the Federal Depository Insurance Corporation (FDIC) enacted a change in the base upon which insured U.S. banks are assessed. The legislation was passed as a part of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank) in response to the financial crisis of 2008. As such, the

FDIC assessment base change sought to act as a corrective tax on large, complex institutions and wholesale funding. Specifically, whereas banks were previously assessed a percentage of domestic deposits, they would now be assessed based upon their total liabilities; wholesale funding became part of the assessment base.

Banks generally fund their assets through a variety of liabilities. Deposits are the primary and traditional source of bank funding. In contrast, wholesale funding refers to a variety of borrowings, usually done in large quantities and often on a short-term basis. Repurchase agreements, federal funds, and foreign deposits are a few common sources of bank wholesale funding. Figures B.1 and B.2 show the composition of the balance sheets of small and large banks, respectively.

All U.S. depository institutions are required to have FDIC insurance, but a group of around two-hundred branches of foreign banks in the U.S. are not. These foreign bank branches may not accept retail deposits from U.S. citizens and residents, but take wholesale deposits and engage in a variety of other banking activities. These branches make up the majority of foreign banking assets in the United States, and most of their lending takes the form of syndicated commercial and industrial (C&I) loans.[1]

We view this policy change as a heterogeneous funding shock. Insured banks now face higher costs associated with raising non-depository funds. The traditional lending channel of monetary policy works through this mechanism: if, following a contractionary shock, banks cannot substitute lost deposits with other liabilities such as certificates of deposits (CDs) or money market funds, the shock is transmitted to the asset side of their balance sheets. The result is generally a decrease in lending. In the current setting, insured banks face a higher cost associated with wholesale funding. Facing a higher cost associated with liabilities, the negatively affected banks may respond by increasing their deposits or reducing assets.[2] We use a difference-in-differences approach to show that the funding shock indeed had an effect on balance sheet allocation. Large uninsured branches of foreign banks accumulated a disproportionate share of reserves in the U.S. banking system as the Federal Reserve engaged in quantitative easing, a byproduct of which was a large stock of excess reserves in the banking

[1] In the first quarter of 2011, roughly two-thirds of all foreign banking assets were held in uninsured branches and roughly half of all loans extended by uninsured branches were categorized as C&I loans, compared to 10% for insured foreign institutions.

[2] An insured bank with a relatively high level of deposits could actually face lower costs. For the sake of explanation here, we consider a bank facing higher costs. This is generally true of larger insured banks.

system. The finding that cash balances of foreign banks rose disproportionately following the funding shock is not novel. Others, for example, Kreicher, McCauley, and McGuire (2013), have discussed and attributed the finding to this policy change. We continue with this difference-in-differences approach in analyzing bank lending responses to the policy change. We analyze lending activity of these banks as recorded on their quarterly balance sheet statements, and through a syndicated loan-level database, DealScan. We find that these uninsured branches of foreign agencies reduced their lending, despite benefitting from improved access to wholesale funding. Similar to the "lazy banks" which reduced their screening and monitoring of borrowers following an influx of credit, first described by Manove, Padilla, and Pagano (2001), this group of banks faced with greater access to the high levels of interest-bearing liquidity, reduced their lending in favor of holding reserves.

1.1.1 Literature

This paper relates to several strands of literature. First and foremost include papers analyzing international shock transmission through the internal capital markets of global banks. This literature is related to that on the lending channel, highlighted by Kashyap and Stein (1995), Peek and Rosengren (1995), and Kashyap and Stein (2000). Each of these papers show the transmission of monetary policy operating through the banking sector. Kashyap and Stein (1995) show that large banks are more resilient than small banks in withstanding a contractionary monetary policy shock. Peek and Rosengren (1995) identify the lending channel through bank capital positions, and Kashyap and Stein (2000) find that banks with less liquid assets are more affected by monetary policy shocks.

Cetorelli and Goldberg (2008) argue that the feature that insulates large banks from monetary policy shocks is not their size, as Kashyap and Stein (1995) posit, but rather the existence of foreign offices. They show that large global banks react less to monetary policy shocks than banks of similar size which operate only in one country, and attribute this to their ability to manage funds between their home and foreign offices. Of course, this insulation from monetary policy shocks domestically has consequences internationally. As the home office of a multinational bank draws funds from its related foreign offices, the negative shock may be transmitted to those countries in which the bank operates.

Research on the effects of bank funding shocks extends beyond those caused by monetary policy. Peek and Rosengren (1997) traced the impact of a bank funding shock to real economic effects abroad through constrained bank credit. In the early 1990s, the Japanese stock market collapsed, negatively affecting the capital positions of Japanese banks. The authors utilize the fact that U.S. branches of Japanese banks share a balance sheet with their parent organization, meaning that their foreign branches' balance sheets were identically affected by the stock market decline. The authors conclude that a percentage point decline in the parent's risk-based capital ratio resulted in a decline in total loans at U.S. branches of nearly 4 percent of assets, which translates into roughly a 6 percent decline in total loans. Peek and Rosengren (2000) show that this Japanese bank shock had real effects on the United States economy through construction activity and commercial real estate.

Cetorelli and Goldberg (2012b) look at exposure to asset-backed commercial paper as a proxy for balance sheet stress during the financial crisis. From 2006-2009, they estimate the change in internal borrowing by U.S. branches of foreign banks from the parent organization in the first stage and examine heterogeneity across these branches to establish the bank's commitment to the local market. In the second stage, they trace the initial shock to the parent bank's balance sheet to a decline in lending in the U.S.

Analyses of loan-level data fall into another relevant strand of literature which takes advantage of the detail offered by the ability to control for characteristics of borrowers, lenders, and loans. We use the identification strategy suggested by Khwaja and Mian (2008) in our baseline specification. The authors argue that when a single firm is borrowing from two lenders, any change in lending from one of the lenders but not the other can be interpreted as a change in credit supply, not demand. This methodology implies using borrower fixed effects to compare how loan growth rates vary across lenders to the same borrower.

Correa, Sapriza, and Zlate (2013) undertake a similar study to this one, in which they examine the effect of the European debt crisis in 2011 on U.S. branches of European banks. Among their main findings is that the fall in large time deposits held by these uninsured branches reduced their willingness to extend loans. The branches were only able to partly offset this decline in funding through internal borrowing. The authors then examine the syndicated loan market and find that these branches decreased their lending on the extensive

margin, but find no effect on the intensive margin. That is, the branches reduced the number of borrowers to whom they lent, but did not adjust the amount lent to each borrower.

In perhaps the most closely related paper, De Haas and Van Horen (2012b) analyze international lending in response to the financial crisis. Specifically they seek to identify the various drivers of cross-border and foreign bank lending in the market for syndicated loans. Notably, cross-border lending tends to be substantially more stable in some countries than others. The authors emphasize the importance of access to borrower information during a crisis as a key determinant of lending. Banks reduced their cross-border lending less to countries that were geographically close during and after the crisis. De Haas and Van Horen attribute the negative effect of distance on lending stability to the difficulty of assessing the credit worthiness of distant borrowers.

The remainder of the paper is structured as follows. Section 1.2 describes in detail the FDIC assessment base change and how it may be interpreted as a bank funding shock. Section 1.3 provides background foreign banks in the United States, interest on reserves, and hypotheses regarding the effects of the FDIC assessment base change. Section 1.4 describes the data we use. Sections 1.5 and 1.6 describe our methodology and results. Section 1.7 concludes.

1.2 FDIC Assessment Base Change

Dodd-Frank was signed into law July 2010 with the intention of enhancing the FDIC's ability to manage its Deposit Insurance Fund (DIF). The law enabled the FDIC to use greater tools to "maintain a positive fund balance even during a banking crisis and [maintain] moderate, steady assessment rates throughout economic credit cycles." Dodd-Frank raised the target reserve ratio, called the designated reserve ratio (DRR), and set a timetable by which the FDIC was to achieve specified increasing ratios through 2020. The act also required that the effect of this increased fund ratio not raise the assessment for insured depository institutions with total consolidated assets of less than $10 billion. Another significant change dealt with the fund's payment of dividends. In the past, when the reserve ratio of the DIF reached 1.35% or higher, the FDIC was required to distribute dividends to its member institutions. Following the change, the FDIC would indefinitely suspend dividends, but could instead lower assessment rates in order to avoid the fund becoming unnecessarily large.

The most important change, at least as it pertains to this study, came in the law's requirement that the FDIC redefine the assessment base used for calculating deposit insurance assessments. The FDIC previously assessed insured depository institutions based on domestic deposits. Beginning April 1, 2011, the FDIC would assess institutions based on average consolidated total assets minus tangible equity. The amendment went into effect for the second quarter of 2011, but a Notice of Proposed Rulemaking was released six months prior, on October 19, 2010. The FDIC set the assessment rate such that the change would be revenue neutral. That is, they targeted the rate schedule such that the fund would receive the same revenue following the assessment base change as before. Therefore, the rate of assessment fell following Dodd-Frank because the base of assessment widened to include all liabilities, not just deposits.

As before, the FDIC assigns insured banks a Risk Category ranging from I through IV (Category I corresponds the lowest risk and Category IV to the highest risk institutions) based on capital and supervisory evaluations. The rates of assessment depend on the category into which an insured bank falls, ranging from 5 basis points (0.05%) for Risk Category I to 35 basis points for a bank in Risk Category IV. Insured banks are required to compute their total consolidated assets as a daily average over the quarter. In order to avoid imposing transition costs on smaller depository institutions, those with total consolidated assets less than $10 billion are required to report assets each Wednesday rather than every day. The final rule defines tangible equity as Tier 1 Capital.[3] Because equity tends to fluctuate less than assets do, the averaging period is set to be monthly, and only at the end of the quarter for smaller institutions. Each quarter, institutions are assessed a certain percentage, based on their risk category, of average total consolidated assets less tangible equity. From these base assessment rates, the FDIC offers several adjustments. Insured banks can achieve a lower total assessment rate if they have long-term unsecured debt outstanding. The final rule eliminated an upward adjustment on assessment rates for institutions with secured debt outstanding. As before, institutions that qualify as a banker's bank or a custodial bank face lower assessment rates.

[3] Tier 1 capital is a definition of bank capital established by the Basel Committee. The measure consists of core capital (common stock and retained earnings) and preferred stock.

The most consequential change in the FDIC's assessment on insured banks came in their treatment of large and highly complex institutions. Banks in each of these categories use a scorecard to calculate their assessment rates in a considerably more complicated manner than for the institutions discussed above. Large institutions are defined as those with at least $10 billion in total assets. The definition of a highly complex institution is less straightforward, but generally is a bank with total assets of $50 billion or more that is controlled by a U.S. holding company with $500 billion or more in total assets. The scorecards used to calculate assessment rates for the two groups are similar. The calculation takes into account two measures, a performance score and a loss severity score, which are combined and converted into an assessment rate. The performance score has three components: a weighted average CAMELS rating (based on capital adequacy, assets, management capability, earnings, liquidity, and sensitivity), the ability to withstand asset-related stress, and the ability to withstand funding-related stress. The CAMELS rating is constructed based on the six confidential criteria listed above. The measure of ability to withstand asset-related stress is a function of a bank's Tier 1 leverage ratio, a concentration measure (which looks at the higher-risk assets), the ratio of core earnings to total assets, and a measure of credit quality. The ability to withstand funding-related stress takes into account the ratio of core deposits to total liabilities and balance sheet liquidity. These three measures combine to make up the performance score which ranges from 0 to 100. The loss severity score measures the relative magnitude of potential losses to the FDIC in the event of failure; it is constructed to fall between 0.8 and 1.2. The product of the performance score and the loss severity score yields an institution's total score, which maps to an assessment rate. The major difference between the scorecard for large institutions and that for highly complex ones is that the latter includes various measures of counterparty risk.

There are a few finer points in the final rule which warrant discussion here. Insured branches of foreign banks are given no special treatment.[4] They are to compute their assets and equity based on the consolidated branch without including those of a foreign parent bank. In the case that a parent bank and its subsidiary are both FDIC insured, the two entities are to compute their assessments separately, based only on the assets and

[4] The FDIC Improvement Act of 1991 disallowed U.S. branches of foreign banks from obtaining FDIC insurance, but allowed existing insured branches to retain their insurance. There were nine such branches at the time of the assessment base change.

equity of the individual institution. This implies that internal borrowing within a banking organization is assessed in the same way external borrowing would be. Within Risk Category I there is a degree of variance for the base rate, which depends upon the weighted average CAMELS component ratings and certain financial ratios.

The exact assessment rates are not publicly disclosed, but some general implications can be gleaned from this policy change. First, it should be viewed as a corrective tax on both large depository institutions and those which rely heavily on short-term wholesale funding. As mentioned, Dodd-Frank did not mandate a change in the assessment base to generate additional revenue for the fund, but rather to shift the burden of cost. FDIC Chairman Martin Gruenberg testified that "as Congress intended, the change in the assessment base will generally shift some of the overall assessment burden from community banks to the largest institutions." The FDIC estimated that "aggregate premiums paid by institutions with less than $10 billion in assets will decline by approximately 30%, primarily due to the assessment base change." Whalen (2011) estimates the assessment base for the ten largest banks increased from 33% to 576%.

Second, it is evident that this policy change had a real effect on the behavior of banks. McCauley and McGuire (2014) focus on reserve holdings as a result of the policy. They argue that the "seemingly small regulatory differences" between insured banks and uninsured branches of foreign banks have incentivized these branches to hold a disproportionate share of reserves, not by reducing loans or other assets, but by recalling funds lent internally. These consolidated non-U.S. banks raised dollars to finance their cash holdings through increased deposits and swapping of other currencies, the authors claim. Afonso et al. (2013) reiterate the point that the FDIC assessment change has had a material effect on U.S. bank funding costs. Particularly, they note that foreign banks have increasingly borrowed in the federal funds market in order to finance their holdings of reserves at the Fed.

Important for the purpose of this study is the effect of this policy on wholesale funding rates. Kriecher, McCauley, and McGuire (2013) examine four overnight money market rates: the effective federal funds rate, Libor, Eurodollar, and repurchase agreements. They find that these rates all fell immediately on the first of April, 2011. In fact, they note that trading was "especially turbulent" on the date of the policy change (Figure

B.3). Figure B.4 depicts the commercial paper rate, another instrument banks use for short-term funding. They cite estimates from informed observers that the FDIC change cut overnight rates by 5-10 basis points. This fact yields two important implications of the policy change. First, the demand for borrowing in this market by insured institutions fell. Second, this policy change can also be viewed as a positive funding shock for the uninsured institutions, as their funding costs on the wholesale market decreased.

1.3 Background

1.3.1 Foreign Banks during the Financial Crisis

Details regarding the regulation of foreign banks in the United States are presented in Appendix A. Much has been written on internal liquidity management of foreign banks in the United States during the financial crisis. It is well-documented [for instance by Cetorelli and Goldberg (2011)] that U.S.-based foreign banks disproportionately reduced their lending during the crisis. A significant retrenchment in global banking occurred during the crisis, ending a steady period of growth over the previous two decades. Cetorelli and Goldberg (2012b) estimate that the mean-sized U.S. branch of a foreign bank increased its net internal borrowing by about 12% during the Great Recession. At the same time, loan supply from these banks fell. Cerutti and Claessens (2013) look at the reasons that cross-border lending fell in the wake of the Lehman crisis in 2008 and during the Euro crisis of 2011. They note that while cross-border lending fell substantially during these two episodes, lending by local affiliates fell only modestly. The authors compare the relative importance of three possible reasons for the fall in bank lending across borders: deteriorating balance sheets of global banks, weak loan demand, and the changing and uncertain regulatory landscape. The paper uses the BIS cross-border banking dataset, which contains bilateral cross-border net claims by country as well as local affiliates' claims. Using the borrower fixed effects identification strategy suggested by Khwaja and Mian (2008), they find that certain balance sheet measures like non-performing loans or risk-weighted assets were insignificant predictors of lending, but market-based measures were significant determinants. They argue that affiliates' lending was used as a substitute for cross-border lending during the two episodes of stress, suggesting that some affiliates faced barriers to moving resources across borders.

Correa, Sapriza, and Zlate (2011) examine the internal capital markets of global banks and note that both lending and internal borrowing by U.S. branches of foreign banks tend to be procyclical with the U.S. economy. Further, the lending of these branches tends to be more volatile than that of U.S. subsidiaries of foreign banks. In a later paper, Correa, Sapriza, and Zlate (2013) look at responses of U.S. branches of foreign banks to liquidity shocks stemming from the European debt crisis in the fall of 2011. They show that these branches lost funding in the form of large time deposits, and responded by cutting syndicated lending along the extensive margin. The number of loans they provided fell, but the role they played and the size of the loans did not. The authors also find that U.S. branches borrowed more from related institutions, but this only partially offset the negative funding shock.

Cetorelli and Goldberg (2012a) emphasize the heterogeneity of U.S. branches of foreign banks with respect to the role they play within their organizations. While some were "core investment markets" that received funding from their home affiliates, others were "core funding markets" that sent new flows to their parent banks in response to balance sheet disturbances. In another paper, Cetorelli and Goldberg (2012b) show that funding shocks to parent banks have material impacts on the supply of loans from their branches. The authors measure a balance sheet shock by looking at parent banks' asset backed commercial paper (ABCP) exposure during the financial crisis. They find that the global banks adjusted their balance sheets in a heterogeneous manner, depending on the bank's commitment to the branch's U.S. market.

Many have discussed a significant retrenchment in multinational banking following the financial crisis. Claessens and Van Horen (2014) cite weakened balance sheets as well as strengthened capital and other regulatory requirements as potential reasons for reduced cross-border claims. The authors use a unique dataset which shows that after the crisis, about one-fifth as many foreign banks were established as during the year prior to the crisis. This retrenchment is mostly attributable to banks from countries which experienced the largest effects of the crisis. Cross-border banking declined more than local lending did; the authors argue that this supports evidence of the notion that foreign banks act as a stabilizing presence. The authors argue that cross-border banking is largely unrelated to lending by foreign banks and thus "the retrenchment witnessed in cross-border lending is quite distinct from foreign banks' local activity."

Ivashina and Scharfstein (2008) discuss the fall in syndicated lending beginning in mid-2007 just following the peak of the credit boom. Of course, the reduction in lending accelerated in 2008 even before the collapse of Lehman Brothers. The authors discuss several stylized facts regarding the market for syndicated loans during the financial crisis of 2008. Specifically, they note that new loans declined by 37% in dollar volume and 22% in the number of issues in the September through November 2008 period compared to the prior three month period. Banks with larger volumes of deposits relative to assets reduced lending by less than others, and those with greater exposure to revolving lines did so by more than other banks.

Giannetti and Laeven (2012) analyze credit supply shocks arising from bank funding shocks and their effects on the geography of bank lending. Namely, when banks experience a positive funding shock resulting in easier access to funding, they tend to extend a higher proportion of foreign loans.

De Haas and Van Lelyveld (2010) examine internal capital markets of multinational banks and their effect on lending in host countries. The authors explicitly examine two competing effects regarding the provision of capital and liquidity to a subsidiary from a parent bank. When a subsidiary experiences a negative capital shock, the support effect dictates that the parent bank will reallocate capital and liquidity to the subsidiary. Otherwise, the substitution effect implies that a parent bank will allocate liquidity among the multinational banking family in order to achieve the highest expected returns. The support effect can mitigate shocks and soften the business cycle while the substitution effect can exacerbate a negative shock.

There are several well-established priors regarding multinational bank lending which are discussed at length in several papers [see De Haas and Van Lelyveld (2010)]. For instance, lending by a foreign subsidiary is negatively related to the business cycle in the country in which it operates as well as in other countries in which related banks operate. The support effect enables lending by foreign subsidiaries to be relatively insensitive to domestic crises. However, their lending will be dependent not only on the balance sheet of themselves, but also their parent and other related institutions. Local lending by foreign affiliates is procyclical with the business cycle in the host country.

Ongena, Peydró, and van Horen (2013) argue that among banks which borrow internationally, those which are locally funded contract their lending more during a crisis than those with primarily foreign funding. The

authors also show that, regardless of their funding, foreign banks reduce lending more than domestic banks. Further, the authors show that firms with a relationship with banks which contract their credit suffer real effects. This paper offers evidence that foreign banks can have a destabilizing effect on an economy.

De Haas and van Horen (2012a) examine syndicated loans granted by over one-hundred of the largest global banks during the financial crisis of 2008. Using borrower country and bank fixed effects, the authors explicitly examine the ways in which a bank adjusts its lending to different countries during times of crises. During the crisis, banks continued to lend to countries that were geographically close, as well as to borrowers with whom they had established relationships. De Haas and Van Horen attribute this to the costliness of screening and monitoring. The authors also find weak evidence that the presence of a local affiliate can stabilize cross-border lending. The study underscores the important role that information asymmetry plays in cross-border lending, especially during times of crisis.

Cerutti, Hale, and Minioiu (2014) study the impact of credit line drawdowns during the crisis on bank balance sheets. They argue that information asymmetries played a significant role in cross-border lending during the crisis. The main focus of their study deals with the decision of a bank to offer a syndicated or bilateral loan.

Contributing to the long-standing debate about the stabilizing and destabilizing presence of foreign banks following a shock, Claessens and Van Horen (2012) note several inherent benefits stemming from the presence of foreign banks, including increased competition, absorption of shocks, and better access to a range of financial services. On the other hand, they note that foreign banks also have the potential to reduce credit provision by domestic banks and to introduce instability through a channel by which a shock is transmitted from the home country of the foreign bank. The authors note that while foreign banks cut lending more during the crisis than domestic banks, they did not do so when the bank played a dominant role or was funded locally.

1.3.2 Interest on Reserves

Congress passed the Financial Services Regulatory Relief Act in 2006, permitting the Federal Reserve to pay interest on reserves held by depository institutions at the Fed. The originally planned effective date was

October 1, 2011, but was advanced to October 1, 2008 by the Emergency Economic Stabilization Act of 2008 when it became apparent that the Fed would begin to drastically increase the size of its balance sheet. The Fed has paid interest on both required and excess reserves since then, at a rate of 25 basis points. The rationale for providing interest on required reserves is that by requiring banks to hold reserves, banks forego some return on those deposits, and should be compensated for this. The reasoning behind paying interest on excess reserves, on the other hand, is that it gives the Fed an additional monetary policy tool to use when reserve balances are large. Excess reserves have soared since the Fed's post-crisis lending program followed by the three rounds of quantitative easing. These reserve balances have closely tracked the size of the central bank's balance sheet since 2008.

Specifically, such interest may be paid on balances held by depository institutions, U.S. branches and agencies of foreign banks, Edge Act and agreement corporations, and trust companies. Pass-through correspondents may receive interest on balances held on behalf of an eligible institution even if the correspondents themselves are not eligible. The Bank of England began paying interest on reserves shortly after the Fed, in March 2009, and the European Central bank has had the authority to do so since its creation.

Martin, McAndrews, and Skeie (2013) construct a general equilibrium model and argue that large reserve balances can actually contract bank lending when banks face significant balance sheet costs and interest is paid on excess reserves. A balance sheet cost is defined here only as a cost function increasing in the level of bank assets, but binding capital requirements could be interpreted as such a cost. There are anecdotal examples that banks' balance sheet costs have increased substantially since in the wake of the financial crisis (for instance, Garratt et al. 2015). Keister and McAndrews (2009) explain that the level of bank reserves in the economy is driven by monetary policy actions rather than banks' reluctance to provide credit. The authors argue that interest on reserves prevents the large stock of reserves from becoming inflationary.

1.3.3 Testable Implications

The policy change has severable testable implications, some of which Kreicher, McCauley and McGuire (2013) originally discuss. First, we expect that the affected institutions (insured banks in the U.S.) will reduce their use of the newly assessed wholesale funding and increase their financing of assets with deposits and/or

reduce their assets. After all, this assessment base change was implemented as a corrective policy measure; one of the main intentions of assessing wholesale funding was to achieve this. Second, in the environment of quantitative easing and its implications for bank balance sheets, we should expect unaffected banks (uninsured branches and agencies of foreign banks) to disproportionately accumulate reserves at the Fed. These branches are not insured, and so the return of 25 basis points on reserve accounts at the Fed is more attractive than it is for insured banks because the funding of this asset is now cheaper.

The predicted implication for lending is ambiguous. The traditional bank lending channel posits that such a funding shock should cause the affected institutions (here, insured banks) to cut their lending relative to the unaffected group of uninsured branches. Accordingly, Kreicher, McCauley, and McGuire (2013) predict that this shock should cause uninsured banks to increase their lending relative to insured institutions. On the other hand, Martin, McAndrews, and Skeie (2013) predict that increased cash holding can crowd out bank lending in the presence of balance sheet costs, large excess reserves, and interest on reserves. These conditions are likely present around the time of the policy change. As others have noted, banks in the U.S. have seen increased balance sheet costs since the crisis. Basel regulations and other supplementary capital ratios imposed by the Fed have incentivized some banks to seek to shrink their balance sheets.

Further, Manove, Padilla, and Pagano (2001) discuss the reasons that collateral may disincentivize a creditor from monitoring the quality of a borrower to which it lends. Banks in position to evaluate the quality of an investment project will cease to do so if the collateral provided is of sufficiently high quality. While one result of this phenomenon can render credit cheap and abundant for borrowers, incentivizing banks to relax their screening and monitoring practices reflects a negative outcome. In a related sense, in the presence of a liquidity shock, some banks might become similarly "lazy". Rather than put forth the effort required to participate in lending deals, these banks could prefer to accumulate interest-bearing reserves and become more passive. The influx of liquidity from the Federal Reserve beginning in 2008 may incentivize some banks to reduce their lending activity in favor of holding reserve balances and collecting interest.

1.4 Data

1.4.1 Bank Call Report Data

We use several sources of data in this study. First, we obtain quarterly Call Reports from the Federal Reserve Bank of Chicago's website. These Call Reports are collected by the Federal Financial Institutions Examination Council (FFIEC) which is an interagency body responsible for examining financial institutions in conjunction with the Federal Reserve, FDIC, National Credit Union Administration, Office of the Comptroller of the Currency (OCC), and the Consumer Financial Protection Bureau (CFPB). There are several specific reports we collect: the FFIEC 031 and the FFIEC 041 are reported at the level of the consolidated bank, filled out by banks located in the U.S. with and without foreign offices respectively. We rely on a separate report, the FFIEC 002, for data on U.S. branches and agencies of foreign banks.

We supplement these Call Reports with a Federal Reserve release which contains data on the structure and shareholdings of foreign banks. This so-called structure and share dataset contains more detailed qualitative information on the related foreign institutions of all foreign-owned banks in this dataset. The dataset consists of all U.S. offices of foreign banking organizations: U.S. branches and agencies, subsidiaries which are commercial banks and at least 25% owned by an FBO, foreign-owned Edge Act and agreement corporations, U.S. representative offices of foreign banks, and New York state investment companies owned by foreign banks. As discussed previously, we choose to look only at foreign-owned branches and agencies, foreign-owned subsidiaries, and domestic banks. This dataset allows us to link the Call Reports to information regarding ownership structure.

Foreign banking organizations which control or own an institution in the United States are required to complete the FR Y-7Q report which contains limited information regarding total assets, risk-weighted assets, and regulatory capital levels of the FBO. FBOs with U.S. banking operations that have achieved status as financial holding companies complete this form quarterly; all other FBOs are required to complete the report once each year. As alluded to previously, these FBOs can either be banks or holding companies. The report is available through the Federal Reserve via Freedom of Information Act Request. With this report, as with all data in this paper, when quarterly data is unavailable, we interpolate lower frequency data.

We also obtain balance sheet data on domestic bank holding companies (BHCs), which report their financial statements with the Federal Reserve via the FR Y-9C form. Only BHCs with total consolidated assets of $1 billion or more file this report. If a holding company controls or owns another holding company, only the top-tier holding company must file the report. Currently, around 85% of U.S. chartered banks are controlled by a holding company. Those that are not, and those whose top-tier holding company has less than $1 billion in total consolidated assets, are excluded from the portions of the study in which we consolidate all banks to the level of the holding company.[5]

Our full dataset spans 2001Q1 through 2014Q2, though in parts of the analysis we opt to use a shorter timeframe in order to avoid various problems, particularly those arising from including the financial crisis. We combine these datasets into two forms which we use for analysis in the coming sections. First, we look at the individual banks and branches of foreign banks alone. This unconsolidated dataset yields roughly 432 thousand observations over the nearly 15 year timespan. Next, we consolidate the entities to the level of the top-tier holding company. The vast majority of small domestic banks have no affiliated depository institutions, so we retain about 273 thousand observations. With the unconsolidated dataset, we are able to identify whether or not the observation is FDIC insured. However, it ignores the relationship between related branches and banks, and comparing consolidated banks to branches could pose certain problems. In the consolidated dataset, we measure the degree to which a foreign bank family is not FDIC insured by the ratio of its assets held by uninsured U.S. branches to total assets held in U.S. institutions. The differences are not qualitatively substantial, and so we present here only the results from the consolidated datset.

The problem of missing data presents itself at various times throughout the sample. Following standard practice [for instance, Peek and Rosengren (2000)], we use a dummy variable to indicate missing values for nonperforming loans and capital ratios, and replace the missing value to zero.

A considerable deal of care should be taken regarding the timing of the policy change in our analysis. The FDIC assessment base change went into effect April 1, 2011, but was finalized just less than six months prior.

[5] Those banks excluded for this reason tend to be extremely small in asset size and therefore this exclusion is of little consequence to the main result.

In our base case, we use the second quarter of 2011 as the policy change. We have tried other implementation dates as checks for robustness and find that the results are not substantially changed.

1.4.2 Syndicated Loan Market Data

We also use Thompson Reuters' DealScan database, which contains comprehensive information on global loans, including the identities of borrower and lender. We matched the DealScan dataset lender firms to our list of banks, and matched the dataset's borrower firms to Bureau Van Dijk's Osiris database, which contains information on nearly 80,000 listed and unlisted companies around the world. The resulting dataset contains a large number of loan-level observations and a variety of controls for borrower, lender, and deal characteristics.

The DealScan database consists mostly of syndicated loans. A syndicated loan is a commercial loan extended by several lenders to a single borrower. There is one or more designated lead banks which typically offer the biggest loan share of all lenders. There are a handful of designations which a lender can take, indicating a range of how active the lender is in the syndicated loan (such as participant, administrative agent, arranger, etc.). Lenders who underwrite syndicated loans have traditionally been commercial or investment banks, with other entities such as finance companies, institutional investors, structured finance vehicles, and hedge funds more recently becoming active in this market. Syndicated loans are attractive from the point of view of the lender because they are able to diversify their loan portfolios. These deals make it possible to lend to a single borrower without any bank exceeding its lending limit, as banks generally may not lend more than 15% of their total capital to one borrower. Further, syndicated loans allow lenders to extend credit to large corporations while sharing some of the risk inherent to offering a large loan to a single borrower. Not surprisingly, the borrowers in syndicated loan deals tend to be large companies. Within the market for syndicated lending, lenders offer a wide range of deals, or facilities, to borrowers. The four main types are: revolving credit lines, term loans, letters of credit, and acquisition or equipment lines.

1.4.3 Variables and Summary Statistics

Without loss of generality, we discuss summary statistics in this section from the unconsolidated bank balance sheet data, presented in Table C.1. Each of the variables refer to the total holdings in U.S. offices of a particular category. The capital ratio we use is Tier 1 capital divided by total risk-weighted assets. For branches

and agencies of foreign banks, we use the capital ratio of their FBO. Liquid assets are given by interest-bearing balances, noninterest-bearing balances, currency and coin, and securities available for sale and held-to-maturity, less asset-backed and mortgage-backed securities. Nonperforming loans are loans that are reported as past due by 90 days or more and non-accruing loans.

The measure of cash here closely tracks reserve balances held at the Fed, but reserves are only a component of all cash reported by banks, albeit the dominant one. In addition to reserve balances due from Federal Reserve banks, cash reported by banks includes cash items in the process of collection, unposted debits, currency and coin, balances due from unrelated depository institutions in the U.S.[6].

It is a well-known facet of the U.S. banking system that a small group of banks hold a large proportion of assets. The mean asset size of a bank is nearly double that of the 90th percentile; there is an extremely large number of banks with relatively few assets. Table C.1 shows that uninsured branches are significantly larger than the average insured bank. The group of banks without foreign offices (those filing the FFIEC 041) makes up roughly 95% of observations in this sample, but its median assets are a small fraction of that of the group of branches (FFIEC 002) and those with foreign offices (FFIEC 031).

U.S. chartered banks filing these Call Reports do so at the level of the consolidated bank for all U.S. offices. Thus, a consolidated bank without foreign offices cannot lend to affiliates—from the level at which it is reporting, it has no affiliates. This means that the majority of observations in the sample do not report internal borrowing or lending. Those reporting this category are branches or agencies of foreign banks and U.S. chartered banks with affiliates in other countries. The sample of banks which report internal lending and borrowing shrinks to about 20,000 observations, though most of the institutions which drop out are the smallest banks. Uninsured institutions were net lenders to their affiliates, while insured banks borrowed from their families, on average, in the years leading up to and immediately following the financial crisis. These positions reversed in 2011: uninsured branches of foreign banks drew on credit from their foreign affiliates and domestic banks in the United States lent abroad.

[6] We use cash instead of reserves primarily because reserves (balances due from Federal Reserve banks) are only reported by banks with consolidated total assets of $300 million or greater. All banks report their cash balances.

While U.S. chartered banks supply more loans than uninsured branches and agencies, branches and agencies are more focused on commercial and industrial (C&I) lending, which comprises a roughly equal proportion of their balance sheet. Uninsured branches and agencies have lower deposit to asset ratios primarily because of their restriction from taking retail deposits from U.S. residents. Ratios of deposits to assets of insured banks began to rise gradually around 2011 after bottoming during the financial crisis (Figure B.5).

The summary statistics from the DealScan dataset are listed in Table C.2. The database is missing information on the share of the deal that lenders take for a considerable proportion of observations. The dummy for whether or not the loan is secured is also sometimes unavailable. Nonetheless, we retain a large number of observations that are matched to information on a bank and a borrowing firm. The set of borrower firm characteristics is similar to those used by Minetti and Yun (2015). Ninety-five percent of the borrowers in the sample are defined in the dataset as corporations. All of the lenders are described by DealScan as a U.S. bank, foreign bank, or financial institution.

The dependent variables we use in this section are intended to capture each lender's level of activity within a specific deal. First, we use a binary response variable corresponding to whether or not the bank is listed as the lead lender in this deal. This variable is denoted $lead$. We also look at the proportion of the total deal that the lender extends. This variable, $share$, ranges from 0 to 100. The interaction of these two variables we call $lead\ share$. The fourth dependent variable we use is a measure that incorporates the concentration of other lenders in the deal. The so-called $share\ index$ gives a higher weight to a lender who takes a large share in a deal when there are many other lenders. The $share\ index$ for bank i lending in a deal with n firms is:

$$share\ index_i = \left(share_i - \frac{1}{n-1} \sum\nolimits_{j \neq i} share_j \right). \quad (1)$$

We also look at the impact of the policy change on loan concentration. Several authors [for instance, Minetti and Yun (2015)] have used a measure called the Herfindahl index. The index is generated as the sum of the squared shares by each lender in the deal. This measure is equal to 10,000 when there is one lender offering the full amount of the deal, and lower when there are more lenders involved. Finally, we look at the logarithm of

the amount offered by each lender, which is simply the product of the loan share and the total facility amount offered. We denote this variable simply $amount$.

1.5 Methodology

This section discusses the methodology for our main results. Our regression specification when analyzing the bank balance sheet data follows that which is often employed to identify a bank lending channel. The Kashyap and Stein (1995) specification has influenced much subsequent research on the topic of bank lending. The authors separate banks into five classes based on size measured by total assets. They use the growth rate of nominal total loans as the dependent variable, and a monetary policy indicator, seasonal dummy variables, nominal GDP growth, inflation, and four lags of the dependent variables as regressors. More recent studies have augmented this model, commonly by adding a set of bank characteristics and other macroeconomic control variables. The baseline specification we use in this paper follows this approach, employing a rich set of control variables:

$$\Delta LN_{it} = \alpha_i + \beta_1 \text{uninsured}_i + \beta_2 FDIC_t + \beta_3 (\text{uninsured} * FDIC)_{it} + \sum_{j=1}^{4} \theta_i \Delta LN_{it-j} + \sum_{j=1}^{4} \gamma_j X_{it-j} + \sum_{t=1}^{T} \mu_t T_t + \varepsilon_{it}. \quad (2)$$

uninsured_{it} is a dummy variable equal to one if bank i in period t is uninsured, and zero otherwise. $FDIC_t$ is also a dummy variable equal to one after the FDIC assessment base change in the second quarter of 2011, and zero before. $\text{uninsured} * FDIC_{it}$ is the interaction of the two. β_3 is the key independent variable in this regression, corresponding to the difference-in-differences result. β_3 can be interpreted as the difference in the reactions to the policy shock of uninsured banks compared to insured banks. A positive coefficient would suggest that uninsured branches increased their lending following the funding shock relative to insured banks. X_{it} is a vector of bank-specific controls including the natural logarithm of total assets, the ratio of liquid assets to total assets, the ratio of tier 1 capital to risk-weighted assets, and the ratio of nonperforming loans to loans for bank i in time t. T_t is a set of quarterly time dummy variables. The regression we run when analyzing cash holding is identical, except that we include four lags of the dependent variable instead of loans.

Analysis of loan-level data allows for an additional dimension of control variables. Whereas in the above regressions we include bank-specific controls, with the DealScan lenders and borrowers matched to bank data files and the Osiris database, we include borrower-specific, lender-specific, and deal-specific controls. We continue to employ the difference-in-differences identification strategy, and our preferred specification includes borrower, lender, and time (quarter) fixed effects. Because of the highly disaggregated nature of the data, we opt to use only the first lag of each of our controls. As stated previously, we use four dependent variables which measure the activity of a given lender in a syndicated loan deal. The level of observation is a borrower-lender pair for a given deal, or facility. Some facilities appear more than once in this dataset. The preferred regression specification for a loan from bank i to firm j at time t is

$$y_{ijt} = \alpha_i + \beta_1 \text{uninsured}_i + \beta_2 \text{FDIC}_t + \beta_3 (\text{uninsured} * \text{FDIC})_{it} + \Theta X_{it} + \Phi S_{jt} + \Pi Z_{ijt} + \mu_i + \gamma_j + \nu_t + \varepsilon_{ijt}. \quad (3)$$

As before, β_3 is the primary coefficient of interest. X_{it}, S_{jt}, and Z_{ijt} are vectors of lender-specific, borrower-specific, and deal-specific characteristics. μ_i, γ_j, and ν_t are vectors of lender, borrower, and time fixed effects. The following borrower-specific characteristics are included: the natural logarithm of total sales; liquid assets to total assets; the natural logarithm of earnings before interest, taxes, depreciation, and amortization (EBITDA); a leverage ratio (total debt to EBITDA); net profit to assets; cash to assets; working capital to assets; the natural logarithm of the number of employees; the ratio of tangible assets to total assets; the natural logarithm of revenue; the ratio of income to total assets; the natural logarithm of total debt; and a set of dummy variables corresponding to the borrower company's industry. The set of lender characteristics is the same as before: the natural logarithm of total assets, the ratio of liquid assets to total assets, the ratio of tier 1 capital to risk-weighted assets, and the ratio of nonperforming loans to loans. The set of deal-specific controls include: a set of dummies corresponding to the primary purpose of the deal, the maturity of the loan in months, a dummy variable corresponding to whether or not the loan is secured, and the natural logarithm of the deal amount.

The above specification restricts our sample to banks which participate in syndicated lending. Thus, we are examining lending on the intensive margin; we examine the quality of the lenders' participation in the deal conditional on the lender participating. Additionally, we alter this dataset to examine the lenders' participation

on the extensive margin. We aggregate the loans by bank and use bank-quarters as our level of observation. This allows us to analyze banks which altered the number of deals in which they participated following the assessment base change, rather than examining their roles in the deals in which they participated. Our dependent variables in this portion of the analysis count the number of deals in which a bank participates, the number of deals in which a bank is listed as the lead lender, and the total amount of credit extended in a quarter.

1.6 Results

1.6.1 Bank Call Reports

We separate the banks into groups based on asset size because the expected effect of the FDIC assessment base change varies between large and small institutions. Recall that we expect smaller insured institutions to face lower assessments from the FDIC on average, while the largest insured institutions should face significantly higher funding costs. Following similar papers, [for instance, Cetorelli and Goldberg (2008)], we classify the smallest 90% of banks as small and the largest 5% as large. These asset sizes are based on the size of the bank in the fourth quarter of 2010, just prior to the policy change taking effect. Using a difference-in-differences approach with uninsured banks as the treated group,[7] we estimate the policy's effect on cash holding, total lending, and commercial and industrial (C&I) lending. For each dependent variable, we use three forms: the change in the natural logarithm, the absolute change scaled by assets, and the change in the fraction of the dependent variable to assets. Our main results show only the latter two forms. We use the system GMM estimator suggested by Arellano and Bond (1991) to account for the endogeneity of the lagged dependent variable. Each regression equation includes time fixed effects. Alternatively, we have used bank fixed effects and macroeconomic control variables instead of time dummies. Neither alternative specification yields substantially different results.

Tables C.3 through C.8 are based on the U.S. offices of the entire banking organization, consolidated to the top-tier holding company. We also use three sets of time windows for each dependent variable (first, we use the entire 14.5 year series, and then four-year and two-year windows surrounding the policy change. Our

[7] We might have chosen to have insured banks as the treated group, but chose to use uninsured banks for purposes of exposition. The results are numerically equivalent.

main results exclude the two-year windows because the findings are similar to the four-year timeframe). As expected, in Tables C.3 and C.4, we find that the largest uninsured banks began to accumulate a disproportionately large amount of cash (mainly in the form of reserves) following the assessment base change. Interestingly, in the full timespan (Table C.3), the smaller set of uninsured banks accumulates more cash according to the first measure (Column 1). Restricting our sample to the four year window around the policy change, from 2009Q2 through 2013Q1, Table C.4 shows that uninsured institutions increased their holdings of cash by about seven percentage points of their total assets (left-hand panel); as a share of assets, these branches increased their allocation of cash by about four percentage points (right-hand panel) relative to insured institutions. The policy seems to have had no positive impact on the lending of these banks, and a negative effect in some cases as reported on their balance sheet. Tables C.5 through C.8 show, in some cases, a reduction in loans by these institutions which increased their cash holdings as a result of the positive balance sheet shock. Again, restricting our attention to the four year window around the policy shock, balance sheet allocation of total loans by uninsured branches fell by about two percentage points for both independent variables (Table C.6). Table C.8 shows that the results are marginally significant at best when looking at commercial and industrial loans specifically. Overall, these results for the lending responses vary between insignificant and suggestive of a reduction in lending by uninsured branches, as suggested by Martin et al. (2013).

1.6.2 Syndicated Loan Market

1.6.2.1 Baseline Results

Our preferred specification in for estimation of equation (3) includes both borrower and lender fixed effects. Using the same difference-in-differences approach, we find that uninsured banks reduced their roles within the deals in which they participated, as shown in Tables C.9 and C.10 for nearly each of the six measures of loan activity estimated. The uninsured banks became significantly less likely to be classified as the lead lender within the deals they made (Column 1), and took smaller portions of the total facilities (Column 2). As in the previous section, we estimate their roles over varying timespans. When restricting our sample to a four year window surrounding the implementation of the policy change, we find that uninsured banks became about 10 percentage points less likely to be the lead lender following the policy change (Table C.10, Column 1). The

share of the total facility that these banks offered also fell by about 2.2 percentage points (Table C.10, Column 2). The results are qualitatively similar, though have a less straightforward interpretation when the dependent variable is *lead share* or *share index*.

The fifth columns of these tables show that the deals became marginally, if at all, more concentrated in the sense that more lenders may have entered into the deals when the uninsured branches participated. The effect is insignificant when the relationship is estimated for the entire timespan and only significant at the 10% level when restricting the sample to the four years surrounding the policy change. On the other hand, there appears to be a strong effect of the policy change on the total value of loans extended by uninsured branches. The two estimates (Tables C.9 and C.10, Column 6) imply that relative to their insured counterparts, these uninsured lenders cut their total offerings by around 23% or 37%. These estimates are both statistically significant.

Correa et al. (2013) found that uninsured branches of foreign banks decreased their lending around this time due to a fall in deposits during the Euro area debt crisis in 2011. However, they find no effect on the intensive margin, which we show U.S. branches of foreign banks generally exhibited here. The authors found that these banks cut the number of loans and borrowers to whom they lent—a reduction of lending on the extensive margin. We implement a similar specification (not shown here) including the change in deposits as an explanatory variable. Our results are virtually unchanged when controlling for this loss of deposits. In Section 1.6.2.2 we break down the uninsured branches into European and non-European groups in order to examine the extent to which our results are driven by a reduction in lending caused by the European sovereign debt crisis.

Having established that these lenders took on a more passive role in the deals in which they participated, we next look at whether these banks adjusted the number of borrowers to whom they lent, the number of loans they gave, or the size of loans. We use three dependent variables in this section: (1) the number of loans into which a lender entered in a given quarter, (2) the number of loans in which a lender was the lead arranger in a quarter, and (3) the total amount of credit extended by a lender in a quarter. We find that after the policy change, uninsured banks extended fewer loans each quarter, and acted as the lead arranger of credit less frequently (Tables C.11 and C.12). To look at the extensive margin in this manner requires us to use a bank-quarter as an

observation, although we may continue to use borrower and lender fixed effects.[8] However, we discard any observations for which a lender does not participate in any deals in a given quarter. The results are consistent with those from the previous section. The uninsured lenders, facing a relatively positive funding shock, reduced the number of deals in which they participate and gross amount of credit they extended, relative to insured lenders.

1.6.2.2 Robustness Checks

In this section we present a series of checks for robustness of our main results. Of our primary concerns is the concurrence of the European sovereign debt crisis which culminated in 2011. Correa et al. (2013) show that U.S. branches of European banks cut their lending, specifically in the market for syndicated loans, as a result of this crisis. To test the extent to which our results reflect the FDIC assessment base change rather than the European debt crisis, we separate our treatment group of uninsured banks into uninsured branches of European banks and uninsured branches of non-European banks. Tables D.1 and D.2 in the appendix present our results for the intensive margin of loan-level data. All columns employ lender fixed effects and borrower fixed effects. The expanded time window (Table D.1) appears to show similar results as before: all uninsured banks took on more passive roles in the deals in which they participated. The results lose some power, as expected, but neither the European nor non-European group of uninsured bank branches appear to dominate the effect. However, when we shrink the time window to four years, much of the reduction in lending by uninsured banks seems to be driven by the European branches. The amount of credit is the only of the six dependent variables for which the results hold across the two groups of branches. These specific results appear to be weakened.

Tables D.3 and D.4 present these results for the extensive margin using loan-level data. These results, however, appear more robust to the separation between European and non-European banks at both time windows. In both the expanded and reduced time windows, neither group of bank appears to dominate the reduction in lending; Table D.3 shows the effect of both groups as significant at the 99% confidence level for

[8] To retain borrower characteristics, we may include multiple observations for each lender in a given quarter. We simply weight each observation by the inverse of the number of deals per lender in the given quarter when estimating the equation.

the number of deals and the total amounts offered. Table D.4 shows that the number of deals remains significant for both groups when examining the shorter timeframe. We have also produced but not presented robustness checks for the bank balance sheet data dividing uninsured banks into European and non-European subgroups and found that both groups report an increase in cash holding and a mild reduction in lending.

In the same manner, we have also distinguished between foreign insured banks and foreign uninsured branches to ensure that our results are not primarily driven by the foreign nature of these banks but rather their uninsured status. These results are shown in Tables D.5 through D.8. The main results are driven entirely by uninsured foreign banks. In fact, foreign insured banks tend to exhibit opposite behavior in these tables when there is a significant coefficient. These results confirm that it is the uninsured nature, rather than the foreign nature of these banks which drives their relative reduction in lending.

The final robustness check results we show employ the use of home country-year fixed effects. This should effectively control for home country-specific shocks. Our results clearly lose some power, although the main results hold. The variation in these results now comes from within-home country between uninsured branch and insured subsidiary bank. Tables D.9 and D.10 display these results for the change in lending along the intensive margin.

We have used a number of other specifications and other modifications of our baseline regression and found no significant deviations from our baseline results. Some of these modifications include the following. In addition to the two time windows of fourteen years and four years, we also examine a time window of two years—from 2010q2 through 2012q1—for each of the regressions presented in this paper. The results are quite similar to those obtained from the four year windows. Additionally, we have employed bank fixed effects in each of the regressions in this paper. In addition to aggregating the Call Reports to the level of the bank holding company, we run the same regressions using disaggregated bank-level data and find similar results. It is our view that aggregating to the level of the BHC is the more conservative approach as we avoid comparing branches of banks to consolidated banks. Finally, as mentioned previously, we have used macroeconomic controls instead of a set of time dummy variables. None of these alternative approaches produce qualitatively different results.

1.7 Conclusion

This paper empirically explores the relationship between bank lending and cash holding. We exploit a funding shock which primarily affected large banks, and induced branches and agencies of foreign banks to accumulate a disproportionate share of reserves which were created as a byproduct of the Federal Reserve's quantitative easing programs. We then show in two complementary ways that these uninsured banks reduced their lending at the same time they used this improved access to wholesale funding to increase their holdings of reserves. We show that banks which acquired more reserves allocated a smaller proportion of their balance sheets to general loans and C&I loans. These banks also became more passive lenders in the syndicated loan deals in which they participated, and entered into fewer of these deals.

The paper's contribution to the literature deals with the reaction of foreign banks to a domestic shock. Much earlier literature, such as Cetorelli and Goldberg (2008), has found that foreign banks are resilient in the presence of domestic shocks, such as monetary policy shocks, and continue to extend credit when domestic banks in a host country contract their lending. Our paper suggests that this transmission mechanism may not hold true under the current environment of large excess reserves in the banking system and steep balance sheet costs, as suggested by Martin et al. (2011). Further work on this subject might more explicitly attempt to quantify these balance sheet costs, for instance, by measuring the U.S. banks' leverage ratios, which were strengthened by Basel III and further by the Fed's enhanced supplementary leverage ratios. The Basel III capital requirements use risk-weighted assets in the denominator, and because reserves carry zero risk weight, cash accumulation does not impose a balance sheet cost through this ratio. The leverage ratio on the other hand uses total consolidated assets in the denominator, so an increase in a bank's holding of cash requires it to raise more capital, a potentially costly activity.

A second area for possible future work lies as an extension of the Manove et al. (2001) model of lazy banks. In our paper, the banks which receive a positive funding shock acquire disproportionately large amounts of excess reserves. These interest-bearing reserves appear to crowd out lending and discourage these banks from actively extending credit. The banks described in the Manove et al. paper enjoy a positive collateral shock. Their prospective borrowers are able to provide higher quality collateral in exchange for

credit. While one effect of such a shock is cheaper credit for entrepreneurs, the overall result as hypothesized by the authors is less desirable. Namely, banks, the institutions best equipped to judge credit worthiness, become "lazy", content with the collateral provided by the borrowers, and opt not to screen lenders. In a similar sense, these uninsured branches of foreign banks become less eager to lend when faced with a positive liquidity shock.

CHAPTER 2

Bilateral Foreign Banking Trends in the U.S., Europe, Latin America, and Japan

2.1 Introduction

Interest in foreign banking and cross-border banking exposures has grown considerably during the past two decades, and increasingly following the financial crisis of 2008. However, remarkably few data sources capturing global banking exist. In this paper, I create and analyze a novel dataset examining foreign banking at the level of the bank with a focus on bilateral banking activities between the U.S. and three regions of the world. This unique dataset contains, to my knowledge, the most comprehensive bank-level foreign banking information between the United States and Europe, Latin America, and Japan. Other general datasets covering foreign bank ownership exist, but I show that this dataset covers the relevant banks most thoroughly. The dataset is bilateral; that is, it contains United States owned banks operating in certain foreign markets, and certain foreign banks operating in the United States.

The financial crisis originated in the United States and quickly spread across the globe through the banking sector. The contagion of the collapse of the subprime lending market was unexpected by market observers and policymakers, and highlights the need to better understand the costs and benefits of foreign banking. Banking expansion into foreign markets occurs both through local affiliates and cross-border claims; a bank may enter a foreign market either by establishing a subsidiary or branch, or by conducting business remotely. In this paper I construct a dataset which allows a researcher to examine foreign banking by local affiliates via branches or subsidiaries.

The difficulty in compiling a consistent source of data covering global banks lies primarily in the inconsistencies with which these banks report data across countries. Generally, a bank operating in a foreign market must comply with the reporting standards of its host country. These reporting standards vary

substantially across countries. For example, the United States requires detailed quarterly filings of all branches and subsidiaries of foreign banks operating in the U.S. and even requires their parent entities, called Foreign Banking Organizations (FBOs) to file reports with the U.S. as well. Each of these reports are publicly accessible. On the other hand, many European countries do not publicly release any financial data obtained from subsidiaries or branches of foreign banks operating within.

A second difficulty of this process comes from the issue of consistently defining an entity as a bank. One data source I use, Bankscope, includes a wide variety of banking and nonbanking institutions, including financial companies, industrial companies, and banks. Among banks are institutions which engage in a variety of financial services including investment banking, securitization, and real estate and mortgage lending. I settle on defining a bank as an institution which accepts customer deposits. The Bankscope database lists many institutions as banks which specialize in several of the above non-depository activities, but I include these institutions as long as they accept deposits.

The main contribution of this paper to the literature on foreign banking and bilateral bank ownership between countries is primarily in the construction of this novel bank-level dataset. The most similar source of data is described in Claessens and Van Horen (2014) and is later extended in Claessens and Van Horen (2015). The Claessens and Van Horen (hereafter, CvH) Database contains bank ownership information over a nearly 25 year span for banks active in 139 countries. For each bank, the database contains the country of ownership for each year dating back to 1995. Financial data is not included but is easily linked to the Bureau Van Dijk's Bankscope database.

While the CvH database has the advantage of spanning banks in a vast number of countries, it has several notable gaps upon which I seek to improve. CvH excludes roughly 15 United States owned depository institutions that are included in my dataset (see Tables F.1 and F.2). My coverage of foreign banks in the United States is substantially more complete, as I discuss in Section 2.4. I identify 102 European, Latin American, and Japanese banks operating in the United States. The CvH database identifies only 12.

I contribute to the literature by building on the study conducted by Claessens and Van Horen (2014). I create a more focused dataset concentrating on bilateral foreign bank ownership between the United States

and several other regions in the world. In doing so, I create a more comprehensive dataset than others currently available. Further, I examine foreign bank ownership trends specifically between two countries. There bilateral relationships are different from foreign banking generally. Rather than investigating, say, the entry of all banks into Great Britain and British banks in the rest of the world, I focus on the behavior of U.S. banks in Great Britain, and British banks in the U.S.

The remainder of this paper is organized as follows. Section 2.2 discusses an overview of the relevant literature including foreign bank entry, foreign banking during the financial crisis and recent trends in foreign banking. Section 2.3 covers broad regulatory aspects of foreign banking in each of the four regions I cover and the reporting disclosures by these regulatory bodies. Section 2.4 discusses the methodology and data sources. Section 2.5 discusses my main findings including recent trends in bilateral banking and the influence of country-specific economic factors. Section 2.6 concludes.

2.2 Literature Review

2.2.1 Foreign banking trends

Global foreign banking has increased rapidly since about 1960. There are many explanations for the upward trend in foreign banking presence but the increase has hardly been monotonic. Foreign banking has experienced several pronounced periods of retrenchment, including the late 1980s and the post-crisis years. Several have noted that increases in foreign branching has occurred alongside an increase in trade and foreign direct investment. Financial innovation and increases in communication likely also enticed banks to increase their global presence.

Brealey and Kaplanis (1996) discuss the trends in foreign banking from the post-WWII era through the late 1980s. Not surprisingly, foreign banking slowed during the Second World War, and remained relatively dormant in the years immediately following. In the early 1960s, the authors note that rapid expansion in foreign banking occurred, with most countries acting as both home and hosts of foreign banks. The broad expansion in the 1960s was led by banks based in the U.S., followed by Japanese and Western European banks. During the 1980s, growth in foreign banking shifted to banks based in the Pacific Rim and South America.

Claessens and Van Horen (2014 GFC) study trends in foreign banking over the subsequent period from 1995 to 2013. Their dataset and analysis focuses on the trends of foreign banking via local affiliates as well as cross-border claims. The crisis was preceded by a marked increase in foreign bank presence from the beginning of their study until the onset of the crisis. They note that over 500 banks entered their database over the period from 1995 through 2007. This represents an increase of over 60%, with the share of foreign banks reaching 32%. Foreign share of banking assets is substantially lower, at about 13% in 2007. The growth in developed countries was much slower than in developing ones. In general, foreign bank presence tends to be most substantial in the poorest countries.

Foreign bank entry plummeted following the crisis. Claessens and Van Horen's dataset shows that about one-fifth as many foreign banks entered in the twelve months following the peak of the crisis as in the twelve months prior. There was also net exiting among domestic banks during this time, so the share of foreign banks globally did not change dramatically after the crisis, remaining around 35%. Foreign banks' asset shares did, however, due in part to the balance sheet disturbances to their parents. Within the aggregate foreign bank retrenchment following the crisis lies several notable patterns. First of all, banks from emerging markets and developing countries continued their expansion into foreign markets. Second, foreign banking since the crisis has become more regional.

2.2.2 Foreign banks during the financial crisis

Foreign banks played an integral role in the propagation of the financial crisis of 2008. Indeed, the crisis highlighted the importance of understanding the international and domestic counterparty exposures which are often obfuscated. Both foreign banks in the United States as well as U.S. banks operating as branches and subsidiaries abroad propagated the shocks originating the in U.S. which made the financial crisis a global one.

A trend in which foreign banking had steadily increased globally screeched to a halt after the onset of the financial crisis in 2008. A broad retrenchment occurred in which foreign banks reduced their lending and cross-border claims fell even further. It has been documented, for instance by Correa, Sapriza, and Zlate (2011) that both lending and internal borrowing by U.S. branches of foreign banks tend to be procyclical with the U.S. economy. Thus, this retrenchment may be seen as an extreme case of an established tendency.

Claessens and Van Horen (2014) discuss reasons for the significant retrenchment in global banking following the crisis. They cite weakened balance sheets and more stringent capital requirements and other regulatory guidelines as potential reasons for cross-border claims. The authors show that in the year following the crisis, about one-fifth as many foreign banks were established as were established during the year prior. It is also well-documented that cross-border lending fell more than lending by local affiliates; these authors argue that this supports evidence of the notion that foreign banks can provide a stabilizing presence in a host country.

Cerutti and Claessens (2013) study the fall in cross-border bank lending following the collapse of Lehman brothers in September of 2008. Interestingly, they find that cross-border lending plummeted around the onset of the crisis, but local lending fell only modestly. Correa, Sapriza, and Zlate (2013) study the impact of lost bank deposits of branches of European banks in the U.S. during the European sovereign debt crisis in the fall of 2011. As investors withdrew funding from these branches, the branches reacted by substantially reducing their lending.

Cetorelli and Goldberg (2012a) separate foreign branches of banks as serving one of two specific functions to the overall banking family. They deem some branches to be core investment markets which receive funding from their home affiliates. Others are classified as core funding markets, which send flows to their parent banks in response to negative balance sheet shocks. Cetorelli and Goldberg (2012b) analyze a funding shock to branches of foreign banks in the U.S. measured by asset-backed commercial paper (ABCP) exposure. Global banking families' reactions to the financial crisis, as measured by this balance sheet stress, were heterogeneous and depended on the bank's commitment to the U.S. market.

Claessens and Van Horen (2012) note several inherent benefits resulting from foreign banking. Specifically, they find that foreign banks can increase competition, absorb shocks, and allow better access to a range of financial services in a host country. However, these benefits are not without some drawbacks. The authors find that foreign banks may have the potential to reduce credit provision by domestic banks and to introduce instability through a channel by which a shock is transmitted from the home country of the foreign bank. The authors also argue that while foreign banks cut lending more during the crisis than domestic banks, they did not do so when the bank played a dominant role in the host country or was funded locally.

De Haas and Van Horen (2013) examine syndicated loans granted by large global banks during the financial crisis of 2008. The authors find that during the crisis, banks continued to lend to countries that were geographically close and to borrowers with whom they had established relationships. The authors attribute this finding to the costliness of screening and monitoring. They also find weak evidence that the presence of a local affiliate can stabilize cross-border lending. The study underscores that important role that information asymmetry plays in cross-border lending, especially in times of crisis.

2.2.3 Foreign Bank Entry

Understanding the decision to enter a foreign market, and the manner in which entry occurs, is central to understanding trends in foreign banking as they relate to the business cycle. Much work has been done on the multi-part decision of a bank to enter a foreign market and to enter via a local affiliate in the form or a branch or subsidiary, or to operate in the market from abroad via cross-border claims. Understanding the existence of bilateral banking requires an understanding of the costs and benefits to the different types of foreign bank participation.

Generally, Brealey and Kaplanis (1996) discuss several means by which a foreign bank can exploit a comparative advantage by entering a new market. Specifically, expansion into a foreign market may attract customers from the same country as the bank's home office with business abroad. Secondly, as different banks specialize in different financial services, specialization by product with geographic diversification may improve efficiency in the industry. Third, the authors discuss how overseas expansion can stem from regulatory or tax discrepancies between different countries. The authors test motivations for international expansion and find that export volume, foreign direct investment, regulatory restrictions, and the size of the home country's capital market play significant roles.

Cerutti, Dell'Ariccia, and Peria (2007) examine the decision between entering a market as subsidiaries and branches. Recall that subsidiaries possess their own independent capital structures while branches are merely extensions of their parent organization, and thus less costly. The authors create an empirical model in which the organizational form of a foreign bank is determined by characteristics of the parent bank, home-country regulations, commitment to the host market, and host-country specific factors. The authors reach the

conclusion that regulations are of the greatest importance in the decision of organizational form. Branches are more common among banks desiring less commitment to the foreign market. Host country factors—including political risks—also play a role in the organizational form of a bank. Subsidiaries are more common in countries with higher economic risk, as parent banks prefer not to incur the risk brought on by a shared capital structure under a branching organizational form.

Focarelli and Pozzolo (2000) look at this question as well, and find that banks which hold shares of foreign banks tend to be larger and based in countries with more developed and efficient financial sectors. The countries in which they often operate are determined by expected profits, and so usually is correlated with economic growth and less developed financial sectors. Focarelli and Pozzolo (2005) expand the focus to include the decision to lend directly across borders. Typically this activity is available only to the largest borrowers through syndicated loans. The degree of integration between the home and host countries plays a large role in cross-border expansion. Large financial centers tend to be popular destinations for branches, but less so for subsidiaries. Subsidiary shareholding tends to be more popular in countries with either less concentration in the market or lower regulatory costs.

2.3 Bank Regulatory Practices

It is a difficult but important task to succinctly summarize the bank reporting standards in each of the 34 countries in my dataset. The Basel Committee on Banking Supervision has set forth standards for reporting in three sequential accords beginning with Basel I occurring in 1988, Basel II in 2004, and Basel III in 2011 in response to the financial crisis of 2008. Most of the developed world follows Basel regulations, and some countries have even set forth enhanced regulations which go beyond the Basel rules.

The first Basel Accord, Basel I was agreed upon in 1988. The Basel Committee published several minimum capital requirements for banks. The Committee established the following:

$$Tier\ 1\ Capital\ Ratio = \frac{Tier\ 1\ Capital}{Risk\ Weighted\ Assets}.$$

The Committee also grouped assets into risk classes in order that risk-weighted assets could be consistently calculated. Basel I was adopted progressively over the subsequent years, eventually becoming

enacted in thirteen countries in Europe and North America. Basel I also required banks to report off-balance-sheet items. Basel II was published in June 2004 and focused on strengthening capital requirements to better address credit risk, operational risk, and market risk. In so doing, Basel II introduced three approaches for measuring these different types of risk. Basel II also equipped regulators with better supervisory tools and improved transparency of the capital adequacy of banks. Finally, Basel III arose in response to the financial crisis of 2008. The Accord strengthened the capital requirement established in Basel I and introduced two new measures

$$Total\ Capital\ Ratio = \frac{Tier\ 1\ Capital + Tier\ 2\ Capital + Tier\ 3\ Capital}{Risk\ Weighted\ Assets}$$

$$Leverage\ Ratio = \frac{Tier\ 1\ Capital}{Total\ Exposure} \geq 3\%$$

$$Liquidity\ Coverage\ Ratio = \frac{High\ quality\ liquid\ assets}{Total\ net\ liquidity\ outflows\ over\ 30\ days} \geq 100\%$$

Basel III also introduced stress tests. The Federal Reserve adopted a significantly stricter requirements for the leverage ratio, with mandated ratios increasing with the size of the bank and bank holding company.

By the third Accord, most countries in my dataset had become members of the committee. The Basel Accords are agreed upon by the Basel Committee, but implementation is left to the individual governing bodies, many of which are represented on the board. The European Union and the United States are each represented by their respective bank supervisory groups. The Bank of Japan represents its banks as a member of the Basel Committee as well. There is less continuity among Latin American banks, as they are not entered into a monetary union like European countries are. Argentina, Brazil, and Mexico are each members of the Basel Committee. Chile is listed as an observer of the committee. Several of the smaller countries with less developed financial sectors are not part of the Basel Committee: Bolivia, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, and Uruguay. The Committee strives to cooperate with non-member countries. To this end, the Committee established the Basel Consultative Group as a means for engaging with non-member authorities and regional groups of banking supervisors on Committee initiatives.

The Basel Committee is not the only or even the predominant authority on bank supervision. In fact, all Basel Accords are completely voluntary initiatives, adopted individually by various supervisory authorities. The Basel Committee regularly publishes updates regarding the status of implementation of the latest Accord by country, but does not directly supervise any banks. Banks are generally supervised by the designated authority in the country in which they are located, regardless of their country of ownership. Generally, branches of foreign banks are treated uniquely by the host country's regulatory body, while foreign-owned subsidiaries are treated identically to domestic banks.

There are around three-hundred foreign-owned banks in the United States in my dataset. Bank regulation in the United States is somewhat unique in that there are multiple regulators. Commercial banks in the U.S. can organize as states or national banks. Banks obtaining a charter at the national level are regulated by the Office of the Comptroller of Currency, while state banks are regulated by either the Federal Reserve of the FDIC. The majority of foreign-owned U.S. banks are branches of foreign banks which are not eligible for FDIC insurance and thus are not permitted to accept retail deposits. As mentioned previously, the U.S. regulators release quarterly balance sheet statements from all banks in the U.S., as well as their domestic and foreign holding companies.

The regulatory practices in the European Union are also somewhat unique, as the European Central Bank conducts monetary policy of the Eurozone, but each country has its own central bank as well. Banks in the European Union are subject to regulation by the Single Supervisory Mechanism, composed of the ECB and national competent authorities (NCAs) of the participating Member States. The Single Supervisory Mechanism is responsible for supervisory review and evaluation of all banks in the European Union. The ECB directly supervises institutions classified as significant, with the day-to-day supervision conducted by the Joint Supervisory Teams, comprised of staff from both NCAs and the ECB. The NCAs conduct supervision of institutions not classified as significant, subject to oversight by the ECB. The Supervisory Review and Evaluation Process (SREP) publishes details on the risks discovered stemming from this evaluation, including exposures, systemic risks, and risks revealed by stress testing. The regulatory authorities in the European Union do not, however, release bank-level balance sheet statements akin to the Fed's Call Reports. Further,

though I am able to identify a vast number of U.S. branches in Europe, the corresponding financial statements are not available. The Federal Reserve, as well as many Latin American countries, publishes statements from foreign branches operating under their jurisdiction, but the Single Supervisory Mechanism in Europe does not. Neither the ECB nor other central banks in Europe serve as the source of financial data in my dataset.

Latin American banks are regulated by the governing authority of their host country, which is usually the central bank. The reporting standards are more straightforward in Latin America because each country has its own central bank, unlike in Europe, but the regulations are somewhat less transparent, as only three of the countries are members of the Basel Committee, and as a result, there is less documentation on the status of implementation, if any, of the Basel Accords, which the Committee publishes for its members. However, evidence exists that each country has committed to comply with the Basel Accords.

2.4 Data and Methodology

The bank-level data in this paper cover banks in four regions of the world and come from two main sources. I examine banks located in the United States which are owned by banks or holding companies in Europe, Latin America, or Japan; and banks located in Europe, Latin America, or Japan which are owned by U.S. institutions. The purpose of this structure is to obtain a complete set of foreign banks under a bilateral ownership structure. This can inform trends on foreign banking between sets of countries while focusing on a subset of all global foreign banks in order to ensure accuracy and maximize coverage of the dataset. Coupled with macroeconomic data, this dataset intends to inform on determinants for foreign bank expansion and growth.

The list of host countries and number of banks are located in Tables F.5 and F.6. Banks located in the United States are obtained from the Federal Reserve's Call Reports, which contain an exhaustive list of banks as well as branches of foreign banks in the United States. Banks in the United States fill out any of three reports depending on whether they also have foreign offices (FFIEC 031), only have domestic offices (FFIEC 041), or are branches or agencies of foreign banks (FFIEC 002). The Call Reports contain information on the percentage of which banks are owned by foreign entities. By Freedom of Information Act

request, I am able to link these banks to data on their foreign banking organization (FBO), including the location of their home office, which must fill out an annual or quarterly report (FR Y-7Q).

Bankscope uses the FDIC Call Reports as a raw source for their database, but there are very few intstances of branches of foreign banks in the U.S. in Bankscope. Dating back to 1993, there are six branches of foreign banks in the United States listed in Bankscope, none of which come from the FDIC's Call Reports. For this reason, CvH is missing a crucial component of foreign banking in the United States. Branches comprise of nearly two-thirds of all foreign bank assets in the country. Despite adequate coverage of standalone subsidiaries of foreign banks, Bankscope's omission of nearly all branches of foreign banks (from the FFIEC 002) pose a problem. My dataset contains 268 U.S. banks and branches owned by FBOs in Europe, Latin America, and Japan located in the United States in 2013. In contrast, Claessens and Van Horen's dataset contains merely sixteen such banks, none of which are owned by Latin American banks or holding companies. Because of the accuracy and completeness of the Fed's Call Reports, Claessen and Van Horen's dataset fails to accurately represent bank ownership in the United States.

Gathering data on the banks located in Latin America, Europe, and Japan necessarily requires more care due to the inconsistencies of reporting standards across the various countries. As a result, this list of banks may be incomplete, though is more comprehensive than the database created by Claessens and Van Horen and still substantial. I use the Bankscope database to identify these banks. Due to the complexity of these banking families and the range of their activities, I identify many of these foreign branches and majority-owned subsidiaries of U.S. banks by hand. Any single query of the Bankscope database omits at least several banks that should be included. There is considerable ambiguity in the Bankscope database, due largely to the difficulty in assigning these institutions a specific designation, as many of these global banks participate in a wide variety of depository and non-depository activities. Bankscope assigns each institution a specialization (Table F.9), corresponding to one of several banking activities an institution might perform. Banks which specialize in Commercial Banking are of primary interest to this study. However, other specializations do not preclude a bank from commercial banking activities. Consistent with much of the literature (for instance,

Claessens and Van Horen 2014), I consider only banks which are at least 50% directly foreign-owned. Foreign branches are, of course, wholly owned by a foreign bank.

Because of the ambiguity in precisely defining a bank, and because the purposes of this dataset are not necessarily identical to the Claessens and Van Horen dataset, when comparing my dataset to theirs I use the most conservative criteria. That is, I look only at banks that are at least 50% directly owned by United States shareholders specializing in commercial banking with positive customer deposits listed on their balance sheets. Using this criteria, I add 17 banks operating in Europe, Latin America, or Japan in 2013 to the database created by Claessens and Van Horen. 2013 is the most recent year for which their database is publicly available. It is worth noting that some of the banks listed in their database do not fulfill the most conservative criteria I laid out.[9]

2.5 Summary Statistics and Trends

In this section I discuss several coverage results, comparing my dataset to existing ones. I also talk about summary statistics related to foreign banking activity between the U.S. and Europe, Latin America, and Japan. Then I discuss some of the trends in foreign banking that my datasets bear out.

Tables F.1 and F.2 compare broad summary statistics from my dataset (Table F.1) and the dataset created by Claessens and Van Horen (2014). As mentioned, the Claessens and Van Horen dataset contains data on global bank ownership, whereas mine focuses specifically on bilateral bank ownership among several regions. The dataset I have created is not meant to replace the existing one, but my contribution lies in part in the more comprehensive nature of my dataset than existing ones, so comparison with other datasets is informative.

As previously mentioned, gathering data on large banking families presents several significant challenge, and so comparing my dataset to existing datasets requires precise definitions of the criteria for determining a foreign bank. The majority of the global banks in this dataset undertake a wide variety of financial activities including, but not limited to, deposit-taking and commercial banking. The first panel of Table F.1 shows the

[9] For instance, some banks appearing in their dataset do not list commercial banking as their specialization or are missing values for customer deposits.

full set of active banks owned by U.S. banks in Europe, Latin America, and Japan; the second panel shows the entire set of active banks owned by institutions in those regions operating in the United States. I omit all banks which do not accept customer deposits. My dataset contains twenty-six active banks owned by United States institutions which do not appear in the CvH database. Table F.1 shows a smaller discrepancy between our coverages than this number because a handful of banks in the CvH database do not hold positive values of deposits.

Table F.1 shows that I have identified sixty-one active banks in Europe, Latin America, and Japan that are directly and majority-owned by a U.S. based institution and have financial statements available in 2013 or more recently. The summary statistics between our U.S.-owned banks are fairly similar, with the average bank in the CvH database slightly larger than mine, but the median slightly smaller. Data on Tier 1 capital ratios among banks abroad is fairly sparse, with only about one-third of those in my dataset reporting. Table F.3 breaks down the statistics by region of the bank's activity.

Using the Federal Reserve's Call Reports instead of the Bankscope database yields even better coverage of banks operating in the U.S. Further, via a Freedom of Information Act Request, I have obtained information on the Foreign Banking Organizations which control these banks which provides the location of parent organization as well as information on the capital of a branch. The Federal Reserve Call Reports contain more consistent and detailed information on the balance sheets of banks. Further, these data are reported at a quarterly frequency whereas Bankscope reports annually.

Not only is the coverage provided by the Call Reports is substantially greater than that available from Bankscope, but use of the Call Reports ensures that the institutions included are in fact banks. There are one-hundred two banks in the U.S. that are majority owned by institutions in Europe, Latin America, or Japan. Claessens and Van Horen identify only twelve active banks from the Bankscope database. Not surprisingly, the banks identified by Claessens and Van Horen are substantially larger than those in my dataset. My dataset exhibits substantial skewness; Table F.1 shows that the assets held by 75th percentile bank is less than the mean asset size. This is a well-established facet of the U.S. banking system. Bankscope generally identifies the largest banks, whereas the Call Reports contain all of them.

Nearly two-thirds of this group of foreign banks in the U.S. are from Europe; 19 are owned by Latin American institutions and 19 are Japanese-owned. Latin American banks in the United States are notably smaller than banks from Europe or Japan. All tables are in millions of U.S. dollars in order to facilitate comparisons across countries. Table F.1 shows that the asset sizes of banks in the U.S. are not dramatically different from those owned by the U.S., with average total consolidated assets of $25.7 billion and $21.9 billion respectively. As should be expected, these banks are considerably larger than domestic banks. Both groups of banks devote between 35% and 40% of their balance sheets to lending on average. Customer deposits make up just over 50% of liabilities for U.S. owned banks abroad; foreign banks in the U.S. rely slightly less on deposits as a source of funding on average.[10] U.S. owned banks appear to be better capitalized than foreign banks in the United States.

Table F.3 breaks down the operations of U.S. banks in each of the three regions. Bankscope identifies too few U.S. owned banks in Japan from which to draw any conclusions, but we can compare U.S. banks in Europe to U.S. banks in Latin America. U.S. banks in Europe are substantially larger than U.S. banks in Latin America as of the end of 2014. The mean asset size of European banks in this dataset is nearly seven times that of the mean Latin American bank. Interestingly, these larger European banks are also better capitalized than U.S. banks in Latin America, holding a Tier 1 Capital Ratio of 42%, compared to 20% for Latin American banks owned by the U.S. United States banks in Latin America dedicate a larger proportion of their balance sheet to lending (42% vs. 32%), and both sets of banks fund roughly have of their assets using deposits.

Within the group of banks operating in the United States (Table F.4), interesting insights are drawn by comparing banks from different regions. Notably, the average asset size of European banks is a staggering eight times that of Latin American banks stemming from a more developed financial sector in European countries. Japanese banks are even larger than European banks on average. The three groups of banks are similar in the share of loans they extend, but Latin American banks rely much more heavily on deposits (49.8%) as a source of funding than do European banks (35.4%). A higher reliance on wholesale funding by

[10] This is due in part to the restriction on branches of foreign banks to not accept retail deposits in the United States

large banks is a well-known feature. Interestingly, however, Japanese banks also rely very heavily on deposits as a source of funding (54.9%). Japanese banks also hold substantially higher levels of capital (32.5%) than European (11.9%) and Latin American banks (13.5%) do.

Interestingly, this dataset identifies more United States owned banks operating in Latin America than in Europe. This is largely due to the rapid growth in many Latin American countries over the past few decades, as well as reporting and disclosure practices of central banks in Latin America. It is well established that host country growth is one of the key drivers of foreign banking. Figure E.2 shows robust growth of U.S. banks in Latin America both during and after the financial crisis, when global foreign banking stagnated. On the other hand, Figure E.1 shows that U.S. ownership of European banks has not grown substantially over the past decade. Somewhat more surprising is the growth over Latin American banks in the United States over this period. While many studies show that host country characteristics play a large role in foreign bank expansion, home country characteristics are not thought to be as large an influence. Nonetheless, Figures E.3 and E.4 show that while European banks in the United States did not substantially grow their assets, their Latin American counterparts did substantially. This is likely due to the burgeoning financial sector in those countries during this time, as well as the fact that the financial crisis impacted the balance sheets of European banks in a more direct way.

Figures E.2 and E.4 show substantial growth in the size of U.S. banks in Latin America and Latin American banks in the U.S. over the past fifteen years. In contrast, Tables F.6 and F.8 show the numbers of foreign banks between the U.S. and Latin America. Interestingly, while the total banking assets and loans grew rapidly, the number of institutions generally remained constant. The size of these banks grew, but the number did not. The number of U.S. banks in Europe and European banks in the U.S. remained relatively stable as well, but the assets and loans (Figures E.1 and E.3) did not grow at the pace in which they did for their Latin American counterparts. The bilateral banking activity between the U.S. and Europe appeared to retrench somewhat during and following the financial crisis of 2008, but similar reduction in assets and loans did not appear to occur between the U.S. and Latin American countries.

2.6 Conclusion

Global foreign banking is an important and growing issue which will continue to generate interest among academics, policymakers, and financial market observers as its prevalence continues to grow. Understanding the costs and benefits of foreign banking are of paramount importance, and these costs and benefits are still unclear. Foreign banks hold the ability to both propagate and insulate shocks. Despite the increase in global banking, rich and comprehensive bank-level data is not consistently available.

In this paper, I construct a dataset containing such information on a bilateral basis. I look at the operations of foreign banks in the United States, and United States based banks abroad for three counterparty regions: the Eurozone, Latin America, and Japan. These regions are chosen for various reasons. Europe has a well-developed financial sector, and there is great bilateral bank activity between many European countries and the United States. However, European branches of foreign banks do not disclose balance sheet information at the level of the branch, resulting in an incomplete sample. Latin America has many developing countries with rapidly growing financial sectors, and central banks in Latin America disclose balance sheet information of foreign branches participating within. Japanese banks have long had a strong and important presence in the United States, but U.S. bank operations in Japan are comparatively limited.

I am able to identify a substantial number of U.S. based banks from Bureau Van Dijk's Bankscope database and the complete set of depository institutions from the Federal Reserve's Call Report. In comparison with another global database of foreign banking, my coverage of depository institution appears to dominate for the banks pertaining to this study. One striking finding resulting from the summary statistics is the growth of the size of foreign banks in and from Latin America. The number of U.S. banks in Latin America and Latin American banks in the United States has remained constant, even showing some slight decline. The total assets and loans among both of these groups of banks has soared over the past fifteen years, coinciding with the rapidly developing financial industries in many Latin America countries.

CHAPTER 3

Foreign Banking Trends in the U.S., Europe, Latin America, and Japan: Drivers of Growth and Choice of Structure

3.1 Introduction

The severity of the financial crisis sparked growing interest in the interconnectedness of the financial system among academics and policymakers. The failure of a small number of major financial institutions led to a global financial crisis via exposures across borders. Remarkably little is known about the cross-border banking behaviors of global financial institutions, despite steady and robust growth of global banking over the past several decades (Figure G.1). One reason for this is the lack of consistent and comprehensive data covering international banks and their cross-border operations.

In this paper I use two complementary datasets which cover bilateral banking operations between several sets of countries. One of the datasets is novel, created by Belton (2016) which contains bank-level observations on foreign owned banks. The second is the fairly well-known BIS Consolidated Banking Statistics, containing quarterly aggregated claims across borders and by local affiliates abroad. Use of these complementary data sources enables one to obtain insights that are unavailable when examining only aggregated or the necessarily incomplete disaggregated data.

The primary questions of interest in this study deal with bilateral bank operations. For example, I look at the operations of United States owned banks in Germany and the concurrent operations of German banks in the United States. I am primarily interested in the drivers of foreign banking, but attempt to specifically answer several pointed questions. First, there was a noted retrenchment in cross-border banking following the financial crisis of 2008. Foreign lending by local affiliates (i.e. by foreign-owned subsidiaries and branches) fell following the crisis, but less significantly (Figure G.1). I examine the drivers of this retrenchment and

decompose which countries saw lending fall and which did not. I also discuss the correlations between countries with bilateral banking presences. More generally, because I have fairly rich time series data for a number of countries, including data regarding their domestic banking activity, I can look at the factors that drive foreign banking activity. This introduces the differential drivers of cross-border banking activity and banking by local affiliates. I have country-specific macroeconomic data which provides insight into the role that host country specific factors play and the role that home country specific factors play.

The presence of foreign banks in an economy has ambiguous implications. A growing strand of literature examines the extent to which foreign banks have the ability to insulate an economy from a domestic shock and to propagate a foreign shock, reducing credit in the host country in which it operates. I discuss the relevant literature, and several key stylized facts about foreign banks in the next sections.

I look at banks from four regions of the world: the United States, the Euro zone, Latin America, and Japan. My dataset consists of foreign banking activity between the United States and countries in each of those three regions. I focus on the bilateral banking activity between the United States and each of these regions for a few reasons. First, these regions provide excellent variation over this time period. Japan and most countries in the Euro zone have well established financial sectors. Latin America, on the other hand, has a financial sector that is far less sophisticated, although it has been developing rapidly in some countries. Secondly, these regions each substantial foreign banking presences, both in the banks to which they are host and home to.

The use of these complementary datasets allow me to answer several interesting questions regarding bilateral banking operations among these vastly different countries before, during, and after the financial crisis. I show that claims of different types between countries are positively correlated. When a lenders in one country increase their loans to another country via direct cross-border lending, they also tend to increase their loans made by local affiliates operating in that country. I also find that foreign branches tend to rely on the economic prospects in their home country more than their host country, while foreign subsidiary banks are more dependent on the economic growth of the countries in which they operate. I document several

additional stylized facts regarding foreign banking during and immediately following the financial crisis of 2008.

The rest of this paper is organized as follows. The next section discusses the relevant literature regarding foreign banks, trends in foreign banking, and bilateral foreign banking. Section 3.3 discusses in depth the data sources I use and the creation of the novel bank-level dataset constructed in a previous paper. Section 3.4 reviews and explains methodology and results. Section 3.5 concludes.

3.2 Literature

3.2.1 International Shock Transmission

The literature on foreign banks, including trends in foreign banking around the crisis, has grown substantially over the past fifteen years. Not surprisingly, this growth has coincided with the growth in global banking. One of the crucial aspects of the presence of foreign banks in any economy is their tendency to transmit a shock in their home country to their host country, and conversely their ability to insulate their host country from a domestic shock. This transmission occurs through the balance sheet of a global bank; when a parent bank in the foreign bank's home country experiences a negative capital or liquidity shock, it may draw on resources from its bank abroad, causing the foreign bank to reduce credit. The workings of these so-called internal capital markets are of great importance to the operations of foreign banks.

The bank lending channel of monetary policy posits that monetary policy can affect the real economy through bank lending. Consider a contractionary monetary policy shock: the central bank reduces the total amount of deposits in the banking system. If a bank cannot replace these deposits with other sources of funding, the shock will result in a reduction in some asset, typically loans. Kashyap and Stein (1995) identified this channel showing that large banks can be more resilient to contractionary monetary policy shocks than small banks due to their ability to raise nondepository sources of funding. Cetorelli and Goldberg (2008) argue that it is not merely the size of these banks which allows them to withstand a contractionary monetary policy shock, but rather the presence of foreign offices. The authors posit that having foreign offices allows a global bank to maintain credit extension during a negative shock in one country by allocating capital and funding across borders. Claessens and Van Horen (2011) add several benefits to a strong foreign bank

presence in an economy. Namely, foreign banks promote competition, absorb shocks, and ensure access to a wider array of financial services.

Peek and Rosengren (1996) showed the potentially negative consequences of foreign bank presence when they traced the impact of a bank funding shock in Japan to real economic effects in the United States through a reduction in commercial real estate loans. The Japanese stock market collapsed in the early 1990s, and maybe Japanese banks suffered reduced capital positions, via a reduction in deposits. A bank experiencing a capital loss, especially when facing a mandatory capital ratio constraint, must either raise capital or reduce assets. Peek and Rosengren utilize the fact that U.S. branches of Japanese banks share a balance sheet and thus a capital structure with their parent bank, so a capital loss to the parent bank in Japan is seamlessly transmitted to its branch in the United States. Specifically, they find that a decline in the parent bank's risk-based capital ratio resulted in a decline in total loans at U.S. branches of nearly 4% of their total assets. In a later paper, Peek and Rosengren (2000) show that this reduction in lending had real effects on the United States' economy.

Cetorelli and Goldberg (2012) also look at the transmission of bank funding shocks from a foreign parent bank to their branch based in the United States. They use asset-backed commercial paper (ABCP) exposure during the financial crisis as a proxy for a negative balance sheet shock. Of course, ABCP was one of the largest sources of bank balance sheet stress during the financial crisis. In a first stage estimation, the authors estimate the change in internal lending by the parent banking organization from the U.S. branches. They emphasize the considerable heterogeneity in internal lending which reflects the bank's commitment to the U.S. market. In the second stage, they trace this initial balance sheet shock to a decline in lending by the U.S. branch.

Correa, Sapriza, and Zlate (2013) examine the consequences of the European sovereign debt crisis which peaked in the fall of 2011. They note that U.S. branches of European banks experienced substantial reductions in large time deposits. Their response to this funding shock was two-fold: these branches increased their internal borrowing (that is, their borrowing from European parent banks) and they reduced

the number of loans they extended. The internal borrowing was an attempt to mitigate the negative funding shock but the branches were unable to completely offset the fall in deposits.

3.2.2 Foreign Banks during the Financial Crisis

As mentioned previously, there was a well-documented decline in foreign banking claims following the financial crisis. Interestingly, this is evident primarily in cross-border claims, rather than claims by local affiliates. That is, the deleveraging across borders is seen in the BIS Consolidated Banking Statistics. It is not, however, particularly pronounced when examining bank-level data, because foreign banks did not substantially reduce their assets or loans.

Cerutti and Claessens (2014) address possible reasons for the great decline in cross-border banking alongside the modest fall in foreign banking occurring via branches and subsidiaries. Using the BIS Consolidated Banking Statistics, they attempt to disentangle three potential reasons for this fall in bank lending across borders: deteriorating balance sheets of global banks, weak loan demand, and the changing or uncertain regulatory landscape. Like most papers using data of this sort—with lender and borrower entities—Cerutti and Claessens use the identification strategy proposed by Khwaja and Mian (2008) which implies using borrower fixed effects to identify credit supply changes. The authors find that deleveraging varied largely with ex ante measures of lender banks' vulnerabilities especially market based measures. They find that financial statements and other borrower- and lender-specific characteristics were mostly insignificant predictors of credit reduction. Further they find that barriers to internal lending within banking systems which influence cross-border banking do not similarly explain changes in lending by local affiliates. In fact, they argue that there may have been some degree of substitution between lending across borders and by local affiliates by some banking systems. One explanation for this is that some banks which may have been prohibited from reallocating resources to a parent bank could have cut cross-border lending from the parent bank and replaced it with lending by the branch or subsidiary abroad.

Claessens and Van Horen (2014) construct a novel bank-level dataset using the Bureau van Dijk's Bankscope database and examine global foreign banking trends around the time of the financial crisis. The authors reiterate that the retrenchment in foreign bank presence following the crisis (judged by the number of

banks rather than their loans) was limited. They argue that this is evidence of the stabilizing presence of foreign banks. Countries with more advanced financial systems, hit hardest by the effects of the financial crisis, reduced their foreign bank ownership more than countries with less developed financial sectors. In fact, banks from emerging markets and developing countries expanded their foreign presence following the crisis. Claessens and Van Horen argue that the qualities of the host country have influenced foreign bank presence and retrenchment following the financial crisis. While some have argued that the retrenchment in foreign banking has represented a reversal of financial integration, these authors posit that it accelerated the process of structural transformations. These transformations have left the global banking system with a greater number of home countries active abroad.

3.2.3 Determinants of Foreign Banking

Central to this paper are the distinct manners in which a bank can enter a foreign market, of which there are at least three important ones: through cross-border lending, through establishing or acquiring an existing subsidiary bank, or through establishing a branch. Cerutti, Dell'Ariccia, and Peria (2007) discuss this decision. Because unlike branches, subsidiaries hold their own capital structures, establishing and maintaining a subsidiary bank is more costly. However, the liabilities of a branch are identically the liabilities of a parent bank. As a result, in countries with higher economic or political risk, banks often opt to establish a subsidiary in order to separate themselves from the risk of the subsidiary. Cerutti et al. establish that the most important factor in the structural form is the regulatory framework in the host country.

Brealey and Kaplanis (1996) discuss more broadly the roles that a foreign bank might play and the reasons for foreign bank entry. First of all, by expanding into a foreign market, a bank might attract customers who reside in its home country and conduct business in the market into which the bank expands. Second, banks may obtain a comparative advantage by offering a service in a most efficient way than is offered by existing banks in the market. Regulatory and tax discrepancies can also fuel expansion into foreign markets. Claessens and Van Horen (2014), using their novel dataset, argue that host country characteristics are important determinants of foreign bank entry; faster growth and geographical closeness each play important roles in the decision of a foreign bank to enter.

Focarelli and Pozzolo (2000) emphasize that banks which have expanded into foreign markets tended to be based in wealthier countries with more well-developed financial sectors. Claessens and Van Horen (2014) discuss that this is no longer the case. One of the major structural changes with respect to foreign which came about as a product of the financial crisis is the variety of home countries owning global banks. Focarelli and Pozzolo (2000) find that profits determine foreign bank expansion, and so high economic growth and developing countries are attractive hosts for foreign banks. Focarelli and Pozzolo (2005) discuss the decision to lend across borders. This is an activity generally available to large borrowers through syndicated loans.

3.3 Data

There are two sources of data used in this study, each of which I discuss in detail in this section. Both datasets bear their own complexities: my bank-level dataset created in a previous paper requires a great deal of care and several caveats, and the BIS Consolidated Banking Statistics are notably intricate, and as such require two major systematic corrections and explanations.

3.3.1 Bank-Level Data

For complete details on the creation of this bilateral dataset of foreign banking activity, the reader is referred to an earlier paper in which a more complete treatment of the data is given. I use different primary sources to compile data on U.S. banks in Europe, Latin America, and Japan and foreign banks in the U.S. For the former set of banks, I use the Bureau van Dijk's Bankscope database. This source purports to be the most comprehensive global database of banks' financial statements. The database lists the source of the banks' financial statements, when available. Primarily these sources are the annual reports filed by publicly traded institutions. In less common cases, such as banks in Latin America, the local central bank discloses financial information completed by the U.S. owned banks or branches. The complexity of these global banks and the wide range of financial services many of them of offer poses some amount of difficulty in compiling this list of banks. I choose to compile a dataset only of deposit taking banks. The database contains, for instance, securities firms and investment banks which are nondepository institutions and therefore of no interest to this study. Due to the complex nature of the data, the banks are selected by several queries rather than a single one.

For the set of European, Latin American, and Japanese owned banks in the United States, I rely on the Federal Financial Institutions Examination Council's (FFIEC) Call Reports. This set of banks is substantially more complete than that provided in Bankscope. The Federal Reserve releases these quarterly reports which provide detailed information regarding balance sheet and income information of all banks and savings associations resident in the United States. I combine three reports: FFIEC 002, completed by branches of foreign banks in the United States; FFIEC 031, completed by consolidated banks in the United States with offices abroad; and FFIEC 041, completed by consolidated banks in the United States without foreign offices. Via Freedom of Information Act Request, I also obtain the FR Y-7Q which contains balance sheet and qualitative information regarding the Foreign Banking Organizations (FBOs) which control branches and banks in the U.S. Bankscope gathers data from these Call Reports, but there are two main reasons I use the raw data from the reports directly. First, the reports contain rich information on ownership structure, including several tiers of holding companies and the percentage of ownership. This ownership data can easily be matched to banks in the Federal Reserve's reports. More importantly, Bankscope does not have Call Report data on branches of foreign banks resident in the United States. That is, the balance sheet statements of these branches appear to be included in the consolidated statements of the parent bank. For the purposes of this study, this format is inadequate. Foreign branches are a crucial component of foreign banking.

For the sake of comparison, a similar global banking dataset exists created by Claessens and Van Horen (2013). Claessens and Van Horen compile a set of foreign banks in each country, matched to their country of ownership. The authors use Bankscope to create the database. The scope of their study is considerably wider than mine, and this enables me to capture a set of banks that Claessens and Van Horen do not because of the additional data source I use and the more careful manner in which I select these banks.

Summary statistics are shown in Table H.1. I convert currencies into U.S. dollars for comparison in the table below. A more detailed treatment of the statistics across the different regions of the world are given in the earlier paper.

In parts of this paper I am interested in the share of banking conducted within a country that is done by foreign banks. I continue to use the same data sources, but include all banks available. Again, because the

coverage of banks in the United States is more comprehensive than the coverage of European banks, the foreign banking shares themselves may not be directly comparable, but the changes over time can be insightful.

3.3.2 Aggregated Banking Data

The second source of data I use comes from the BIS Consolidated Banking Statistics. McGuire and Wooldridge (2005) provide good discussion regarding the evolution and uses of this data. The dataset captures aggregate exposures of banks within a country to counterparties in different countries and sectors. Banks are required to report disaggregated data regarding claims on borrowers residing outside the country in which the bank is headquartered. Banks report their cross-border claims on an immediate borrower basis and on an ultimate risk basis; claims on an ultimate risk basis correspond to the country in which the ultimate obligor, or the counterparty who is ultimately responsible, resides. On the other hand, claims on an immediate borrower basis reflect the residency (not nationality) of the direct borrower. For instance, if a U.S. bank lends to a German company operating in Mexico, then Mexico will be the counterparty on an immediate basis, but Germany may be the counterparty on an ultimate risk basis. The difference between the two categories is captured by net risk transfers. Banks report their outstanding loans and securities holdings on an immediate borrower basis. On an ultimate risk basis, banks report separately their derivative contracts as well.

The BIS Consolidated Banking Statistics date back to 1983, when aggregated cross border claims between pairs of countries were published on a semi-annual basis. The reporting frequency increased to quarterly in 2000. These statistics are ideal for a study of bilateral cross-country banking statistics in that they contain the complete aggregate statistics over a suitably long timeframe for various different measures of cross-border claims and exposures. The data are broken up into six categories: residency of the borrower, basis for allocating risk exposure, type of exposure, booking office location, sector of borrower, and maturity. I focus on two measures: local claims by local affiliates are on an immediate counterparty basis for all counterparty sectors and all maturities in local currencies; and total claims on an immediate counterparty basis for al counterparty sectors and all maturities.

The BIS Consolidated Banking Statistics serve as an appropriate complement to the bank-level bilateral dataset I have previously compiled. While the bank-level data can offer insights regarding firm-specific factors driving lending and paint a more detailed picture regarding local lending, the database inevitably fails to capture many banks of interest due to the reporting practices in the various regions. The BIS Consolidated Banking Statistics provide quarterly aggregated banking sector claims on a range of countries, counterparty sectors, and maturities. Further, the dataset breaks down total claims of one country on another into local claims by local affiliates and direct cross-border claims. The introduction of cross-border claims adds a dimension of international banking that is unavailable in the bank-level dataset.

Because of the length of the BIS data and the aggregated nature of the data, there are a number of breaks in the series which need to be accounted for. Cerutti (2015) emphasizes the need for these corrections and provides a list of the breaks needing correction. For example, at certain points in the series for a given country the reporting population may increase due to the inclusion of a group of institutions or to improvement in data quality. Failure to adjust the series will lead to potentially drastic incorrect conclusions. In the United States, investment banks became part of the reporting population in the first quarter of 2009 as the Fed sought to improve their access to liquidity and other resources. This caused international claims by U.S. reporting banks to jump nearly 60% in a quarter. The BIS provides the level by which local and adjusted claims increase due to the series break in each of these instances, allowing the researcher to compute an adjusted series working backward from each series break. Figure G.2 shows the adjusted and unadjusted cross-border claims series for banks resident in the U.S. lending directly to the rest of the world.

My interest lies primarily in the two series of local claims by local affiliates and cross-border claims (that is, total claims less local claims) from banks in the United States on European, Japanese, and Latin American borrowers, and the reciprocal borrowings of the United States from banks in those countries.

Figure G.1 shows that there was a global retrenchment in cross-border lending by banks following the crisis. This retrenchment subsisted for quite some time, and has not fully begun to reverse course. On the other hand, lending by local affiliates declined only slightly during the crisis, but stabilized fairly quickly over the following quarters. While this global retrenchment in foreign banking is both clear and well-established,

Figure G.3 shows that this broad reduction in global lending was not monotonous across countries. Banks in the U.S. generally expanded their lending to the rest of the world, primarily through cross-border claims. Figure G.4 shows that foreign banks within the U.S. behaved in an opposite manner. In the next section I focus on the drivers of this divergent trends.

3.4 Methodology and Results

This section presents basic results and briefly discusses the identification strategies for each dataset used. I set out to establish several facts about bilateral bank ownership between countries, as well as to test some drivers of foreign banking generally. Khwaja and Mian (2008) propose an identification strategy which has subsequently become widely used in papers identifying credit supply with borrower characteristics available. The strategy posits that when a single borrower (here, a country) borrows from multiple lenders, any change in credit extended from one lender and not the others is a function of credit supply rather than demand. Functionally, this amounts to the inclusion of borrower fixed effects. For country i lending to country j:

$$\Delta L_{ijt} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_{jt} + \beta_3 \Gamma_t + \gamma_j + \tau_t + \varepsilon_{ijt}.$$

X_{it} and Z_{jt} represent lender (home) and borrower (host) country-specific variables. I use macroeconomic variables such as GDP growth, inflation, industrial production, and unemployment. We should expect the host country variables to play a more substantial role than the home country variables, as has been established in the literature. This should be especially true in the case of cross-border claims, as Cerutti and Claessens (2014) find.

The results in this paper are broken up into four parts. First I analyze the drivers of cross-border claims and claims by local affiliates. These data come from the BIS Consolidated Banking Statistics, and so micro-level data including bank balance sheet information is unavailable. I focus on various measures of macroeconomic growth and financial market stress, distinguishing among the claims of the three regions of interest. Secondly, I look at measures of lending at the level of the foreign bank in each region. In this set of equations I am able to compare the drivers to those at the aggregate level, and to distinguish between the forces determining loan growth by subsidiaries and loan growth by foreign branches. The next set of results

contain exit and entry of banks into and out of foreign markets. Finally, I look at asset and loan volatility for domestic banks, foreign subsidiaries, and foreign branches.

I seek to add a dimension to existing literature on foreign banking by distinguishing between branches and subsidiaries. Foreign branches may be expected to reallocate capital within their banking systems more freely than subsidiaries of foreign banks for several reasons, including regulatory. In the same sense, we might expect branches to be more reactive than subsidiaries to host country characteristics. Additionally, I explore the volatility of foreign and domestic bank lending using bank-level data.

3.4.1 Drivers of foreign and cross-border banking

The first set of regressions I run looks at drivers of cross-border banking and banking by local affiliates. I estimate equation (1) using measures of market stress such as the CBOE Volatility Index (VIX)[11] and the TED spread[12] as well as host- and home-country specific macroeconomic variables. Additionally, I look at a measure of systemic risk developed by Acharya et al (2010) and provided by The Volatility Laboratory at NYU Stern. This measure of systemic risk (SRISK) estimates the riskiness of banks in a country and is comprised of three main factors: change in debt, change in equity, and change in risk.[13] SRISK seeks to measure the expected capital shortfall of a bank given a crisis.

Tables H.2 and H.3 aim to show some of the drivers of aggregate foreign banking claims as reported in the BIS dataset. These regressions are not formatted to show specifically bilateral claims, but include only claims among the countries of interest. There are more counterparty countries (borrowers or hosts) than appear as reporting countries (lenders or home countries) in the dataset. For instance, Argentina appears in this dataset only as a counterparty country, not as a reporting country. In these regressions, I include U.S. claims on Argentina even though the reciprocal Argentinian claims on the U.S. are not present. In the next section when I focus specifically on the bilateral claims, I will drop the countries which do not report claims.

[11] The VIX is a measure of implied volatility of the S&P 500 stock market index options
[12] The TED spread is the difference between the three-month LIBOR rate and the three-month Treasury Bill rate. The TED spread is used as an indicator of general economic credit risk.
[13] http://vlab.stern.nyu.edu/doc/16?topic=mdls

The first column of Table H.2 shows that a higher level of SRISK in a bank's home country can reduce that bank's desire to lend abroad directly. Macroeconomic factors seem to play a role, as presented in column 2, but likely because of the collinearity among these factors included, the unemployment rate in the host country is the only significant factor. Column 3 indicates that the two measures of financial market stress are only marginally significant factors in cross-border lending when the host or borrowing country was the United States during this time period. Columns 5 through 8 repeat the specifications in the first four columns but add the contemporaneous logarithmic change in claims but local affiliates between the same countries. These columns show that there is a fairly strong positive conditional correlation between cross-border lending and lending by local affiliates between a given pair of countries. Each specification includes dummy variables corresponding to the quarter of the observation as well as borrower (host) country fixed effects.

Table H.3 presents the results of the same regression specification with the logarithmic lending by local affiliates (branches or subsidiaries). The results suggest that the determinants of this type of lending are less driven by macroeconomic factors, and entirely unrelated to home country factors. Column 2 shows that the host country unemployment rate is a significant determinant of local loan growth by foreign banks. Columns 5 through 8 show, again, that the two types of foreign lending, cross-border lending and lending by local affiliates, have a strong conditional correlation even aggregated to the level of the country.

The next set of results looks at the correlations between cross-border and local loan growth in greater detail. Tables H.4 and H.5 look at the correlations between cross-border banking claims and claims by local affiliates. These regressions necessarily discard observations for which the country only appears in the data as a counterparty. These regressions should be viewed simply as correlations between types of claims between countries. The equations are regressed using no fixed effects, borrower country fixed effects, and country-pair (or bilateral country) fixed effects. The positive correlation between change in local and cross-border claims remains generally intact (Columns 1 through 3, Tables H.4 and H.5) even when lagged changes in the dependent variables are included along with lagged changes in the independent variables (Columns 7 through 9, Tables H.4 and H.5). Columns 4 through 6 show that these two types of claims are most positively correlated in Japan and Latin America; the correlation between claims is insignificant between the U.S. and

European Union countries. These tables generally show that banks may view these forms of foreign lending as complementary.

3.4.2 Drivers of Local Lending by Branches and Subsidiaries

Drivers of foreign banking appear in the next set of results. I regress individual bank loan growth on a series of balance sheet and macroeconomic control variables. I separate the group of banks into foreign branches and foreign subsidiaries after estimating the equations for the two groups together. Each of these regressions is estimated with no fixed effects, host country fixed effects, and bank fixed effects.

The most notable finding in this section is the importance of home country growth for the group of foreign branches, and the importance of host country growth for subsidiaries. Recall that branches share a balance sheet with their parent bank, and so their funding is tightly tied to that of their parent bank. Further, foreign branches in the United States are generally not permitted to accept retail deposits, rendering them more dependent upon their FBO. On the other hand, subsidiary banks typically rely primarily on their own deposits and other sources of funding, so their health is more directly tied to the country in which they operate than that in which their parent is located. Balance sheet characteristics appear to be less important predictors than macroeconomic conditions.

3.4.3 Entry and Exit

Figures G.5 and G.6 chart the exits and entries, as well as net entry of foreign banks during the time sample my data allows. Mergers and acquisitions are accounted for, so that a non-surviving institution involved in a merger is not mistaken for an exit. The most striking finding in Figure G.5 is perhaps the stability of exits of foreign banks in the U.S. surrounding the financial crisis. Banks did not exit substantially more frequently around 2008 and the following years. However, foreign bank entry plummeted around this time, reaching a peak of seven foreign branches and subsidiaries in 2007, and falling to one in each year from 2009 through 2011. While the financial crisis and ensuing recession did not cause foreign banks to leave the United States, it clearly deterred foreign banking organizations from establishing new institutions.

U.S. banks abroad showed a spike in exits just before the worst of the crisis in 2007, but entries jumped in 2008. Exits actually fell substantially during the crisis, indicating that perhaps some U.S. banking

organizations expanded their business in countries which were experiencing better economic growth while the U.S. stagnated. U.S. banks exited these markets in increasing numbers several years after the crisis, peaking in 2012.

3.4.4 Volatility

One of the problematic aspects of foreign banks deals with their potential to allocate capital away from a host country if, say, a shock to their home country induces their parent bank to draw on some of the funding lent to the foreign branch. Peek and Rosengren (1996) show that Japanese branches located in the United States reduced their lending in response to a stock market crash in Japan which reduced the capital of the parent banks controlling these branches. The result was a reduction in real estate construction activity in the United States. The tendency of foreign banks to change alter their lending positions is of obvious interest for this reason.

Figure G.7 shows the quarterly percentage change in total loans among domestic banks in the United States. Clearly it is quite stable with the vast majority of observations near zero. The standard deviation of the quarterly percentage change in loans among U.S. domestic banks is 0.0794. In contrast, Figure G.8 shows the quarterly percentage change in loans for foreign banks (from Latin America, Europe, and Japan) in the U.S. The standard deviation is 0.1997 for this group. These foreign banks show a clear tendency to drastically alter their lending positions which can act as a destabilizing force. Figures G.9 and G.10 show a similar fact for U.S. banks operating in select foreign markets. The data are at a lower frequency and have fewer observations, but the general result is consistent.

3.5 Conclusion

This paper has contributed to the growing literature on foreign banking by analyzing two datasets looking at bilateral banking activity. The first dataset is compiled in an earlier paper [Belton (2016)] and consists of bank-level data from the U.S. Call Reports and Bankscope. The second is the BIS Consolidated Banking Statistics, which contains data aggregated to the level of the country, but has the benefit of completeness and including direct cross-border lending. Through the analysis of these complementary datasets, I am able to

distinguish between the drivers of three types of foreign banking: direct cross-border lending, subsidiaries, and branches.

Among the main results of this paper deal with the different drivers of different types of foreign banking. Home country characteristics and growth factors matter substantially for cross-border lending and for the lending of branches, but do not impact subsidiaries in the same way. Rather, foreign subsidiary banks tend to react to the economic well-being of the country in which they operate. After controlling for macroeconomic factors and financial market stress, lending growth by local affiliates tends to move positively with lending growth by institutions across borders. This is especially true between the United States and Latin American countries and Japan. I also show trends in foreign bank exit and entry as well as volatility of lending by this group of foreign banks.

APPENDICES

Appendix A Regulation of Foreign Banks in the United States

Foreign banking in the United States takes on several different forms, each with unique regulatory characteristics. Foreign banks in the U.S. most commonly appear in the forms of representative offices, agencies, branches, banks, and Edge Act and Agreement international banking corporations. A representative office generally engages in non-transactional business such as marketing, and so is not considered in this study. By mandate, Edge and Agreement corporations may engage only in banking activities outside of the U.S., and so are not of interest here as well. In this section we discuss the important characteristics distinguishing branches, agencies, and subsidiaries of foreign banks in the United States.

Federal Reserve Regulation K defines an agency as a place of business of a foreign bank "at which credit balances are maintained, checks are paid, money is lent, or…deposits are accepted from a person or entity that is not a citizen or resident of the United States." A foreign branch is defined as a place of business of a foreign bank "at which deposits are received, and that is not an agency." The major distinction between branches is that agencies are generally more restricted in their ability to accept deposits. Agencies may keep credit balances, which are deposit-like liabilities, but less general than a deposit. Credit balances must serve a specific purpose, cannot be used to pay routine operating expenses, and must be withdrawn reasonably soon after the specified purpose has been accomplished. Aside from their differing abilities to accept deposits, branches and agencies are practically indistinguishable, and for the remainder of this paper, we choose not to distinguish between the two, as is common in the literature (see, for instance, Cetorelli and Goldberg 2012b).

A branch is merely an extension of its parent bank—not a separate legal entity—and is less costly to establish because it does not require its own capital investment. U.S. branches of foreign banks file quarterly reports (FFIEC 002) based on the assets and liabilities held by the branch itself, but do not have a freestanding capital structure. Though these reports are less detailed than those filed by standalone banks, they contain the major balance sheet and income categories. The Foreign Bank Supervision Enhancement Act of 1991 (FBSEA) prohibited the FDIC from insuring U.S. branches and agencies of foreign banks. For this reason, they may not accept retail deposits (any deposit of less than $100,000) from U.S. citizens or residents. There are a small number of branches established before the FBSEA which were allowed to keep their insured status with the

FDIC. Aside from this restriction, branches can engage in a full range of activities. Branches are not subject to U.S. bank capital adequacy requirements, but it is U.S. law that federal branches and agencies maintain a Capital Equivalency Deposit (CED) equal to 5% of their liabilities.

Unlike a branch, a subsidiary bank maintains its own capital and is a separate legal entity from its controlling bank or holding company, but its shares are owned by a parent company. Subsidiaries of foreign banks are subject to all the same regulations and may engage in the same activities as domestically owned banks, including FDIC insurance. From a regulatory standpoint, there are no significant differences between bank subsidiaries of foreign holding companies and U.S. banks. For instance, a U.S. subsidiary bank owned by a foreign bank must comply with United States bank capital requirements—not those of the country in which its controlling office is located. These banks may organize as national banks or state banks.

Branches have more flexibility than subsidiaries in the ability to reallocate liquidity to and from affiliates. Federal Reserve Regulation W adopted Section 23 of the Federal Reserve Act which places limitations on the size and type of transactions allowable between a bank and its subsidiary. Specifically, a bank's covered transactions[14] with any affiliate cannot be greater than 10% of the bank's capital and surplus, and the total amount of covered transactions between the bank and all of its affiliates cannot be greater than 20%. The restrictions apply to both foreign- and domestically-owned banks, but are more limiting to a subsidiary of a foreign bank, as we expect to see capital flow more regularly between international affiliates. A U.S. branch or agency is only subject to these restrictions if the affiliate is a U.S. institution engaged in securities underwriting and dealing, merchant banking, insurance underwriting, and insurance investment activities.

Federal Reserve Regulation D imposes reserve requirements on transaction accounts, nonpersonal time deposits, and Eurocurrency liabilities, but the latter two have had a requirement of zero since the early 1990s. Depository institutions may hold these reserves as vault cash, directly with the Fed (in the case of a depository institution that is a member bank), or in a pass-through account with a correspondent bank. U.S. branches and

[14] A covered transaction here is defined to include the following: a loan or extension of credit to an affiliate; purchase of securities issued by an affiliate; purchase of assets from an affiliate; acceptance of securities or debt obligations issued by the affiliate as collateral; issuance of a guarantee, acceptance or letter of credit on behalf of an affiliate; a transaction that involves the borrowing or lending of securities; or a derivative transaction

agencies choosing to hold reserves at the Fed may do so either directly with the bank in their district, or may aggregate reserves with a pass-through correspondent holding reserves for the consolidated bank. For a small quantity (currently below $14.5 million) of reservable deposits, the reserve requirement is zero. The marginal reserve ratio for banks with up to the next threshold (currently below $103.6 million) is 3%, and rises to 10% above that level. These apply to branches and agencies of foreign banks in the U.S. as long as their parent bank has or is controlled by a company with worldwide consolidated bank assets of at least $1 billion. There are several additional exemptions to the regulation of reserve requirements. Bankers' banks, which primarily do business with other financial institutions, are owned by other financial institutions, and do not do business with the general public, are exempt from reserve requirements. An International Banking Facility (IBF) is a set of accounts through which a depository institution may more effectively transact with foreign customers. IBF deposits held by a depository institution do not count toward required reserves.

U.S. subsidiaries, branches, and agencies of foreign banks required to maintain reserve requirements may use the Fed's discount window. Borrowing at the discount rate is generally done at primary or secondary credit. United States based banks can borrow from the discount window at a rate depending on their CAMELS ratings and their capitalization adequacy. Similarly, foreign banks face a rate based on their SOSA and their ROCA rating.

Commercial banks in the United States can decide whether to organize as a state or national bank. National banks operate with a charter issued by the Office of the Comptroller of Currency (OCC), while state banks receive a charter from a state government. The choice of charter also determines the principal regulator of the bank: a national bank's primary supervisor, regulator, and examiner is the OCC, while that duty falls jointly to either the Fed (if the state bank is a member of the Federal Reserve System) or the FDIC (if it is a nonmember) and the state chartering authority for state banks. National banks are required by law to be members of the Federal Reserve System, and all state banks are eligible to apply for membership. Member banks must hold 3% of their capital as stock in their regional Federal Reserve Bank; this stock pays out a 6% annual dividend each year. State banks generally tend not to pursue membership with the Federal Reserve System. Beyond this, the differences between choosing a national and state charter have lessened over the past century, and the charters

differ mainly in who regulates the bank. Like U.S. chartered depository institutions, branches of foreign banks may obtain either a federal or state charter, and are then characterized as federal or state branches. Unlike a national bank, federally-chartered branches are not required to become member banks, but otherwise, uninsured federal branches face similar regulations to those faced by a national bank.

A foreign banking organization (FBO) is defined as a foreign bank that operates or controls a branch, agency, or subsidiary bank. A bank holding company (BHC) is a company that owns and controls one or more banks. The Fed is the primary regulator of all BHCs in the U.S. Bank holding companies in the United States generally cannot engage in nonbanking activities per the BHC Act of 1956. Most commercial banks in the United States have an associated holding company. A foreign bank controlling a U.S. chartered subsidiary, branch, or agency is likewise restricted in its nonbanking activities. Financial holding companies, on the other hand, have more flexibility with respect to the companies they own. The Gramm-Leach-Bliley Act of 1999 defined financial holding companies which are allowed to engage in nonbanking activities such as insurance underwriting as long as the activities are financial and/or deemed closely related to banking. If a foreign bank and its ultimate parent achieve characterization as a Qualifying Foreign Banking Organization (QFBO), the Fed has limited jurisdiction over nonbanking and nonfinancial activities of a foreign bank's affiliates in the U.S. and abroad. A QFBO may engage in any activity in the U.S. that is deemed incidental to its business outside of the United States, and may engage in any activity outside of the United States. To qualify as a QFBO, a foreign bank and its parent must show that more than half of its global business is banking, and that more than half of its global banking business is outside of the United States. In order for a foreign bank to obtain a charter for a U.S. branch, agency, or subsidiary, the Fed requires that the foreign bank's capital ratio be "equivalent, but not identical to" the requirement of a U.S. bank. A foreign bank operating a branch or agency in the U.S. is treated like a holding company.

The FBSEA placed foreign branches and agencies under the regulatory supervision of the Federal Reserve, rather than the Office of the Comptroller of the Currency (OCC). Many domestic banking entities also operate under the supervision of the Fed: state-chartered member banks, bank holding companies, and foreign branches of U.S. national and state member banks. Though all national banks must be members of the Federal Reserve

System, they are supervised by the OCC. Examiners quantify their assessment of branches and agencies using a ROCA score, which has four components: Risk management, Operational controls, Compliance, and Asset quality. Regulators are also interested in the degree of support a U.S. operation of a foreign bank will receive from its FBO if necessary. The strength-of-support assessment (SOSA) is a confidential rating made up of two components. The first measures the FBO's ability to support its subsidiary or branch, which takes into account the overall health of the FBO as well as supervision from its home country supervisor. The second component assesses whether there are any general concerns regarding the ability of the FBO to maintain controls and compliance at its U.S. office.

All banks in the U.S. are restricted from lending in excess of 15% of their capital to a single borrower. These limits have some exceptions, but also hold for branches and agencies of foreign banks. Because the limits refer to the capital of the parent of the branch or agency, these limitations are likely to be somewhat more relaxed than for a subsidiary of the holding company.

Appendix B Figures for Chapter 1

Figure B.1: Balance Sheet Composition—Small U.S. Banks

Assets	Liabilities
Reserves and Cash Balances (10.3%)	Domestic Deposits (92.2%)
Securities (16.2%)	Foreign Deposits (0.2%)
Loans (59.8%)	Fed Funds purchased (0.2%)
Other Assets (13.7%)	Repos (0.7%)
	Other Liabilities (6.7%)
	Capital (25.8%)

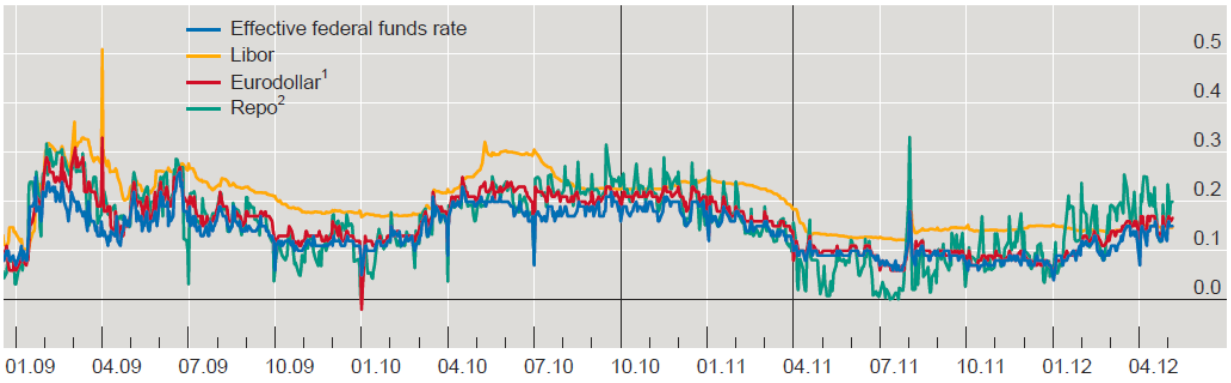
A small bank is defined as in the rest of this paper, as belonging to the smallest 90% of U.S. banks. Balance sheet composition are averages as of the fourth quarter of 2010, just prior to the implementation of the FDIC assessment base change.

Figure B.2: Balance Sheet Composition—Large U.S. Banks

Assets	Liabilities
Reserves and Cash Balances (8.7%)	Domestic Deposits (82.2%)
Securities (20.5%)	Foreign Deposits (3.1%)
Loans (61.9%)	Fed Funds purchased (1.3%)
Other Assets (8.9%)	Repos (3.4%)
	Other Liabilities (10.0%)
	Capital (17.9%)

A large bank is defined as in the rest of this paper, as belonging to the largest 5% of U.S. banks. Balance sheet composition are averages as of the fourth quarter of 2010, just prior to the implementation of the FDIC assessment base change.

Figure B.3: Overnight borrowing rates



Source: Kriecher, McCauley and McGuire (2013)

Figure B.4: Commercial Paper Rate

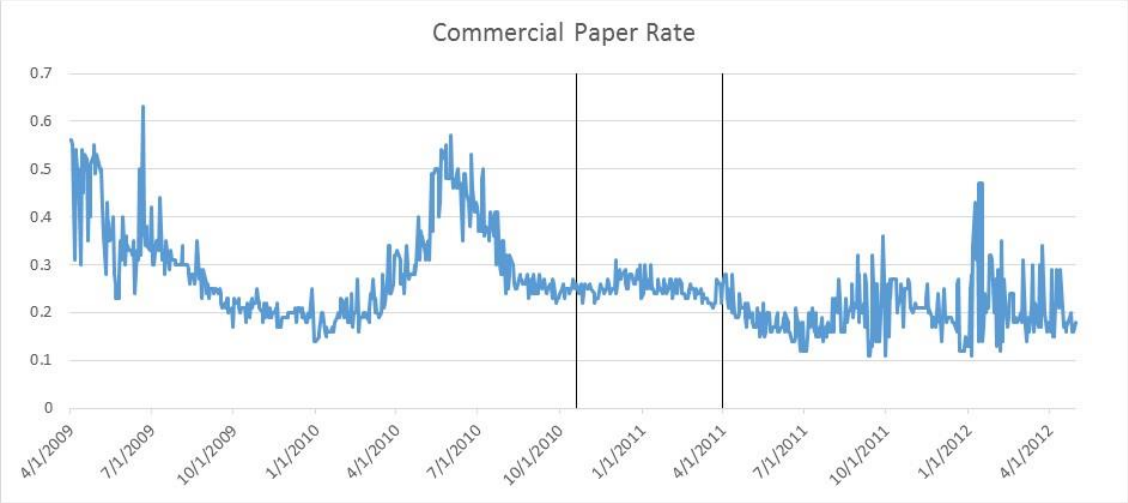
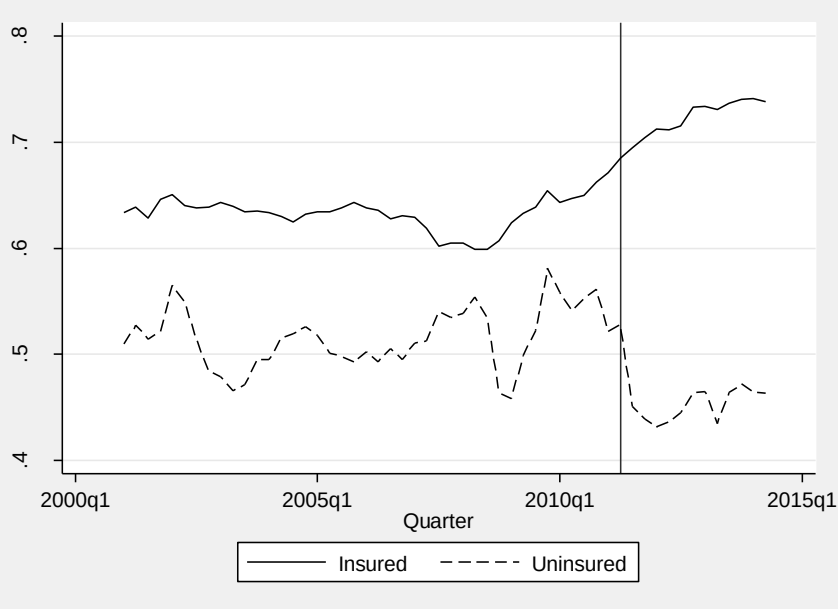


Figure B.5: Ratio of Deposits to Assets



Appendix C Tables for Chapter 1

Table C.1: Bank Data Summary Statistics—2011Q1

	Uninsured				Insured		
Variable	**N**	**Mean**	**Median**	**Std. Dev.**	**N**	**Mean**	**Median**	**Std. Dev.**
Total Assets ($ Billions)	222	9.504	0.633	21.4	6,935	1.575	0.152	26.5
Cash ($ Billions)	222	3.066	0.067	9.798	6,935	0.125	0.011	1.992
Cash (% of Assets)	210	0.270	0.147	0.303	6,935	0.098	0.070	0.101
Deposits ($ Billions)	221	4.982	0.220	12.4	6,935	1.056	0.128	17.2
Deposits (% of Liabilities)	209	0.404	0.331	0.345	6,934	0.930	0.964	0.129
Loans ($ Billions)	221	2.141	0.304	5.483	6,935	0.903	0.093	14.3
Loans (% of Assets)	209	0.434	0.388	0.348	6,935	0.602	0.630	0.168
C&I Loans ($ Billions)	221	1.058	0.161	2.589	6,935	0.145	0.010	2.380
C&I Loans (% of Assets)	209	0.246	0.181	0.256	6,935	0.083	0.069	0.067
Net Internal Lending ($ Billions)	222	0.691	-0.055	10.9	121	-2.710	-0.114	15.70
Liquid Assets to Assets (%)	207	0.488	0.457	0.338	7,010	25.413	21.923	15.804
Tier 1 Capital Ratio (%)	164	12.468	11.745	3.849	7,004	23.468	13.860	213.291
Nonperforming Loans to Loans (%)	77	4.058	1.554	7.367	6,500	3.270	1.996	4.113

Table C.2: DealScan Summary Statistics

	Uninsured				Insured		
Variable	**N**	**Mean**	**Median**	**Std. Dev.**	**N**	**Mean**	**Median**	**Std. Dev.**
Outcome Variables								
Lead	4,202	0.168	0	0.374	70,283	0.272	0	0.445
Share	1,617	6.644	5	7.678	26,107	10.137	7	11.487
Lead Share	1,616	1.467	0	7.398	26,103	4.278	0	11.774
Share Index	1,617	0.804	0.150	6.848	26,107	2.302	0.489	9.891
Herfindahl	1,617	857.853	652.656	807.721	26,107	1191.606	837.5	1139.257
Amount Offered	1,617	55	30	96.700	26,107	48	25	145
Deal Characteristics								
Maturity (Months)	4,146	47.005	60	23.083	69,552	46.700	60	20.674
Facility Amount ($ Millions)	4,201	993	500	1580	70,280	681	330	1200
Secured Loan	2,905	0.526	1	0.499	46,793	0.563	1	0.496
Lender Characteristics								
Total Assets	4,203	37.6	33	36.4	70,289	323.0	125	388.0
Liquid Assets to Assets	4,069	0.580	0.565	0.278	70,289	0.244	0.137	0.217
Tier 1 Capital Ratio	1,726	0.109	0.111	0.021	70,083	0.114	0.091	0.176
Nonperforming Loans to Loans	4,027	0.027	0.014	0.039	69,927	0.022	0.013	0.028
Borrower Characteristics								
Age	3,296	29.729	16	37.080	53,517	27.437	16	31.198
Total Assets	4,076	14.876	15.263	2.353	68,156	14.476	14.630	2.075
Total Sales	4,091	14.233	14.564	2.349	68,495	14.043	14.181	2.093
Liquid Assets to Assets	4,075	1.546	1.247	2.098	68,087	1.750	1.393	2.625
Leverage Ratio	4,074	7.311	6.211	73.792	68,139	5.342	5.355	111.424
Profits	4,076	0.272	0.136	2.158	68,135	0.341	0.139	5.080
Cash	4,074	0.226	0.172	0.197	67,950	0.227	0.167	0.209
Working Capital to Assets	4,076	0.076	0.043	0.153	68,146	0.018	0.072	15.768
EBITDA	4,026	12.584	12.994	2.409	67,492	12.278	12.480	2.090
Number of Employees	3,882	9.228	9.367	1.812	64,491	8.762	8.814	1.845
Tangible Assets to Total Assets	4,065	0.655	0.689	0.219	67,792	0.681	0.720	0.232
Revenue	4,107	14.240	14.573	2.349	68,698	14.049	14.195	2.093
Income	4,076	0.073	0.066	0.077	68,152	0.073	0.073	0.505
Debt	3,099	13.590	14.018	2.479	51,616	13.107	13.416	2.357
Misc.								
Number of Deals (per lender)	72	58.375	10.5	201.772	441	159.386	7	605.895

Table C.2 (Cont'd)

Variable	N	Mean	p25	p50	p75	Std. Dev.
Number of Lenders (per deal)	19,631	10.429	5	8	14	9.037
Number of Leaders (per deal)	19,631	2.513	1	2	2	3.087
Number of Deals (per lender)	513	145.209	2	8	36	567.770
Number of Deals (per borrower)	3,289	22.649	6	13	30	25.695
Number of Deals (between lender/borrower pair)	29,262	2.546	1	2	3	2.172

Table C.3: Change in Cash Holding; full sample

	All					
	$\Delta(Cash_t)/Assets_{t-1}$			$\Delta(Cash/Assets)_t$		
VARIABLES	Smallest 90%	Largest 5%	All Banks	Smallest 90%	Largest 5%	All Banks
FDIC	-0.00284	-0.00559	-0.0119**	0.00306***	0.0142*	-0.00803***
	(0.00575)	(0.0200)	(0.00540)	(0.000877)	(0.00855)	(0.00165)
Uninsured Ratio	-0.0161	-0.0185	-0.0118	0.00609**	0.00114	-0.000833
	(0.0178)	(0.0305)	(0.0139)	(0.00310)	(0.00586)	(0.00761)
Uninsured*FDIC	**0.119****	**0.0780****	**0.0889*****	**-0.00299**	**0.0221*****	**0.00888****
	(0.0586)	**(0.0361)**	**(0.0275)**	**(0.00561)**	**(0.00681)**	**(0.00405)**
Observations	213,680	11,925	237,345	213,680	11,925	237,345
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Holding Companies	5,888	358	6,561	5,888	358	6,561

Robust standard errors in parentheses. Equations estimated using Arellano-Bond GMM estimator. Each regression equation also includes four lagged values of the following as controls: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans. Unit of observation is a bank holding company in a given quarter. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2). Uninsured ratio is the ratio of uninsured assets to total assets under control of the bank holding company. Time period estimated is 2001Q1-2014Q2.

Table C.4: Change in Cash Holding; 4 year sample

	4 year					
	$\Delta(Cash_t)/Assets_{t-1}$			$\Delta(Cash/Assets)_t$		
VARIABLES	Smallest 90%	Largest 5%	All Banks	Smallest 90%	Largest 5%	All Banks
FDIC	-0.0161***	0.0296	0.00704***	-0.00578***	0.00884	0.00683***
	(0.00573)	(0.0191)	(0.00137)	(0.00108)	(0.00667)	(0.000855)
Uninsured Ratio	-0.0175	-0.0363	-0.0418	0.0151*	-0.0140	0.0112
	(0.0279)	(0.0380)	(0.0372)	(0.00834)	(0.0122)	(0.0112)
Uninsured*FDIC	**0.101**	**0.0701***	**0.0857****	**-0.0103**	**0.0387*****	**0.00804**
	(0.0782)	**(0.0361)**	**(0.0425)**	**(0.0110)**	**(0.0123)**	**(0.00735)**
Observations	68,763	3,662	76,240	68,763	3,662	76,240
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Holding Companies	4,708	266	5,240	4,708	266	5,240

Robust standard errors in parentheses. Equations estimated using Arellano-Bond GMM estimator. Each regression equation also includes four lagged values of the following as controls: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans. Unit of observation is a bank holding company in a given quarter. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2). Uninsured ratio is the ratio of uninsured assets to total assets under control of the bank holding company. Time period estimated is 2009Q2-2013Q1.

Table C.5: Change in Loans; full sample

	All					
	$\Delta(Loans_t)/Assets_{t-1}$			$\Delta(Loans/Assets)_t$		
VARIABLES	Smallest 90%	Largest 5%	All Banks	Smallest 90%	Largest 5%	All Banks
FDIC	-0.0176***	0.0242***	-0.0208	-0.0169***	-0.00712	0.00124
	(0.00225)	(0.00617)	(0.0181)	(0.00102)	(0.00462)	(0.00124)
Uninsured Ratio	0.0180**	-0.0351	0.0330***	4.56e-06	-0.0116**	0.00209
	(0.00742)	(0.0414)	(0.0113)	(0.00255)	(0.00562)	(0.00416)
Uninsured*FDIC	**-0.00927**	**-0.0152****	**-0.00983**	**-0.00147**	**-0.00649***	**-0.000900**
	(0.0122)	**(0.00615)**	**(0.00701)**	**(0.00457)**	**(0.00390)**	**(0.00270)**
Observations	213,680	11,925	237,345	213,680	11,925	237,345
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Holding Companies	5,888	358	6,561	5,888	358	6,561

Robust standard errors in parentheses. Equations estimated using Arellano-Bond GMM estimator. Each regression equation also includes four lagged values of the following as controls: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans. Unit of observation is a bank holding company in a given quarter. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2). Uninsured ratio is the ratio of uninsured assets to total assets under control of the bank holding company. Time period estimated is 2001Q1-2014Q2.

Table C.6: Change in Loans; 4 year sample

	4 year					
	$\Delta(Loans_t)/Assets_{t-1}$			$\Delta(Loans/Assets)_t$		
VARIABLES	Smallest 90%	Largest 5%	All Banks	Smallest 90%	Largest 5%	All Banks
FDIC	-0.00294	0.00233	-0.00158	0.00128	0.000390	-0.00720***
	(0.00270)	(0.00717)	(0.00146)	(0.000795)	(0.00406)	(0.000717)
Uninsured Ratio	0.0313*	0.00492	0.00799	-0.00329	-0.00243	-0.00487
	(0.0177)	(0.0141)	(0.0114)	(0.00569)	(0.00851)	(0.00555)
Uninsured*FDIC	**-0.0208**	**-0.0205****	**-0.00999**	**-0.00281**	**-0.0164*****	**-0.00140**
	(0.0299)	**(0.00837)**	**(0.0137)**	**(0.00757)**	**(0.00556)**	**(0.00446)**
Observations	68,763	3,662	76,240	68,763	3,662	76,240
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Holding Companies	4,708	266	5,240	4,708	266	5,240

Robust standard errors in parentheses. Equations estimated using Arellano-Bond GMM estimator. Each regression equation also includes four lagged values of the following as controls: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans. Unit of observation is a bank holding company in a given quarter. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2). Uninsured ratio is the ratio of uninsured assets to total assets under control of the bank holding company. Time period estimated is 2009Q2-2013Q1.

Table C.7: Change in C&I Loans; full sample

	All					
	Δ(C&I Loans$_t$)/Assets$_{t-1}$			Δ(C&I Loans/Assets)$_t$		
VARIABLES	Smallest 90%	Largest 5%	All Banks	Smallest 90%	Largest 5%	All Banks
FDIC	-0.000674	0.00510***	-0.000392	-0.00150***	-0.00296	-0.000104
	(0.000662)	(0.00149)	(0.00122)	(0.000528)	(0.00339)	(0.000636)
Uninsured Ratio	0.00942***	0.000526	0.0120***	0.00325*	-0.00545*	0.00499**
	(0.00237)	(0.00386)	(0.00317)	(0.00181)	(0.00290)	(0.00224)
Uninsured*FDIC	**-0.00124**	**-0.00727*** **	**-0.00347**	**-0.00244**	**-0.00138**	**-0.000587**
	(0.00394)	**(0.00170)**	**(0.00232)**	**(0.00287)**	**(0.00258)**	**(0.00185)**
Observations	213,680	11,925	237,345	213,680	11,925	237,345
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Holding Companies	5,888	358	6,561	5,888	358	6,561

Robust standard errors in parentheses. Equations estimated using Arellano-Bond GMM estimator. Each regression equation also includes four lagged values of the following as controls: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans. Unit of observation is a bank holding company in a given quarter. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2). Uninsured ratio is the ratio of uninsured assets to total assets under control of the bank holding company. Time period estimated is 2001Q1-2014Q2.

Table C.8: Change in C&I Loans; 4 year sample

	4 year					
	Δ(C&I Loans$_t$)/Assets$_{t-1}$			Δ(C&I Loans/Assets)$_t$		
VARIABLES	Smallest 90%	Largest 5%	All Banks	Smallest 90%	Largest 5%	All Banks
FDIC	0.00220***	-0.00135	0.000480	0.00343***	0.000632	7.41e-05
	(0.000606)	(0.00239)	(0.000372)	(0.000511)	(0.00292)	(0.000378)
Uninsured Ratio	0.00926	-0.00812*	0.00390	0.00280	-0.0108*	0.00177
	(0.00840)	(0.00427)	(0.00823)	(0.00388)	(0.00555)	(0.00389)
Uninsured*FDIC	**0.00137**	**-0.00599***	**0.00111**	**-0.000982**	**-0.00335**	**0.00346**
	(0.00747)	**(0.00323)**	**(0.00396)**	**(0.00525)**	**(0.00340)**	**(0.00334)**
Observations	68,763	3,662	76,240	68,763	3,662	76,240
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Holding Companies	4,708	266	5,240	4,708	266	5,240

Robust standard errors in parentheses. Equations estimated using Arellano-Bond GMM estimator. Each regression equation also includes four lagged values of the following as controls: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans. Unit of observation is a bank holding company in a given quarter. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2). Uninsured ratio is the ratio of uninsured assets to total assets under control of the bank holding company. Time period estimated is 2009Q2-2013Q1.

Table C.9: DealScan Baseline Results; full sample

	Time Period: 2001Q1-2014Q2					
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Lead	Share	Lead Share	Share Index	Herfindahl	ln(Amount)
Uninsured	0.110***	4.508***	0.236	6.331***	-661.3***	0.584***
	(0.0288)	(1.019)		(0.794)	(130.3)	(0.219)
FDIC	0.289	117.5	145.6	150.2	8,772	4.427**
	(0.556)	(136.8)	(160.3)	(151.8)	(9,588)	(1.743)
Uninsured*FDIC	**-0.125*** **	**-0.915**	**-1.412** **	**-1.818*** **	**132.0** **	**-0.226** **
	(0.0391)	**(0.599)**	**(0.711)**	**(0.673)**	**(60.60)**	**(0.0908)**
Observations	27,358	11,798	11,795	11,798	11,798	11,786
R-squared	0.328	0.230	0.176	0.181	0.132	0.362
Lender Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Lenders	335	263	263	263	263	263
Number of Borrowers	1,296	820	820	820	820	820

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Table C.10: DealScan Baseline Results; 4 year sample

	Time Period: 2009Q2-2013Q1					
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Lead	Share	Lead Share	Share Index	Herfindahl	ln(Amount)
Uninsured	0.738***	-6.643***	-4.272	-13.56	1,075**	0.565
	(0.185)	(2.240)	(3.935)		(443.7)	(0.481)
FDIC	-0.0138	16.10*	16.63	16.16**	1,415**	-0.387
	(0.100)	(8.886)	(11.34)	(7.890)	(636.8)	(0.483)
Uninsured*FDIC	**-0.0971*** **	**-2.212** **	**-2.588** **	**-2.244** **	**-68.19**	**-0.369*** **
	(0.0345)	**(0.996)**	**(1.254)**	**(1.067)**	**(90.18)**	**(0.0988)**
Observations	6,946	3,605	3,603	3,605	3,605	3,599
R-squared	0.421	0.342	0.288	0.319	0.184	0.412
Lender Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Lenders	163	137	137	137	137	137
Number of Borrowers	707	381	381	381	381	381

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Table C.11: Extensive Margin Lending; full sample

	Time Period: 2001Q1-2014Q2		
	(1)	(2)	(3)
VARIABLES	ln(Number of Deals)	ln(Number of Leads)	ln(Total Amount Offered)
Uninsured	-0.367**	-0.940**	1.962***
	(0.179)	(0.388)	(0.168)
FDIC	-0.596	2.318	-3.809
	(1.913)	(4.608)	(2.893)
Uninsured*FDIC	**-0.832*** **	**-1.052*** **	**-0.921*** **
	(0.151)	**(0.257)**	**(0.194)**
Observations	27,361	23,366	26,699
R-squared	0.882	0.847	0.866
Lender Fixed Effects	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes
Number of Lenders	335	335	335
Number of Borrowers	1,296	1,286	1,295

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Table C.12: Extensive Margin Lending; 4 year sample

	Time Period: 2009Q2-2013Q1		
	(1)	(2)	(3)
VARIABLES	ln(Number of Deals)	ln(Number of Leads)	ln(Total Amount Offered)
Uninsured	1.214**	-1.249	-1.367***
	(0.482)	(1.077)	(0.362)
FDIC	1.440***	1.718**	1.835***
	(0.391)	(0.671)	(0.575)
Uninsured*FDIC	**-0.583*** **	**-0.743** **	**-0.462** **
	(0.150)	**(0.319)**	**(0.215)**
Observations	6,948	5,848	6,861
R-squared	0.941	0.891	0.922
Lender Fixed Effects	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes
Number of Lenders	163	163	163
Number of Borrowers	707	688	704

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Appendix D Supplemental Tables

Table D.1: European vs. Non-European Branches; Full Sample; Intensive Margin

	Time Period: 2001Q1-2014Q2					
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Lead	Share	Lead Share	Share Index	Herfindahl	ln(Amount)
European Uninsured	-0.169	6.409*	6.351**	9.071***	-63.37	-0.332
	(0.168)	(3.273)	(2.531)	(3.485)	(231.9)	(0.718)
Not European Uninsured	0.106	5.373***	0.239	6.963***	-661.1***	0.588***
	(0.0729)	(1.791)	(1.883)	(1.878)	(130.3)	(0.220)
FDIC	0.259	112.8	151.4	148.3	8,766	4.315**
	(0.804)	(94.73)	(106.9)	(105.6)	(9,599)	(1.747)
European Uninsured*FDIC	**-0.117*** **	**-1.489**	**-1.516**	**-2.763** **	**136.1**	**-0.150**
	(0.0437)	**(0.966)**	**(1.039)**	**(1.088)**	**(89.72)**	**(0.121)**
Not European Uninsured*FDIC	**-0.136*** **	**-0.325**	**-1.761** **	**-0.847**	**127.5**	**-0.309** **
	(0.0378)	**(0.863)**	**(0.882)**	**(0.846)**	**(81.29)**	**(0.134)**
Observations	27,358	11,798	11,795	11,798	11,798	11,786
R-squared	0.328	0.223	0.174	0.179	0.132	0.362
Number of Lenders	335	263	263	263	263	263
Number of Borrowers	1,296	820	820	820	820	820

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Table D.2: European vs. Non-European Branches; 4 year sample; Intensive Margin

	Time Period: 2009Q2-2013Q1					
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Lead	Share	Lead Share	Share Index	Herfindahl	ln(Amount)
European Uninsured	0.766***	-4.141	-2.397	-10.76	1,236***	0.504
	(0.204)	(5.953)	(8.015)	(7.206)	(447.2)	(0.499)
Not European Uninsured	0.464***	-0.517	-3.009	0.563	-583.6**	0.936**
	(0.124)	(2.662)	(2.816)	(2.859)	(249.9)	(0.422)
FDIC	-0.0149	16.55**	17.20*	16.44**	1,405**	-0.383
	(0.128)	(7.306)	(9.285)	(7.397)	(633.7)	(0.483)
European Uninsured*FDIC	**-0.130****	**-3.787****	**-3.746***	**-3.895****	**-208.4**	**-0.317****
	(0.0572)	**(1.728)**	**(1.925)**	**(1.864)**	**(143.4)**	**(0.141)**
Not European Uninsured*FDIC	**-0.0555**	**0.0233**	**-0.842**	**0.108**	**109.0**	**-0.435*****
	(0.0441)	**(0.876)**	**(0.799)**	**(0.878)**	**(102.6)**	**(0.130)**
Observations	6,946	3,605	3,603	3,605	3,605	3,599
R-squared	0.421	0.339	0.286	0.318	0.196	0.412
Number of Lenders	163	137	137	137	137	137
Number of Borrowers	707	381	381	381	381	381

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Table D.3: European vs. Non-European Branches; Full Sample; Extensive Margin

	Time Period: 2001Q1-2014Q2		
	(1)	(2)	(3)
VARIABLES	ln(Number of Deals)	ln(Number of Leads)	ln(Total Amount Offered)
Europe Uninsured	0.122	-1.326**	4.243***
	(0.378)	(0.613)	(0.575)
Not Europe Uninsured	-0.366**	-1.017**	1.957***
	(0.178)	(0.404)	(0.165)
FDIC	-0.615	2.681	-3.760
	(1.868)	(4.558)	(2.882)
Europe Uninsured*FDIC	**-0.803*** **	**-1.193*** **	**-0.983*** **
	(0.245)	**(0.273)**	**(0.163)**
Not Europe Uninsured*FDIC	**-0.843*** **	**-0.540**	**-0.897*** **
	(0.178)	**(0.460)**	**(0.260)**
Observations	27,361	23,366	26,699
R-squared	0.882	0.847	0.866
Lender Fixed Effects	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes
Number of Lenders	335	335	335
Number of Borrowers	1,296	1,286	1,295

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Table D.4: European vs. Non-European Branches; 4 year sample; Extensive Margin

	Time Period: 2009Q2-2013Q1		
	(1)	(2)	(3)
VARIABLES	ln(Number of Deals)	ln(Number of Leads)	ln(Total Amount Offered)
Europe Uninsured	1.121**	-0.866***	-1.199***
	(0.499)	(0.180)	(0.344)
Not Europe Uninsured	1.565***	-1.895*	0.0442
	(0.605)	(1.058)	(0.372)
FDIC	1.445***	1.718**	1.832***
	(0.389)	(0.671)	(0.575)
Europe Uninsured*FDIC	**-0.471*** **	**-0.880*** **	**-0.647*** **
	(0.181)	**(0.302)**	**(0.182)**
Not Europe Uninsured*FDIC	**-0.624*** **	**-0.0969**	**-0.382**
	(0.185)	**(0.622)**	**(0.292)**
Observations	6,948	5,848	6,861
R-squared	0.941	0.891	0.922
Lender Fixed Effects	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes
Number of Lenders	163	163	163
Number of Borrowers	707	688	704

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Table D.5: Foreign-Owned Insured vs. Uninsured; Full Sample; Intensive Margin

	Time Period: 2001Q1-2014Q2					
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Lead	Share	Lead Share	Share Index	Herfindahl	ln(Amount)
Foreign-Owned Uninsured	-0.00897	-1.438	-1.461	-1.762*	6.337	-0.145*
	(0.0519)	(1.090)	(0.895)	(0.919)	(91.99)	(0.0877)
Foreign-Owned Insured	0.00109	-0.0694	0.260	-0.0463	-12.26	-0.00742
	(0.0245)	(0.686)	(1.051)	(0.796)	(49.28)	(0.0529)
FDIC	0.214	105.8	145.0	139.3	8,827	3.789**
	(0.634)	(141.5)	(162.5)	(154.2)	(13,539)	(1.538)
Foreign-Owned Uninsured*FDIC	**-0.123*** **	**-0.765**	**-1.432** **	**-1.667** **	**137.2** **	**-0.216** **
	(0.0401)	**(0.640)**	**(0.723)**	**(0.695)**	**(61.59)**	**(0.103)**
Foreign-Owned Insured*FDIC	**0.0195**	**1.119** **	**1.394***	**1.127** **	**49.13**	**0.0544**
	(0.0434)	**(0.469)**	**(0.745)**	**(0.532)**	**(43.09)**	**(0.0599)**
Observations	27,358	11,798	11,795	11,798	11,798	11,786
R-squared	0.328	0.223	0.174	0.180	0.132	0.363
Lender Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Lenders	335	263	263	263	263	263
Number of Borrowers	1,296	820	820	820	820	820

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Table D.6: Foreign-Owned Insured vs. Uninsured; 4 year sample; Intensive Margin

	Time Period: 2009Q2-2013Q1					
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Lead	Share	Lead Share	Share Index	Herfindahl	ln(Amount)
Foreign-Owned Uninsured	0.730***	-6.088**	-3.874	-12.80***	1,074**	0.561
	(0.184)	(2.453)	(4.279)	(1.109)	(484.0)	(0.368)
Foreign-Owned Insured	0.162***	0.481	1.766	0.300	34.10	0.159
	(0.0373)	(0.685)	(1.473)	(0.805)	(41.37)	(0.137)
FDIC	-0.00867	16.72*	17.48	16.63**	1,419	-0.380
	(0.101)	(9.059)	(11.48)	(7.940)	(1,070)	(0.554)
Foreign-Owned Uninsured*FDIC	**-0.0991*** **	**-2.085** **	**-2.463** **	**-2.086** **	**-66.54**	**-0.374*** **
	(0.0355)	**(0.984)**	**(1.228)**	**(1.036)**	**(80.48)**	**(0.0957)**
Foreign-Owned Insured*FDIC	**-0.00747**	**0.206**	**0.514**	**0.389**	**16.81**	**-0.0321**
	(0.0379)	**(0.410)**	**(0.665)**	**(0.441)**	**(27.74)**	**(0.0773)**
Observations	6,946	3,605	3,603	3,605	3,605	3,599
R-squared	0.421	0.338	0.286	0.318	0.184	0.413
Lender Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Lenders	163	137	137	137	137	137
Number of Borrowers	707	381	381	381	381	381

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Table D.7: Foreign-Owned Insured vs. Uninsured; Full Sample; Extensive Margin

VARIABLES	(1) ln(Number of Deals)	(2) ln(Number of Leads)	(3) ln(Total Amount Offered)
Foreign-owned Uninsured	0.260	0.618	-0.179
	(0.253)	(0.561)	(0.387)
Foreign-owned Insured	0.142	-0.0278	0.0961
	(0.102)	(0.147)	(0.122)
FDIC	-0.163	4.903	-3.956
	(1.853)	(5.080)	(2.904)
Foreign-owned Uninsured*FDIC	**-0.896*** **	**-1.037*** **	**-0.916*** **
	(0.152)	**(0.268)**	**(0.196)**
Foreign-owned Insured*FDIC	**-0.268**	**0.0181**	**-0.0325**
	(0.165)	**(0.307)**	**(0.175)**
Observations	27,361	23,366	26,699
R-squared	0.883	0.848	0.866
Lender Fixed Effects	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes
Number of Lenders	335	335	335
Number of Borrowers	1,296	1,286	1,295

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Table D.8: Foreign-Owned Insured vs. Uninsured; 4 year sample; Extensive Margin

VARIABLES	(1) ln(Number of Deals)	(2) ln(Number of Leads)	(3) ln(Total Amount Offered)
Foreign-owned Uninsured	1.247***	-1.120	-1.361***
	(0.484)	(1.078)	(0.361)
Foreign-owned Insured	-0.224	-0.378*	-0.116
	(0.220)	(0.217)	(0.164)
FDIC	1.429***	1.684**	1.797***
	(0.384)	(0.659)	(0.576)
Foreign-owned Uninsured*FDIC	**-0.593*** **	**-0.734** **	**-0.439** **
	(0.150)	**(0.327)**	**(0.216)**
Foreign-owned Insured*FDIC	**-0.104**	**0.0173**	**0.0991**
	(0.145)	**(0.261)**	**(0.173)**
Observations	6,948	5,848	6,861
R-squared	0.941	0.892	0.922
Lender Fixed Effects	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes
Number of Lenders	163	163	163
Number of Borrowers	707	688	704

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Table D.9: Home Country-Year Fixed Effects; full sample

	2001Q1-2014Q2					
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Lead	Share	Lead Share	Share Index	Herfindahl	ln(Amount)
Uninsured	0.380*	11.34***	7.030**	12.13***	69.19	0.736**
	(0.201)	(3.253)	(2.920)	(4.116)	(104.5)	(0.363)
FDIC	0.0349*	-2.116	-2.250*	-2.484*	-130.4	-0.0245
	(0.0208)	(1.367)	(1.257)	(1.279)	(121.9)	(0.146)
Uninsured*FDIC	**-0.0315**	**-2.026****	**-2.602****	**-2.992****	**124.0**	**-0.239***
	(0.0549)	**(1.033)**	**(1.297)**	**(1.233)**	**(98.93)**	**(0.143)**
Observations	27,358	11,798	11,795	11,798	11,798	11,786
R-squared	0.331	0.221	0.177	0.181	0.121	0.363
Lender Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Lenders	335	263	263	263	263	263
Number of Borrowers	1,296	820	820	820	820	820
Number of Country-Years	226	226	226	226	226	226

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Table D.10: Home Country-Year Fixed Effects; 4 year sample

	2009Q2-2013Q1					
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Lead	Share	Lead Share	Share Index	Herfindahl	ln(Amount)
Uninsured	-0.181	3.382	5.297	5.704	-469.3	-0.613
	(0.345)	(4.900)	(5.760)	(9.083)	(455.3)	(0.636)
FDIC	-0.00443	-2.073	-1.864	-1.921	-46.25	-0.506**
	(0.0387)	(2.462)	(2.379)	(2.841)	(257.8)	(0.233)
Uninsured*FDIC	**-0.0760**	**-3.641*****	**-3.893*****	**-4.247*****	**-212.2****	**-0.143**
	(0.0499)	**(1.111)**	**(1.263)**	**(1.351)**	**(83.77)**	**(0.134)**
Observations	6,946	3,605	3,605	3,603	3,605	3,599
R-squared	0.423	0.332	0.312	0.290	0.161	0.414
Lender Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Lenders	163	137	137	137	137	137
Number of Borrowers	707	381	381	381	381	381
Number of Country-Years	81	81	81	81	81	81

Cluster robust standard errors at the level of the borrower and the lender in parentheses. Equations estimated using ordinary least squares. All equations contain lagged values of the following bank-specific characteristics: the dependent variable, the logarithm of total assets, the ratio of liquid assets to total assets, the tier one capital ratio, and the ratio of nonperforming loans to total loans; lagged values of the following borrower-specific characteristics: the logarithm of total sales, liquid assets to assets; the logarithm of EBITDA, a leverage ratio, net profit to assets, cash to assets, working capital to assets, the logarithm of the number of employees, tangible assets to assets, the logarithm of revenue, income to assets, the logarithm of total debt, and a set of dummy variables corresponding to the borrower company's industry; and the following deal-specific characteristics: primary purpose dummies, maturity of the loan, secured loan, and the logarithm of the deal amount. Unit of observation is a borrower-lender pair for a given facility. FDIC is a dummy variable equal to unity following the implementation of the FDIC assessment base change (2011Q2).

Appendix E Figures for Chapter 2

Figure E.1: Total Assets and Loans of U.S. Banks in Europe over Time

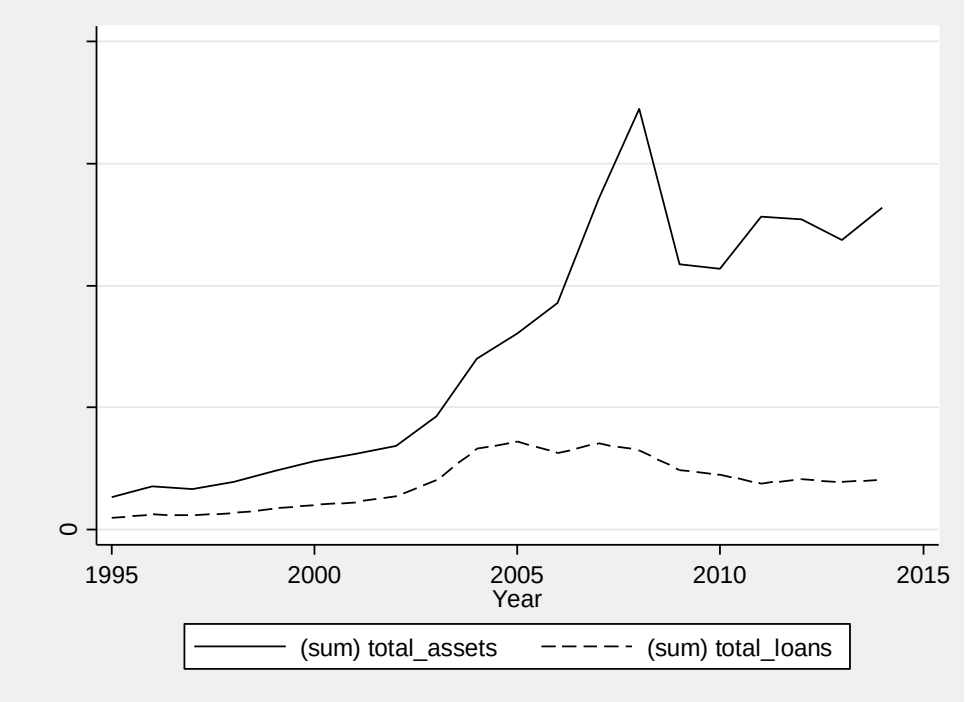


Figure E.2: Total Assets and Loans of U.S. Banks in Latin America over Time

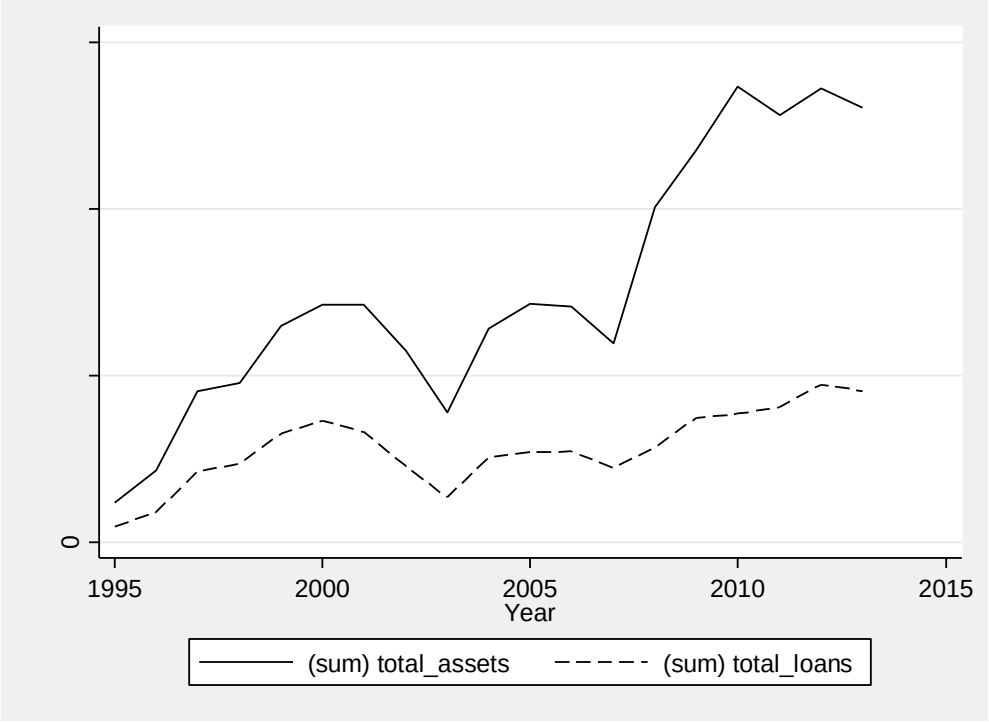


Figure E.3: Total Assets and Loans of European Banks in the U.S. over Time

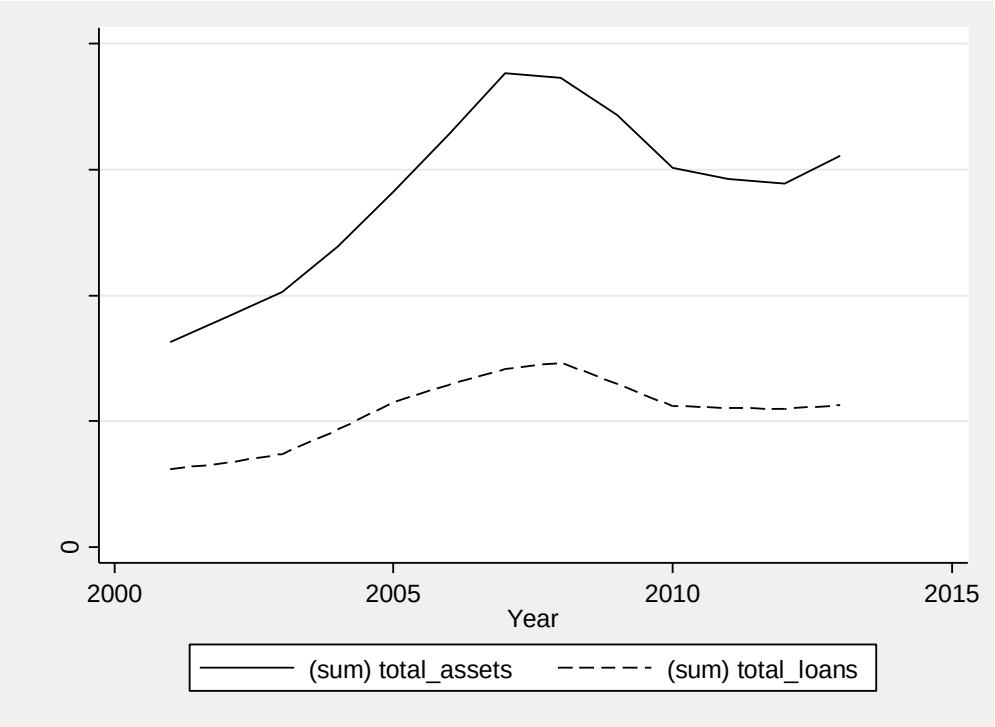
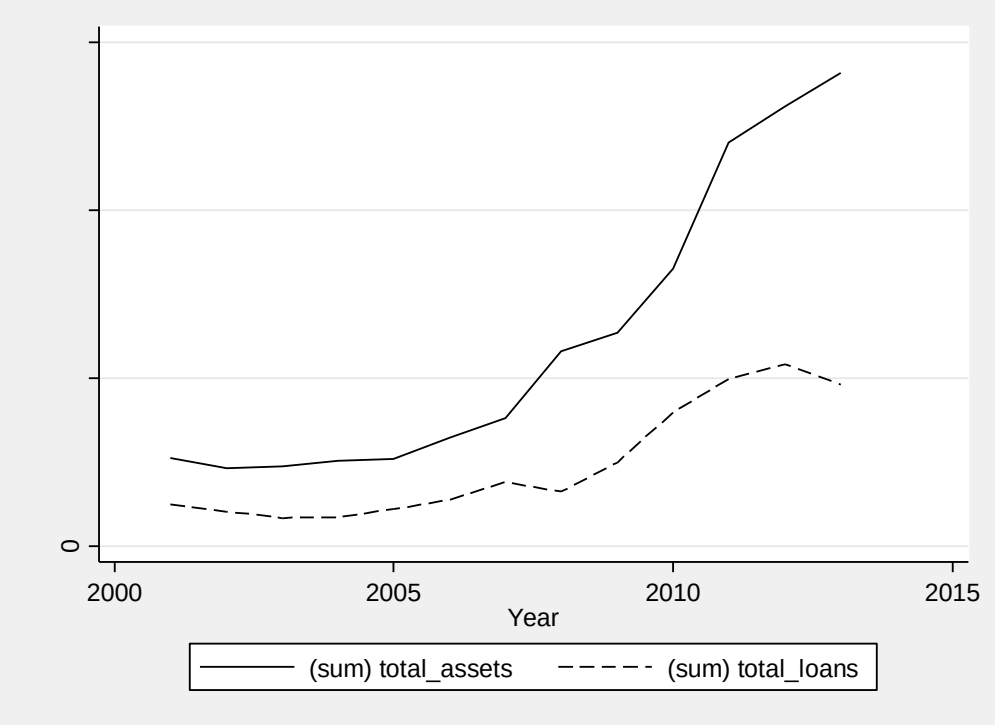


Figure E.4: Total Assets and Loans of Latin American Banks in the U.S. over Time



Appendix F Tables for Chapter 2

Table F.1: Summary Statistics—All Banks

		U.S. Banks Abroad				
	N	Mean	Median	Std. Dev.	p25	p75
Total Assets ($ Millions)	61	25,740.050	3,050.937	126,946.600	703	10,824.100
Total Liabilities ($ Millions)	61	24,217.660	1,961.739	124,061.900	558	10,063.490
Total Loans ($ Millions)	59	4,579.866	504.898	11,891.540	176	1,999
Loans (% of Assets)	59	0.369	0.378	0.305	0.053	0.629
Total Deposits ($ Millions)	61	5,506.218	551.501	12,041.420	189	3,367.748
Total Deposits (% of Liabilities)	61	0.515	0.503	0.338	0.189	0.868
Tier 1 Capital Ratio	20	0.291	0.212	0.258	0.144	0.265
		Foreign Banks in the US				
	N	Mean	Median	Std. Dev.	p25	p75
Total Assets ($ Millions)	102	21,866.360	4,213.298	36,754.220	1,082.499	19,151.500
Total Liabilities ($ Millions)	77	19,475.250	3,782.390	34,386.220	1,105.053	14,358.610
Total Loans ($ Millions)	102	8,220.699	1,470.344	16,269.750	166.786	6,400.959
Loans (% of Assets)	102	0.376	0.342	0.287	0.128	0.587
Total Deposits ($ Millions)	102	11,504.530	1,383.046	21,533.310	202.549	11,806.380
Total Deposits (% of Liabilities)	77	0.417	0.372	0.322	0.129	0.687
Tier 1 Capital Ratio	101	0.161	0.122	0.366	0.096	0.154

Table F.2: Summary Statistics—Claessens and Van Horen (2014) Database

		U.S. Banks Abroad (CvH Database)				
	N	Mean	Median	Std. Dev.	p25	p75
Total Assets ($ Millions)	46	30,018.300	2,165.908	145,788.200	695.621	11,484.920
Total Liabilities ($ Millions)	46	28,493.530	1,917.217	142,573.500	449.057	10,063.490
Total Loans ($ Millions)	45	4,819.669	500.000	12,818.960	172.934	3,345.940
Loans (% of Assets)	45	0.376	0.414	0.325	0.049	0.682
Total Deposits ($ Millions)	42	5,884.957	555.251	13,120.910	189.116	3,367.748
Total Deposits (% of Liabilities)	41	0.530	0.584	0.357	0.107	0.882
Tier 1 Capital Ratio	11	0.301	0.209	0.303	0.123	0.260
		Foreign Banks in the US (CvH Database)				
	N	Mean	Median	Std. Dev.	p25	p75
Total Assets ($ Millions)	12	99,074.500	104,554.000	37,272.130	76,077.500	113,399.000
Total Liabilities ($ Millions)	12	86,994.250	92,711.000	34,006.910	63,527.500	102,601.000
Total Loans ($ Millions)	11	60,250.450	66,158.000	22,753.980	49,958.000	76,041.000
Loans (% of Assets)	11	0.621	0.670	0.144	0.603	0.701
Total Deposits ($ Millions)	10	69,717.500	68,351.000	33,160.900	52,113.000	86,447.000
Total Deposits (% of Liabilities)	10	0.806	0.847	0.159	0.814	0.874
Tier 1 Capital Ratio	10	0.155	0.129	0.130	0.122	0.135

Table F.3: U.S. Banks Abroad

	U.S. Banks in Europe					
	N	Mean	Median	Std. Dev.	p25	p75
Total Assets ($ Millions)	26	49,681.02	7,148	192,712.900	3,453.91	21,377.00
Total Liabilities ($ Millions)	26	47,379.430	6,570	188,637.800	1,725.00	17,537
Total Loans ($ Millions)	25	7,267.75	1,301.718	15,978.330	258.89	8,635.000
Loans (% of Assets)	25	0.317	0.210	0.288	0.048	0.549
Total Deposits ($ Millions)	26	8,048.771	2,837.527	13,992.810	529.881	8,762.610
Total Deposits (% of Liabilities)	26	0.545	0.575	0.329	0.246	0.868
Tier 1 Capital Ratio	8	0.424	0.256	0.367	0.187	0.637
	U.S. Banks in Latin America					
	N	Mean	Median	Std. Dev.	p25	p75
Total Assets ($ Millions)	33	7,188.959	1,017.998	18,817.60	496.835	3,799.546
Total Liabilities ($ Millions)	33	6,255.294	831.390	16,284.810	395.553	3,284.479
Total Loans ($ Millions)	33	2,535.566	289.666	7,407.203	172.00	716.650
Loans (% of Assets)	33	0.417	0.442	0.316	0.055	0.702
Total Deposits ($ Millions)	33	2,845.980	268.651	9,074.435	143.269	599.278
Total Deposits (% of Liabilities)	33	0.492	0.454	0.347	0.107	0.870
Tier 1 Capital Ratio	12	0.202	0.194	0.088	0.139	0.228
	U.S. Banks in Japan					
	N	Mean	Median	Std. Dev.	p25	p75
Total Assets ($ Millions)	2	20,600.40	28,763.11	261.808	20,600.4	40,938.980
Total Liabilities ($ Millions)	2	19,493.59	27,361.74	145.917	19,493.590	38,841.260
Total Loans ($ Millions)	1	4,844.751	-	4,844.751	4,844.751	4,844.751
Loans (% of Assets)	1	0.118	-	0.118	0.118	0.118
Total Deposits ($ Millions)	2	16,346.95	23,088.43	20.961	16,346.950	32,672.940
Total Deposits (% of Liabilities)	2	0.492	0.493	0.144	0.492	0.841
Tier 1 Capital Ratio	-	-	-	-	-	-

Table F.4: Foreign Banks in the U.S.

		European Banks in the US				
	N	Mean	Median	Std. Dev.	p25	p75
Total Assets ($ Millions)	64	24,318.53	6,187.275	36,840.58	1,482.076	33,230.91
Total Liabilities ($ Millions)	48	19,623.53	4,938.389	32,508.48	1,476.243	17,357.15
Total Loans ($ Millions)	64	8,808.142	2,059.13	15,938.92	225.686	9,416.962
Loans (% of Assets)	64	0.359	0.318	0.290	0.087	0.605
Total Deposits ($ Millions)	64	12,195.73	1,242.56	21,060.75	355.843	15,542.07
Total Deposits (% of Liabilities)	48	0.354	0.204	0.332	0.067	0.596
Tier 1 Capital Ratio	63	0.119	0.128	0.122	0	0.146
		Latin American Banks in the U.S.				
	N	Mean	Median	Std. Dev.	p25	p75
Total Assets ($ Millions)	19	2,965.490	1,105.053	4,607.338	344.078	5,240.203
Total Liabilities ($ Millions)	16	3,374.389	1,268.118	4,922.156	406.853	5,462.271
Total Loans ($ Millions)	19	1,015.270	337.378	1,681.156	96.506	1,096.697
Loans (% of Assets)	19	0.338	0.334	0.204	0.236	0.473
Total Deposits ($ Millions)	19	1,683.679	227.560	2,999.639	112.006	1,442.640
Total Deposits (% of Liabilities)	16	0.498	0.482	0.281	0.268	0.717
Tier 1 Capital Ratio	19	0.135	0.121	0.121	0.067	0.199
		Japanese Banks in the U.S.				
	N	Mean	Median	Std. Dev.	p25	p75
Total Assets ($ Millions)	19	32,507.26	4,555.004	47,857.910	1,673.058	82,980.83
Total Liabilities ($ Millions)	13	38,744.21	6,832.278	50,707.170	2,714.700	82,980.84
Total Loans ($ Millions)	19	13,447.37	3,274.354	22,548.260	432.766	7,948.73
Loans (% of Assets)	19	0.474	0.477	0.338	0.276	0.735
Total Deposits ($ Millions)	19	18,997.160	2,317.265	29,623.870	534.939	28,154.010
Total Deposits (% of Liabilities)	13	0.549	0.557	0.287	0.339	0.785
Tier 1 Capital Ratio	19	0.325	0.121	0.802	0.116	0.157

Table F.5: U.S. Banks in Europe by Country

	1995	2000	2005	2010	2014
Austria	--	1	2	2	1
Belgium	--	--	--	1	1
France	9	8	3	4	2
Germany	13	10	9	7	7
Ireland	2	2	3	4	4
Italy	--	--	1	2	1
Latvia	--	--	--	1	1
Luxembourg	2	2	--	--	--
Netherlands	--	--	2	1	1
Portugal	1	--	--	--	--
Slovakia	--	--	1	--	--
Spain	0	1	2	3	0
United Kingdom	4	5	8	8	6
Total	31	29	31	33	24

Table F.6: U.S. Banks in Latin America by Country

	1995	2000	2005	2010	2014
Argentina	5	6	3	6	2
Bolivia	1	1	1	--	--
Brazil	10	10	6	7	8
Chile	3	4	1	1	1
Ecuador	--	1	1	1	1
El Salvador	1	4	3	2	1
Guatemala	1	1	0	2	2
Honduras	1	2	2	2	2
Mexico	4	7	6	6	7
Nicaragua	--	--	--	1	1
Panama	4	5	2	2	2
Paraguay	1	1	1	1	1
Peru	2	3	1	1	1
Uruguay	1	2	1	1	2
Total	34	47	28	33	31

Table F.7: European Banks in the U.S. by Country of Ownership

	2001	2005	2010	2014
Austria	2	1	1	1
Belgium	2	2	2	2
Finland	1	1	1	1
France	14	11	12	12
Germany	14	14	13	12
Greece	2	2	1	--
Ireland	3	4	3	3
Italy	11	8	3	3
Netherlands	7	7	4	2
Portugal	7	6	4	4
Slovenia	1	--	--	--
Spain	9	9	13	8
United Kingdom	18	22	16	13
Total	91	87	73	61

Table F.8: Latin American Banks in the U.S. by Country of Ownership

	2001	2005	2010	2014
Argentina	4	2	2	2
Brazil	7	5	5	5
Chile	3	4	3	3
Ecuador	2	2	2	1
Mexico	5	2	2	2
Panama	3	2	2	2
Peru	1	1	1	1
Uruguay	1	1	1	1
Total	26	19	18	17

Table F.9: Bankscope Specialization Designation

Specialization	Number of Banks
Bank Holding & Holding Companies	1
Commercial Banks	103
Finance Companies (Credit Card, Factoring & Leasing)	11
Investment & Trust Corporations	3
Investment Banks	14
Securities Firm	1
Total	133

Appendix G Figures for Chapter 3

Figure G.1: Total Foreign Banking Claims

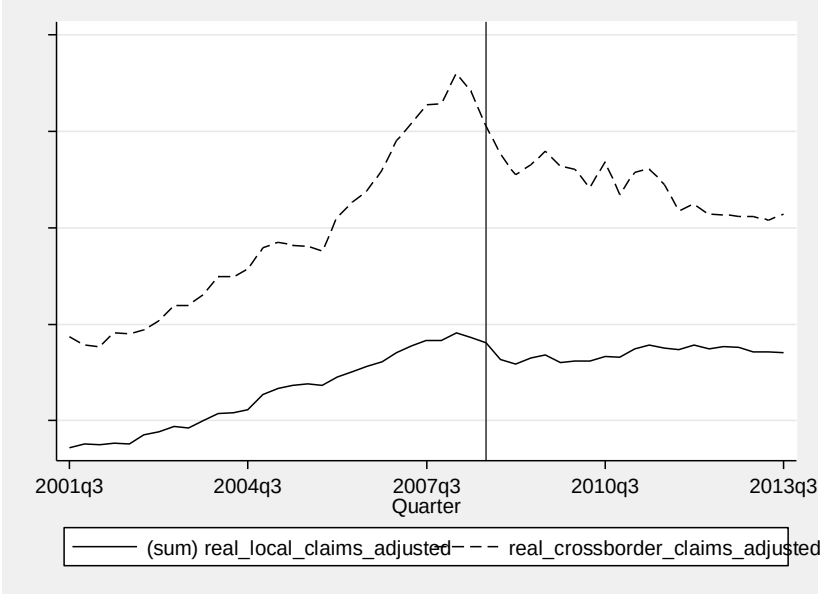


Figure G.2: U.S. Banks' Claims—Adjusted and Unadjusted BIS Series

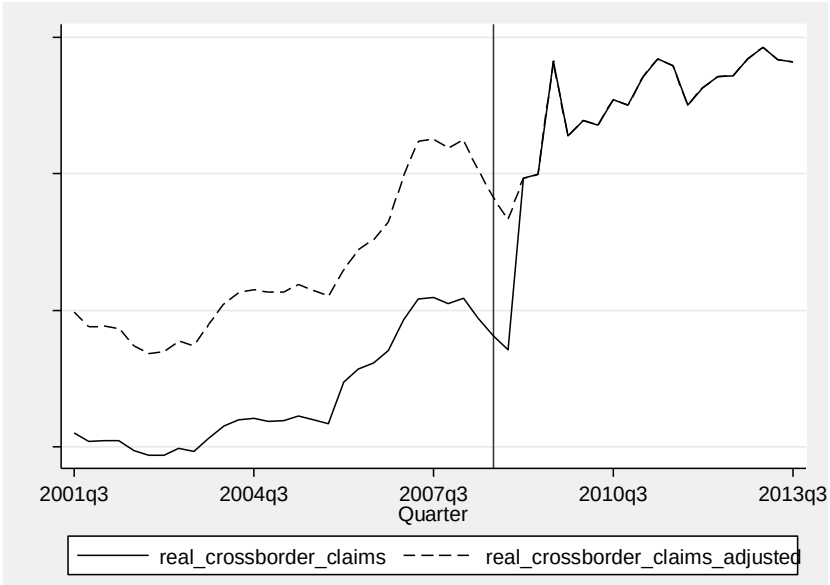


Figure G.3: Claims of U.S. Banks

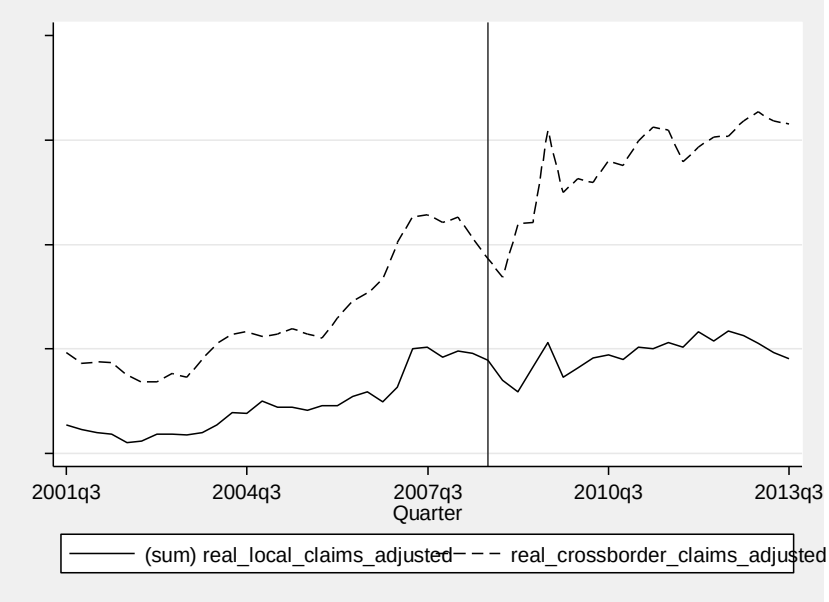


Figure G.4: Foreign Bank Claims in the U.S.

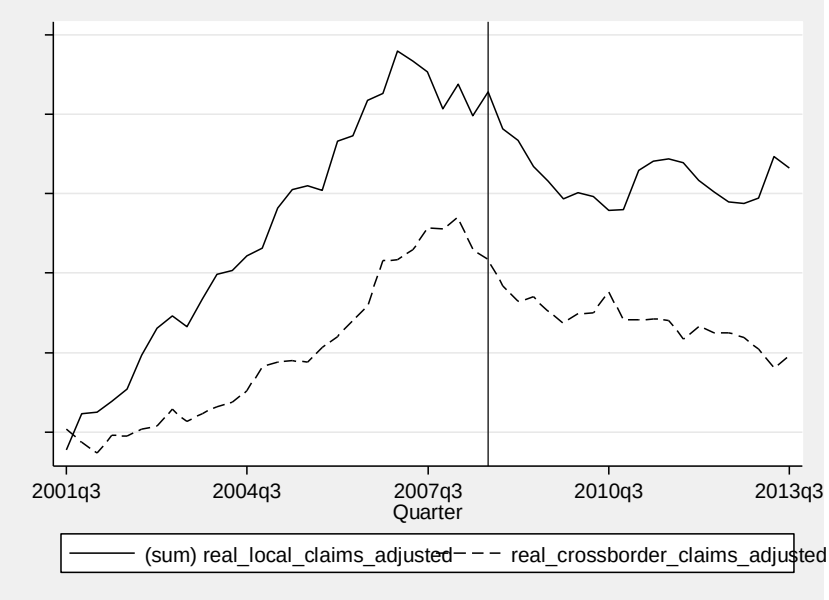


Figure G.5: Foreign Banks in the U.S.—Entry and Exit

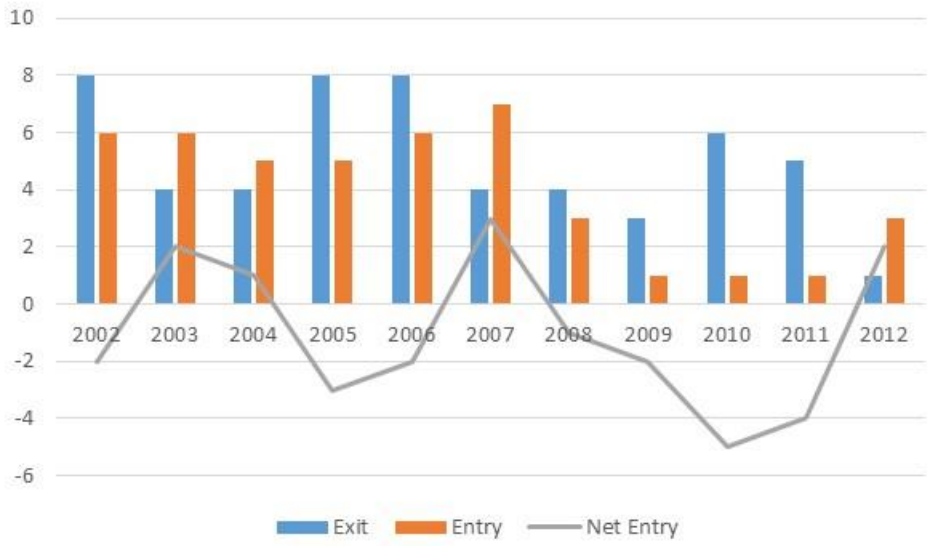


Figure G.6: U.S. Banks Abroad—Entry and Exit

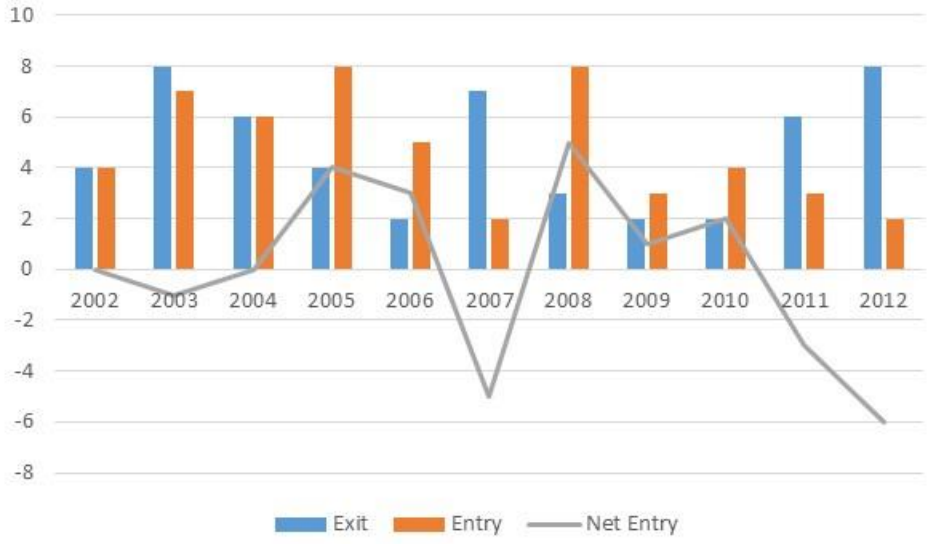


Figure G.7: Percent Change in Loans (Quarter over Quarter)—Domestic Banks in the U.S.

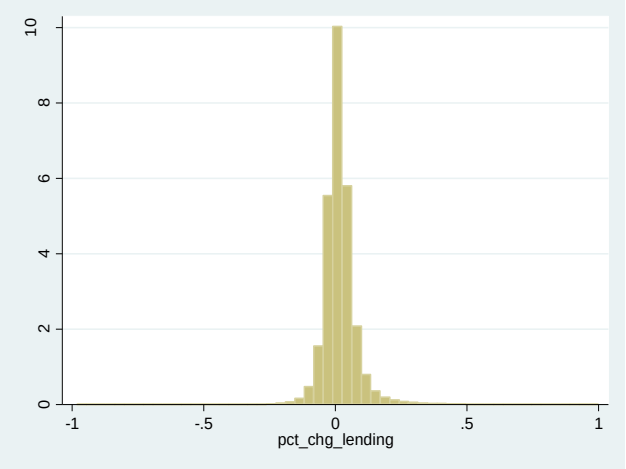


Figure G.8: Percent Change in Loans (Quarter over Quarter)—Foreign Banks in the U.S.

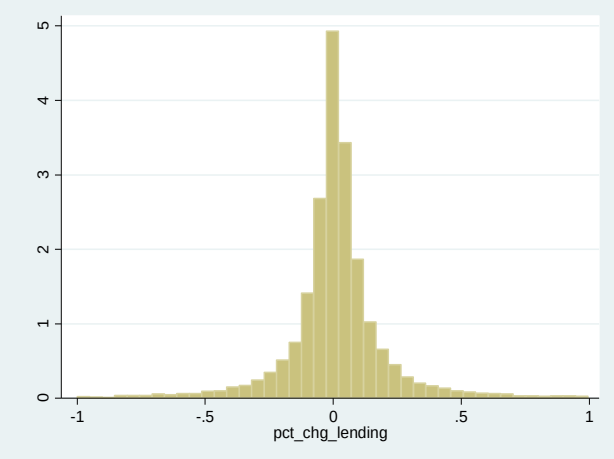


Figure G.9: Percent Change in Loans (Year over Year Quarterly Adjusted)—Domestic Banks Abroad

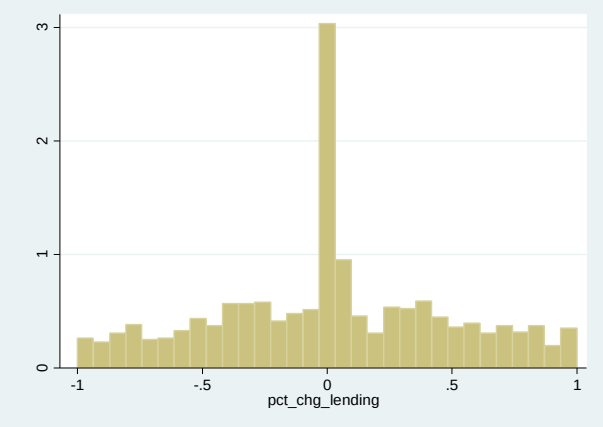
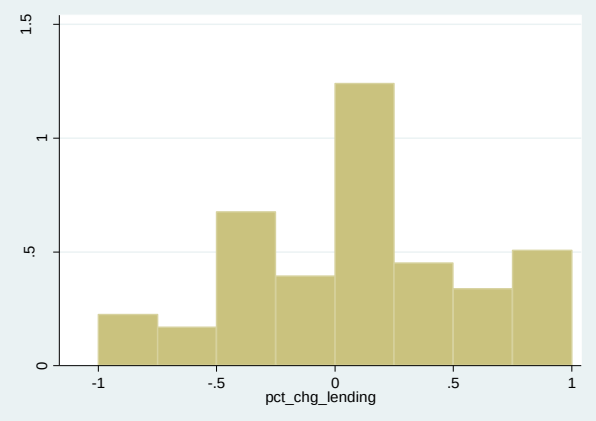


Figure G.10: Percent Change in Loans (Year over Year Quarterly Adjusted)—U.S.-based Foreign Banks



Appendix H Tables for Chapter 3

Table H.1: Summary Statistics—All Banks (2014)

		U.S. Banks Abroad				
	N	Mean	Median	Std. Dev.	p25	p75
Total Assets ($ Millions)	61	25,740.050	3,050.937	126,946.600	703	10,824.100
Total Liabilities ($ Millions)	61	24,217.660	1,961.739	124,061.900	558	10,063.490
Total Loans ($ Millions)	59	4,579.866	504.898	11,891.540	176	1,999
Loans (% of Assets)	59	0.369	0.378	0.305	0.053	0.629
Total Deposits ($ Millions)	61	5,506.218	551.501	12,041.420	189	3,367.748
Total Deposits (% of Liabilities)	61	0.515	0.503	0.338	0.189	0.868
Tier 1 Capital Ratio	20	0.291	0.212	0.258	0.144	0.265
		Foreign Banks in the US				
	N	Mean	Median	Std. Dev.	p25	p75
Total Assets ($ Millions)	102	21,866.360	4,213.298	36,754.220	1,082.499	19,151.500
Total Liabilities ($ Millions)	77	19,475.250	3,782.390	34,386.220	1,105.053	14,358.610
Total Loans ($ Millions)	102	8,220.699	1,470.344	16,269.750	166.786	6,400.959
Loans (% of Assets)	102	0.376	0.342	0.287	0.128	0.587
Total Deposits ($ Millions)	102	11,504.530	1,383.046	21,533.310	202.549	11,806.380
Total Deposits (% of Liabilities)	77	0.417	0.372	0.322	0.129	0.687
Tier 1 Capital Ratio	101	0.161	0.122	0.366	0.096	0.154

Table H.2: Drivers of Cross-Border Claims

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Δln(Cross-Border Claims)							
SRISK Home Country	-0.000494***			-4.53e-05	-0.000463***			-6.30e-05
	(0.000158)			(0.000163)	(0.000154)			(0.000163)
SRISK Host Country	-6.96e-05			-1.86e-05	-5.96e-05			1.13e-05
	(0.000168)			(0.000582)	(0.000166)			(0.000577)
Host Country GDP Growth		-0.000212				-0.000112		
		(0.000662)				(0.000666)		
Home Country GDP Growth		-0.00104				-0.00112		
		(0.000767)				(0.000777)		
Host Country Industrial Production		-0.00115				-0.00111		
		(0.000846)				(0.000852)		
Home Country Industrial Production		0.000572				0.000585		
		(0.00108)				(0.00107)		
Host Country Unemployment Rate		-0.00579***				-0.00540***		
		(0.00175)				(0.00173)		
Home Country Unemployment Rate		0.000654				0.000672		
		(0.00141)				(0.00141)		
TED Spread			0.00417				0.00324	
			(0.0144)				(0.0150)	
Host Country U.S.*TED Spread			0.0125				0.0144	
			(0.0261)				(0.0263)	
VIX			-0.00139				-0.00106	
			(0.00111)				(0.00114)	
Host Country U.S.*VIX			-0.00201*				-0.00207**	
			(0.00105)				(0.00105)	
Home Country U.S.*SRISK				-0.000570				-0.000541
				(0.000849)				(0.000825)
Home Region Europe*SRISK				-0.000353***				-0.000320***
				(0.000123)				(0.000122)
Home Region Latin America*SRISK				0.000630				-0.000335
				(0.00350)				(0.00344)
Host Country U.S.*SRISK				-0.00103				-0.000996
				(0.000740)				(0.000731)
Host Region Europe*SRISK				8.35e-05				6.29e-05
				(0.000594)				(0.000589)
Host Region Latin America*SRISK				-0.00582***				-0.00530**
				(0.00218)				(0.00206)
Δln(Local Claims)					0.0586***	0.0444**	0.0336*	0.0573***
					(0.0193)	(0.0189)	(0.0177)	(0.0193)
Observations	1,118	1,067	1,613	1,118	1,117	1,066	1,575	1,117
R-squared	0.032	0.025	0.013	0.040	0.049	0.034	0.016	0.056
Quarter Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table H.3: Drivers of Foreign Banking by Local Affiliates

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Δln(Local Claims)							
SRISK Home Country	-0.000464			0.000381	-0.000314			0.000393
	(0.000354)			(0.000297)	(0.000351)			(0.000297)
SRISK Host Country	-0.000159			-0.000526	-0.000138			-0.000520
	(0.000309)			(0.000695)	(0.000306)			(0.000685)
Host Country GDP Growth		-0.00226				-0.00221		
		(0.00138)				(0.00138)		
Home Country GDP Growth		0.00205				0.00227		
		(0.00186)				(0.00188)		
Host Country Industrial Production		-0.000401				-0.000161		
		(0.00175)				(0.00173)		
Home Country Industrial Production		-0.000503				-0.000623		
		(0.00285)				(0.00282)		
Host Country Unemployment Rate		-0.00847**				-0.00724*		
		(0.00373)				(0.00376)		
Home Country Unemployment Rate		0.000797				0.000646		
		(0.00279)				(0.00278)		
TED Spread			-0.0440				-0.0442	
			(0.0304)				(0.0302)	
Host Country U.S.*TED Spread			0.0444				0.0425	
			(0.0449)				(0.0446)	
VIX			0.000454				0.000585	
			(0.00193)				(0.00192)	
Host Country U.S.*VIX			0.000899				0.00115	
			(0.00182)				(0.00181)	
Home Country U.S.*SRISK				-0.000576				-0.000405
				(0.00173)				(0.00168)
Home Region Europe*SRISK				-0.000599**				-0.000493**
				(0.000245)				(0.000241)
Home Region Latin America*SRISK				0.0173				0.0171
				(0.0133)				(0.0131)
Host Country U.S.*SRISK				-0.000294				7.77e-06
				(0.00126)				(0.00126)
Host Region Europe*SRISK				0.000362				0.000337
				(0.000678)				(0.000671)
Host Region Latin America*SRISK				-0.00922**				-0.00748*
				(0.00467)				(0.00437)
Δln(Cross-Border Claims)					0.306***	0.214**	0.125**	0.298***
					(0.0969)	(0.0936)	(0.0637)	(0.0973)
Observations	1,117	1,066	1,575	1,117	1,117	1,066	1,575	1,117
R-squared	0.008	0.012	0.006	0.018	0.025	0.021	0.010	0.035
Quarter Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table H.4: Cross-Border Claims and Other Foreign Lending

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Δln(Cross-Border Claims)								
Δln(Local Claims)	0.0345*	0.0335*	0.0340				0.0375**	0.0357**	0.0364
	(0.0177)	(0.0176)	(0.0213)				(0.0183)	(0.0181)	(0.0219)
Europe				0.0127	-0.0174				
				(0.0105)	(0.0107)				
Europe*Δln(Local Claims)				0.0179	0.0166	0.0178			
				(0.0190)	(0.0188)	(0.0194)			
Latin America					0.000297				
					(0.0308)				
Latin America*Δln(Local Claims)				0.0804*	0.0786*	0.0782			
				(0.0425)	(0.0417)	(0.0537)			
Japan				0.0194					
				(0.0139)					
Japan*Δln(Local Claims)				0.284***	0.285***	0.285***			
				(0.0963)	(0.0965)	(0.0478)			
$\Delta \ln(\text{Cross-border Claims})_{t-1}$							-0.147***	-0.155***	-0.159***
							(0.0411)	(0.0415)	(0.0508)
$\Delta \ln(\text{Local Claims})_{t-1}$							0.0189	0.0173	0.0180
							(0.0159)	(0.0155)	(0.0132)
Observations	1,575	1,575	1,575	1,575	1,575	1,575	1,543	1,543	1,543
R-squared	0.005	0.013	0.005	0.013	0.019	0.011	0.028	0.037	0.031
Quarter Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Country FE	No	Yes	No	No	Yes	No	No	Yes	No
Bilateral Country FE	No	No	Yes	No	No	Yes	No	No	Yes
Number of Countries	30	30	30	30	30	30	30	30	30

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table H.5: Claims by Local Affiliates and Other Foreign Lending

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					Δln(Local Claims)				
Δln(Cross-border Claims)	0.127**	0.124**	0.125*				0.137**	0.132**	0.132*
	(0.0627)	(0.0629)	(0.0685)				(0.0626)	(0.0627)	(0.0744)
Europe				-0.0155	-0.0246				
				(0.0204)	(0.0205)				
Europe*Δln(Cross-Border Claims)				0.0690	0.0641	0.0683			
				(0.0714)	(0.0713)	(0.0673)			
Latin America					0.0371				
					(0.0763)				
Latin America*Δln(Cross-Border Claims)				0.289**	0.283**	0.280*			
				(0.130)	(0.129)	(0.156)			
Japan				0.00802					
				(0.0211)					
Japan*Δln(Cross-Border Claims)				0.407***	0.408***	0.408***			
				(0.148)	(0.147)	(0.0269)			
$\Delta\ln(\text{Local Claims})_{t-1}$							-0.128*	-0.130*	-0.145*
							(0.0750)	(0.0757)	(0.0712)
$\Delta\ln(\text{Cross-border Claims})_{t-1}$							-0.00975	-0.0149	-0.0122
							(0.0918)	(0.0940)	(0.0964)
Observations	1,575	1,575	1,575	1,575	1,575	1,575	1,543	1,543	1,543
R-squared	0.005	0.008	0.005	0.009	0.012	0.008	0.022	0.025	0.026
Quarter Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Country FE	No	Yes	No	No	Yes	No	No	Yes	No
Bilateral Country FE	No	No	Yes	No	No	Yes	No	No	Yes
Number of Countries	30	30	30	30	30	30	30	30	30

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table H.6: Drivers of Loan Growth—Branches and Subsidiaries

	Δlog(Total Loans)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	All Foreign Banks			Foreign Branches			Foreign Subsidiaries		
$\ln(\text{Assets})_{t-1}$	0.0108	0.0117	-0.0675**	0.0299*	0.0446**	0.0224	-0.0122	-0.0267*	-0.133***
	(0.0104)	(0.0124)	(0.0296)	(0.0159)	(0.0208)	(0.0435)	(0.0130)	(0.0146)	(0.0392)
Tier 1 Capital Ratio_{t-1}	-0.0148	-0.0267	0.157	-0.269	-0.204	0.166	-0.0395	-0.0516	0.151
	(0.199)	(0.206)	(0.370)	(0.239)	(0.251)	(0.300)	(0.230)	(0.234)	(0.406)
$\Delta(\text{Deposits/Liabilities})_{t-1}$	-0.000230	-0.00377	0.00426	0.110	0.0935	0.0953	-0.198	-0.203	-0.195
	(0.102)	(0.101)	(0.117)	(0.104)	(0.106)	(0.124)	(0.228)	(0.233)	(0.253)
Host Country GDP Growth	0.0113***	0.0112***	0.0110***	0.00645	0.00713	0.00646	0.0126***	0.0130***	0.0127***
	(0.00244)	(0.00245)	(0.00224)	(0.00670)	(0.00699)	(0.00602)	(0.00255)	(0.00247)	(0.00223)
Home Country GDP Growth	0.00410*	0.00441*	0.00590**	0.00534*	0.00558*	0.00819**	0.00440	0.00374	0.00152
	(0.00232)	(0.00267)	(0.00291)	(0.00295)	(0.00335)	(0.00368)	(0.00276)	(0.00280)	(0.00355)
Observations	2,068	2,068	2,068	1,018	1,018	1,018	1,050	1,050	1,050
R-squared	0.016	0.028	0.025	0.010	0.035	0.012	0.034	0.051	0.055
Country Fixed Effects	No	Yes	No	No	Yes	No	No	Yes	No
Bank Fixed Effects	No	No	Yes	No	No	Yes	No	No	Yes
Number of Banks			246			117			129

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

REFERENCES

REFERENCES

Acharya, V., C. Brownlees, R. Engle, F. Farazmand, and M. Richardson, 2010, "Measuring Systemic Risk" in Acharya, Viral, Thomas Cooley, and Mathew Richardson (eds.), *Regulating Wall Street: The Dodd-Frank Act and the New Architecture of Global Finance,* John Wiley and Sons.

Afonso, Gara, Entz, Alex, LeSueur, Eric. "Who's Borrowing in the Fed Funds Market?" *Liberty Street Economics.* Federal Reserve Bank of New York. Web. (2013)

Arellano, Manuel, and Stephen Bond. "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations." *The review of economic studies* 58.2 (1991): 277-297.

Belton, Daniel (2016). Bilateral Foreign Banking Trends in the U.S., Europe, Latin America, and Japan. Unpublished manuscript.

Brealey, Richard A., and Evi C. Kaplanis. "The determination of foreign banking location." *Journal of International Money and Finance* 15.4 (1996): 577-597.

Cerutti, Eugenio. "Drivers of cross-border banking exposures during the crisis." *Journal of Banking & Finance* 55 (2015): 340-357.

Cerutti, Eugenio, and Stijn Claessens. "The great cross-border bank deleveraging: Supply side characteristics." *PSE/BdF/NYFed/CEPR Workshop on the Economics of Cross-Border Banking, Paris (December 13–14, 2013)*. 2013.

Cerutti, Eugenio, Giovanni Dell'Ariccia, and Maria Soledad Martinez Peria. "How banks go abroad: Branches or subsidiaries?." *Journal of Banking & Finance* 31.6 (2007): 1669-1692.

Cerutti, Eugenio, Galina Hale, and Camelia Minoiu. "Financial crises and the composition of cross-border lending." *Journal of International Money and Finance* 52 (2015): 60-81.

Cetorelli, Nicola, and Linda S. Goldberg. *Banking globalization, monetary transmission, and the lending channel*. No. w14101. National Bureau of Economic Research, 2008.

Cetorelli, Nicola, and Linda S. Goldberg. "Global banks and international shock transmission: Evidence from the crisis." *IMF Economic Review* 59.1 (2011): 41-76.

Cetorelli, Nicola, and Linda S. Goldberg. "Liquidity management of US global banks: Internal capital markets in the great recession." *Journal of International Economics* 88.2 (2012a): 299-311.

Cetorelli, Nicola, and Linda S. Goldberg. *Follow the money: Quantifying domestic effects of foreign bank shocks in the great recession*. No. w17873. National Bureau of Economic Research, 2012b.

Claessens, Stijn, and Neeltje Van Horen. "Foreign banks: Trends, impact and financial stability." (2011).

Claessens, Stijn, and Neeltje Van Horen. "Impact of foreign banks." (2013).

Claessens, Stijn, and Neeltje Horen. "Foreign banks: Trends and impact."*Journal of Money, Credit and Banking* 46.s1 (2014): 295-326.

Claessens and Van Horen, 2015, "The impact of the global financial crisis on banking globalization", IMF Economic Review, forthcoming.

Cornett, Marcia Millon, et al. "Liquidity risk management and credit supply in the financial crisis." *Journal of Financial Economics* 101.2 (2011): 297-312.

Correa, Ricardo, Horacio Sapriza, and Andrei Zlate. "International Banks and the Cross-Border Transmission of Business Cycles." *Draft paper* (2011).

Correa, Ricardo, Horacio Sapriza, and Andrei Zlate. "Liquidity shocks, dollar funding costs, and the bank lending channel during the European sovereign crisis." *FRB International Finance Discussion Paper* 1059 (2013).

De Haas, Ralph, and Neeltje Van Horen. "Running for the exit? International bank lending during a financial crisis." *Review of Financial Studies* (2012a): hhs113.

De Haas, Ralph, and Neeltje Van Horen. "International shock transmission after the Lehman Brothers collapse: Evidence from syndicated lending."*American Economic Review Papers & Proceedings*. Vol. 102. No. 3. 2012B.

De Haas, Ralph, and Iman Van Lelyveld. "Internal capital markets and lending by multinational bank subsidiaries." *Journal of Financial Intermediation* 19.1 (2010): 1-25.

Focarelli, Dario, and Alberto Franco Pozzolo. *The determinants of cross-border bank share holdings: An analysis with bank-level data from OECD countries*. No. 381. 2000.

Focarelli, Dario, and Alberto Franco Pozzolo. "Where Do Banks Expand Abroad? An Empirical Analysis*." *The Journal of Business* 78.6 (2005): 2435-2464.

Garratt, R., Martin, A., McAndrews, J. J., & Nosal, E. (2015). *Segregated balance accounts* (No. 730).

Giannetti, Mariassunta, and Luc Laeven. "The flight home effect: Evidence from the syndicated loan market during financial crises." *Journal of Financial Economics* 104.1 (2012): 23-43.

Gruenberg, M (2011): Testimony at hearing on "Enhanced oversight after the financial crisis: Wall Street reform at one year", before the Committee on Banking, Housing and Urban Affairs, United States Senate, 21 July.

Ivashina, Victoria, and David Scharfstein. "Bank lending during the financial crisis of 2008." *Journal of Financial economics* 97.3 (2010): 319-338.

Kashyap, Anil K., and Jeremy C. Stein. "The impact of monetary policy on bank balance sheets." *Carnegie-Rochester Conference Series on Public Policy*. Vol. 42. North-Holland, 1995.

Kashyap, Anil K., and Jeremy C. Stein. "What do a million observations on banks say about the transmission of monetary policy?." *American Economic Review* (2000): 407-428.

Keister, Todd, and James McAndrews. "Why are banks holding so many excess reserves?." *Current Issues in Economics and Finance* 15.8 (2009).

Khwaja, Asim Ijaz, and Atif Mian. "Tracing the impact of bank liquidity shocks: Evidence from an emerging market." *The American Economic Review* (2008): 1413-1442.

Kreicher, Lawrence, Robert N. McCauley, and Patrick McGuire. "The 2011 FDIC assessment on banks managed liabilities: interest rate and balance-sheet responses." (2013).

Manove, Michael, A. Jorge Padilla, and Marco Pagano. "Collateral versus project screening: A model of lazy banks." Rand journal of economics(2001): 726-744.

Martin, Antoine, James McAndrews, and David Skeie. "Bank lending in times of large bank reserves." *Federal Reserve Bank of New York Staff Report* 497 (2013).

McCauley, Robert N., and Patrick McGuire. "Non-US banks' claims on the Federal Reserve." *BIS Quarterly Review March* (2014).

McGuire, Patrick, and Philip D. Wooldridge. "The BIS consolidated banking statistics: structure, uses and recent enhancements." *BIS Quarterly Review, September* (2005).

Minetti, Raoul, and Sung-Guan Yun. "Institutions, Bailout Policies, and Bank Loan Contracting: Evidence from Korean Chaebols." *Review of Finance* (2015): rfu053.

Ongena, Steven, José-Luis Peydró, and Neeltje Van Horen. "Shocks abroad, pain at home? Bank-firm level evidence on the international transmission of financial shocks." (2015): 2013-007.

Peek, Joe, and Eric Rosengren. "The capital crunch: neither a borrower nor a lender be." *Journal of Money, Credit and Banking* 27.3 (1995): 625-638.

Peek, Joe, and Eric S. Rosengren. "The international transmission of financial shocks: The case of Japan." *Available at SSRN 36583* (1996).

Peek, Joe, and Eric S. Rosengren. "Collateral damage: Effects of the Japanese bank crisis on real activity in the United States." *American Economic Review* (2000): 30-45.

Whalen, C (2011): "What is a core deposit and why does it matter? Legislative and regulatory actions regarding FDIC-insured bank deposits pursuant to the Dodd-Frank Act", Network Financial Institute, *Indiana University Working Paper*, no 14, June.