Home sweet home? Bank lending and the impact of the global financial crisis

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January, 2017

The objective of this paper is to study how credit supply and its determinants changed after the collapse of Lehman Brothers. To do so, we manually built an original database of syndicated loans gathering data at the loan level on each bank-firm relationship as well as financial information on the lender and the borrower. The analysis is focused on banks located in four European countries – France, Germany, Italy and Spain – and jointly estimates the spread and amount of each loan. Our conclusions highlight interesting aspects of bank lending behavior in terms of geographical and sectoral orientation of loans. First, the sectoral bias (better terms for companies in industries that banks are used to lending to) observed for all the banks in our sample before the crisis completely disappears after 2008. Second, French banks are characterized by flight-to-home (better terms for domestic companies), while Spanish banks increase borrowing cost for their domestic companies, especially during the sovereign debt crisis. Finally, banks with strong balance sheets are better able to sustain credit supply during the subprime crisis, thus supporting the implementation of banking regulations such as Basel III.

Keywords: Credit supply, financial crisis, home bias, sectoral bias, syndicated loan market

JEL Classification: F34, G01, G21

We would like to gratefully thank Charles W. Calomiris for sharing with us his expertise and his time during the four months one author spent at Columbia University as a visiting scholar. This period was the opportunity to collect the data necessary to run this analysis. We acknowledge funding from the People Programme (Marie Curie Actions) of the European Union's Seventh Framework Programme FP7/2007-2013/ under REA grant agreement n°608129. All remaining errors are ours.

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Following the 2008 financial crisis, bank lending in the United States and Europe decelerated (Dell' Ariccia, Detragiache, and Rajan 2007, Ivashina and Scharfstein 2010, Cerutti, Hale, and Minoiu 2015). Two major reasons may explain this trend. First, the financial crisis contributed to a decrease in banks' capital and deeply affected confidence in their financial situation, thus weakening their capacity to lend money (supply effect). Second, the credit risk of firms and households increased, leading to a drastic reduction of their ability to qualify for funds (demand effect) (Panetta, Faeh, Grande, Ho, King, Levy, Signoretti, Taboga, and Zaghini 2009). The three main questions addressed in this paper concern how banks' lending behavior changed in the aftermath of the financial crisis.

First, do we observe a home and/or industry bias in bank lending after the collapse of Lehman Brothers? Giannetti and Laeven (2012) have argued that banks located in a country which experiences a banking crisis extend loan origination to domestic borrowers regardless of their credit risk (flight-to-home effect) and the quality of domestic financial institutions.

Second, to what extent is the home/industry bias country-related? We investigate whether the geographical location of banks may explain the similarities and/or differences in their lending behavior.

Third, what are the mechanisms which affect bank lending behavior and contribute to the flight-to-home effect and/or to the sectoral reorientation of bank lending? Previous work suggests that lender characteristics such as financial position or the macroeconomic context of the home country may explain the credit policy.

One approach to describing the lending supply shock during a banking crisis investigates the geographical distribution of new loans. Giannetti and Laeven (2012) use data on the syndicated loan market to analyze the lending behavior of banks in 55 crisis-hit countries. The authors provide evidence that, during the 2008 financial crisis, credit crunch was mainly due to a home bias in bank lending. Loan origination is more significant than a firm's credit quality. In addition, the flight-to-home effect does not seem to be related either to the relationship a bank may have established with its debtors or to the impact of government intervention. As such, the risk of foreign loans seems to be a significant determinant of banks' credit allocation. Giannetti and Laeven (2012) argue that investors are unable to properly assess credit risk associated with foreign assets. Hence, banks that suffer from a decrease in their wealth during a banking crisis tend to reduce the weight of foreign assets in their own portfolio (Epstein 2001). In addition, the flight-to-home effect is more significant when the bank does not have stable sources of funding. Antoniades (2014) corroborates this conclusion on funding risk. He argues that the supply of mortgages will be affected more heavily when the bank is exposed to liquidity risk due to a low level of deposits or a high level of unused lines of credit. During a banking crisis, banks with a higher funding risk tighten their credit offer, especially by raising costs or imposing tougher requirements (Panetta, Faeh, Grande, Ho, King, Levy, Signoretti, Taboga, and Zaghini 2009) while also expressing the need to decrease risks by giving priority to domestic companies.

An alternative approach to understanding the effects of a banking crisis on credit supply consists in focusing on cross-border lending. Cetorelli and Goldberg (2011a) examine the international transmission of a financial crisis in developed countries to emerging markets. They highlight a flight-to-home effect during the 2008 crisis, identifying two main channels of transmission. First, banks in developed countries hit by the crisis exhibited a flight-to-home effect through a reduction of cross-border loans to emerging markets. Second, branches in those emerging markets also decreased their lending volume. On the contrary, Aiyar, Calomiris, Hooley, Korniyenko, and Wieladek (2014) find opposing results when studying

how a change in capital requirements affected growth in the cross-border loans provided by a sample of UK banks between 1999 and 2006. They highlight a relationship selectivity bias and show evidence that banks tend to favor countries with which they have a strong relationship. In other words, if a bank is used to lending a large volume to a specific country, the impact of capital requirement changes will be lower.

In conclusion, we can say that the flight-to-home effect seems to be crisis-related and is consistent with the funding risk that banks may experience during a financial institution crisis. Epstein (2001) uses the concept of ambiguity aversion when banks allocate more resources to domestic companies because geographical proximity makes it easier for them to quantify the credit risk of domestic assets. This behavior is even more striking during a banking crisis when banks are affected by a confidence problem. However, De Haas and Van Horen (2013) argue that the conclusions developed by Cetorelli and Goldberg (2011a) on cross-border lending cannot be generalized to all banks. They observe that despite the crisis, cross-border lending in some countries can remain stable.

Our paper contributes to this literature on the flight-to-home effect in bank lending during a financial crisis. Using a different methodology, we aim to reassess the results already provided by the literature. In addition, we introduce a sectoral bias into the credit supply, considering the incentive for banks to lend more to industries they are specialized in. Since this idea is barely explored in the literature, we propose to analyze the significance of the borrower's industry in banks' lending strategies, especially in times of crisis. In the “focus versus diversification” debate, Acharya, Hasan, and Saunders (2006) investigate to what extent a bank's lending strategy may change following a change in capital requirements, and the related consequences on its performance. On the one hand, when providing a loan, a bank may select firms in “familiar” industries to save monitoring costs. On the other hand, for diversification reasons, the bank may decide to provide funds to firms to which it has never lent before.

To address these questions, we manually combine five databases to build a rich and original set of variables for the syndicated loan market of four European countries, namely France, Germany, Italy and Spain, between 2005 and 2013. This period enables us to investigate pre-crisis bank lending, examine how it changed after the collapse of Lehman Brothers, and identify common and/or unique trends among these four countries. In Europe, the collapse of Lehman Brothers is considered as the starting point of the crisis highlighting the high exposure and implication of foreign banks, mainly European, in the trade of subprime mortgage-related securities (Laeven and Valencia 2008, 2010). During the crisis, the syndicated loan market completely collapsed, with a significant increase in loan spreads and flows falling by 75% from their peak in 2007. The market continued to suffer in 2009 before starting its recovery. To simultaneously assess the supply and demand effects on bank lending, we adopt a structural approach of the loan market by jointly estimating loan spreads and quantities. We use the identification strategy to determine one equation for credit supply and one equation for credit demand. The two instruments for the credit supply (demand) equation, i.e. the borrower’s sales growth and a dummy for simultaneous loans (the lender’s specialty in industries before and after 2008), are determinants of loan demand (supply), unrelated to loan supply (demand). We control for the lender's and the borrower's financial position, loan characteristics, and the relationship that may exist between the bank and the borrowing companies. We also integrate a variable that proxies the impact of government action on banks' behavior following the Lehman collapse. Finally, we round out the list of variables with several indicators that capture the home and sectoral biases in bank lending.

Our methodology allows us to factor in two major insights resulting from the previous literature: first, the importance of disentangling demand and supply effects on bank lending (Gan 2007, Khwaja and Mian 2008, Panetta, Faeh, Grande, Ho, King, Levy, Signoretti, Taboga, and Zaghini 2009, Cetorelli and Goldberg 2011a, Jiménez, Ongena, Peydró, and Saurina 2012, Amiti and Weinstein 2013); and second, the importance of jointly determining the price and quantity of loans (Brick and Palia 2007, Jiangli, Unal, and Yom 2008, Chakravarty and Yilmazer 2009). This methodology is innovative in dealing with the flight-to-home effect. Previous studies focus on the geographical distribution of loans and try to explain it mainly with indicators of banks' financial position and variables describing the economic context (Cetorelli and Goldberg 2011a among others). In our study, the analysis of loan's terms, i.e. the spread and the associated amount, allows us to identify differences in credit supply during a crisis, depending on the industry and the geographical position of the borrower.

In line with the literature, our results on the supply side of banking activities provide evidence that after the Lehman collapse, all banks tended to increase their lending spreads.[1] However, French banks grant lower spreads and more favorable lending conditions to domestic companies. This result may highlight banks' willingness to ease credit access for domestic companies, thus improving their assessment of credit risk thanks to geographical proximity (Epstein 2001). This lending behavior may ultimately lead to an increase in the share of domestic loans, resulting in a flight-to-home effect. German banks while penalizing domestic companies with spreads significantly higher before the crisis do not make any distinction during the crisis and apply similar spreads to both domestic and foreign companies. On the contrary, Spanish banks adopt an opposite behavior increasing borrowing costs for domestic companies. Therefore, the home-bias effect pointed out by former studies has to be more carefully discussed as it may be country and type of crisis-related.

Regarding the sectoral bias, our results indicate that banks tend to decrease the loan's cost when lending to a company belonging to an industry they are specialized in. We observe this trend before the crisis for all banks, independently of their nationality. Previous evidence (e.g. Calomiris and Pornrojnangkool 2009) has already underlined that when a bank is used to lending to a specific industry, the loan is characterized by more competitive terms. On the contrary, the discount granted to these industries disappears during the crisis even if banks continue to privilege these sectors in terms of amounts lent. These conclusions provide new insights to the literature by highlighting a change in bank lending strategy from “specialization” in normal times to “risk adjustment” during crises.

Our results are important to financial intermediation because they shed additional light on the joint determinants of loan supply and demand. They are also useful to corporate finance as loans are a major source of external finance; borrowers may thus find important insights regarding the potential evolution of loan costs depending on the time-period, their domiciliation and the industry in which they operate. Finally, our analysis provides regulators with deeper understanding of bank lending behavior both during good and bad times.

The rest of the paper is structured as follows. The next section presents our data and is followed by section 2, which describes our methodology. In section 3, we provide the descriptive statistics and we discuss the results and interpretation of our main estimation in section 4. Section 5 goes further into the analysis

[1] The spread is defined as the difference between the loan interest rate and the benchmark rate.

distinguishing between the financial and the sovereign debt crises while section 6 displays a set of robustness checks, and section 7 concludes.

1. Databases: sources and construction

In this paper we aim at studying how credit supply and its determinants changed in the wake of the 2008 financial crisis, especially in terms of geographical and sectoral orientation. We thus build up a rich set of variables combining five databases, for four European countries – France, Germany, Italy and Spain – over the period 2005-2013. These four countries are the main economies of the European Monetary Union. Having the analysis focused on this group of economies allows us not only to draw comparisons between two core and two peripheral countries but also to contribute to the literature mainly based on U.S. datasets.

1.1 Loan characteristics: LPC Dealscan

First, we use LPC Dealscan to get information on all syndicated loans provided by financial institutions in the four abovementioned countries between 2005 and 2013. A syndicated loan is a financial transaction between a company and a group of banks (a syndicate).[2]

Following Lim, Minton, and Weisbach (2012), we consider only bank-type institutions, i.e. commercial banks, investment banks and thrift institutions[3] and leave aside non-bank institutional investors such as hedge funds due to differences in costs of providing debt capital. Then, we assign each bank to one of the four countries under study, using the following procedure. First, we keep only banks with an ultimate parent situated in France, Germany, Italy or Spain. We develop a unique ID to refer to the ultimate parent bank and we assign this ID to all the banks and subsidiaries belonging to the same holding structure. Second, for each country, we consider the geographical location of each bank and identify three categories: national, European and international branches. In this study, we use only the first category; as such, national banks and subsidiaries are grouped under the same ID as the ultimate parent. The final sample of banks includes not only lead lenders, administering and monitoring the loan, but also participating lenders because both groups of banks decide whether they participate to the loan or not based on specific determinants. As our objective is to highlight these determinants, we need to have both categories in the sample.

We run our analysis not only on the full sample of banks but also on a country-by-country basis, to clearly identify common and/or different trends between the four countries under study. We filter these four national groups of banks, keeping only those which lent on the syndicated loan market between 2005 and

[2] In a syndicated loan, also called deal or package, one borrower can benefit from several loans, also called facilities or tranches. The differences between two tranches depend on the type of the loan, its maturity, spread, etc. As such, we decided to run our analysis at the loan level rather than the deal level to integrate the different characteristics and risk level of each separate tranche of a single syndicated loan. In our paper, we will sometimes use terms from the Dealscan terminology, namely facility, borrower and lender, to refer to the loan, company and bank respectively.

[3] We started by filtering Dealscan data to keep only the three categories we are interested in and which are clearly defined in the database. Then, we manually checked for the Standard Industrial Classification (SIC) code of each remaining financial institution and selected only the appropriate ones (falling into the 6011-6082, 6211, 6712 and 6719 categories).

2013 and for which we have information on bank allocation, i.e. the amount lent.[4] From the list of loans in LPC Dealscan, we get information on the borrowing company such as the country where the borrower is located and the industry it belongs to, the name(s) of bank(s) providing the loan, as well as additional loan characteristics necessary for our study. Each loan is associated to one or several national groups of banks according to the nationality of the syndicate members. As such, the same loan may be included in both French and German sub-samples if one French bank and one German bank have participated to the loan. We then consider each bank's participation to a loan as a loan itself controlling for characteristics of the syndicate as described in the next section.

1.2 Bank characteristics: Bankscope

Based on the list of banks' ultimate parents, we use the Bankscope database to find their financial characteristics on an annual basis. We manually look for each ultimate parent in Bankscope to select only lenders with available data and to update the list of loans according to the new list of banks. This database also provides the financial history of each bank, allowing us to identify mergers occurring during the period under study and to adjust our sample over time.

1.3 Borrower characteristics: Compustat, Orbis and Diane

From the updated list of loans in LPC Dealscan, we first extract the list of borrowing companies. To collect the borrower's characteristics, we must combine three different but complementary databases, Compustat, Orbis and Diane, to obtain the most complete sample possible. Compustat mainly provides data on listed companies from all over the world, with a significant share in North America. To combine LPC Dealscan and Compustat, we start by using the file built by Chava and Roberts (2008), who exploited the GVKEY – the unique ID in Compustat – to match the information available in the two databases. More precisely, each company in LPC Dealscan is assigned a unique GVKEY in Compustat. Hence, if a company contracts more than one loan, the same GVKEY will be used. However, the link file is established at one point in time at the then-current state of the market. In other words, if two companies merge while the file is being built, they will have the same GVKEY even if they were previously two separate entities. As an example, if each of them took out a loan before the merger, the two loans would have the same GVKEY even though the borrowers are two distinct companies. Therefore, to ensure a correct match between LPC Dealscan and Compustat, we simultaneously combine the loan borrower IDs from LPC Dealscan with the unique GVKEY. We then control for the lending date to obtain the relevant information about the borrower at the time the loan was made. If companies cannot be matched automatically following this process, we look for them manually in Compustat, using their name and controlling for the country and the sector. For the remaining unmatched companies, we use two other databases, Orbis for European companies (except French firms) and Diane, which mainly focuses on the French market. One advantage of combining these three databases is to limit selection bias.

1.4 Additional characteristics

According to the literature, the frequency of borrowing on the syndicated loan market as well as the relationship between the company and the bank(s) may impact the credit terms (Brick and Palia 2007,

[4] When comparing the characteristics of loans with and without bank allocation information, we can observe that the two samples remain quite similar in terms of geographical repartition (both from the lender's and the borrower's point of view), sector, maturity, and distribution method with a majority of term loans and revolver lines of credit.

Jiangli, Unal, and Yom 2008, De Haas and Van Horen 2013, Aiyar, Calomiris, Hooley, Korniyenko, and Wieladek 2014 among others). These authors argue that loan costs are higher for new borrowing companies in the syndicated loan market than for existing ones. In addition, in line with Calomiris and Pornrojnangkool (2009), when a bank provides more than one loan to the same company over a given period of time, a relationship can be established. In their study, Chakravarty and Yilmazer (2009) show that having firms with several credit sources available has an impact on the loan spread especially for small businesses. Accordingly, two variables are introduced in our model to control for the relationship between the lender and the borrower as well as for the company's frequency of borrowing.

In addition, previous literature underlines the role of government intervention and its impact on bank lending (Laeven and Valencia 2013, Aiyar, Calomiris, and Wieladek 2014a, 2014b). These interventions may support bank lending during a confidence crisis reinforcing the home bias through political pressure on banks to lend more to domestic companies. To integrate this information into our model, we use the database developed by Ureche-Rangau and Burietz (2013). In their paper, the authors use not only capital injections and guarantees provided by European governments but also the liquidity measures implemented by the ECB to explain the increase in sovereign debt spreads using a monthly database on government interventions. Based on their dataset, we extract only explicit financial support given to banks at the nation-state level to control for potential political pressure on banks' lending activities. We build a dummy equal to 1 when the government of one of the four countries under study intervenes during the financial crisis.[5] In our sample of banks, 32% have received financial support from their governments through capital injections (euro 96 bn between August 2007 and October 2011) and guarantees (euro 332 bn between October 2008 and October 2011).

2. Methodology

To measure the lending supply shock following the banking crisis, we run a cross-section analysis per loan to investigate the significant determinants of its terms.[6] As already suggested by Melnik and Plaut (1986), a credit contract may be seen as a package of terms that cannot be treated separately. Consequently, Dennis, Nandy, and Sharpe (2000) were among the first to capture potential interdependencies between the different contract terms by using a system of equations that allows estimating simultaneously several contract features. In line with this early literature, in this paper we jointly estimate two credit terms, i.e. loan spread and loan amount through the following system of two equations:

$$Spread_i = \alpha^S + \delta^S\, AMOUNT_i + \gamma^S\, SUP_{i,l} + \theta^S\, GEO_{i,b} + \beta_1^S\, LEN_{i,l} + \beta_2^S\, BOR_{i,b} + \beta_3^S\, FAC_i + \beta_4^S\, REL_{i,b,l} + \varepsilon_{1i}$$

$$Amount_i = \alpha^D + \delta^D\, SPREAD_i + \gamma^D\, DEM_{i,b} + \theta^D\, GEO_{i,b} + \beta_1^D\, LEN_{i,l} + \beta_2^D\, BOR_{i,b} + \beta_3^D\, FAC_i + \beta_4^D\, REL_{i,b,l} + \varepsilon_{2i}$$

Where $Spread_i$ is the natural logarithm of the all-in spread (including all interest payments and fees) of loan i issued by borrower b and purchased by lender l and $Amount_i$ is the natural logarithm of the amount of loan i issued by borrower b and purchased by lender l.

[5] In the robustness test run at the bank level, we are even more precise by considering each bank separately in terms of government interventions, highlighting only periods when the bank under study received public financial support.
[6] This loan-by-loan analysis allows us to study each loan separately compared to a time-series analysis implying an aggregation of these loans for a specific period of time.

Following Calomiris and Pornrojnangkool (2009), the loan spread also stays as the main determinant of credit supply while the loan amount characterizes the credit demand. As part of the interdependent contract terms, on one hand the spread may have an impact on the amount. The latter depends on firms' growth opportunities; however firms may delay investments if spreads are too high (Martin and Santomero 1997). On the other hand, the amount may also impact the spread, i.e. larger loans benefit from lower spreads (Angbazo, Mei, and Saunders 1998, Carey and Nini 2007). There are thus common unobserved factors that drive both the loan spread and the loan amount. For this reason, an appropriate identification of the two equations is required to be able to estimate the system. In the same time, this identification will also allow us to disentangle the supply effect from the demand effect in bank lending.

One commonly solution is to use in the demand (supply) equation instruments that are correlated with the loan spread (amount) but do not affect the loan amount (spread). The two sets of variables denoted $SUP_{i,l}$ and $DEM_{i,b}$ stand both as explanatory variables and instruments. $SUP_{i,l}$ is a vector of loan supply shifters unrelated to loan demand (and thus an instrument for the amount equation) while $DEM_{i,b}$, is a vector of loan demand shifters unrelated to loan supply (and thus an instrument for the spread equation).[7] The vector $SUP_{i,l}$ contains the determinants of loan supply which control for a potential sectoral bias. The instruments are $LS_{i,l}^{PC}$ and $LS_{i,l}^{C}$. $LS_{i,l}$, standing for lender's specialty, is defined as the natural logarithm of the total amount lent by the bank during the previous year to companies belonging to the same industry as the borrower of the loan under study (Calomiris and Pornrojnangkool 2009). We partition this series in two, before and after September 2008, to study the evolution of this determinant and to investigate a potential sectoral bias and its impact on the bank lending decision before and during the crisis. The specialization versus diversification issue is crucial in the banking industry. One explanation comes from the very nature of banks, as financial intermediaries in the context of asymmetric information, hence acting as delegated monitors in the sense of Diamond (1984). Information acquisition about the firms and monitoring costs are thus key factors. Acharya, Hasan, and Saunders (2006) as well as Hauswald and Marquez (2006) provide evidence that banks expanding into industries in which they lack experience or into more competitive sectors may lead to worsening credit quality coming from worse monitoring, adverse selection, etc. We may thus argue that such phenomena may have an impact on the spread, i.e. higher spreads for newly entered sectors and more competitive spreads for banks' specialized industries.

The vector $DEM_{i,b}$, contains two determinants of loan demand. More specifically, borrower's sales growth starting solely after the Lehman collapse to emphasize even more the impact of the crisis on the change in demand for credit, $SG_{i,b}^{C}$ and a dummy variable equal to 1 when the deal issued by the borrower contains more than one facility ($DEAL_{i,b}$) measure borrower's needs for funding. We argue that accelerator terms such as sales capture the investment demand and motivate changes in capital spending (Fazzari, Hubbard, Petersen, Blinder, and Poterba 1988 among others). We do not expect these two variables to directly impact the loan spread except through its link with firm's demanded amount.

Our estimated model also includes the vector $GEO_{i,b}$ that accounts for the country of the borrower. The vector contains either two dummies, $DOM_{i,b}^{PC}$ and $DOM_{i,b}^{C}$, equal to 1 if the country of the borrower is

[7] Delis and Kouretas (2011) explain that a good instrument is strongly correlated with the endogenous regressor but weakly correlated with the dependent variable. We therefore use a correlation table of both $Spread_i$ and $Amount_i$ with all the variables in the system to validate that the selected instruments are the most relevant for the two endogenous regressors. Several specification tests are run to ensure that the instruments are relevant and exogenous. These tests are displayed at the end of each table of results.

the same than the country of the lender before and after the collapse of Lehman Brothers respectively. or eight dummies computed using the same process as previously to consider the four sampling countries, i.e. France, Germany, Italy, and Spain before and during the crisis ($FR_{i,b}^{PC}$, $FR_{i,b}^{C}$, $GE_{i,b}^{PC}$, $GE_{i,b}^{C}$, $IT_{i,b}^{PC}$, $IT_{i,b}^{C}$, $SP_{i,b}^{PC}$, $SP_{i,b}^{C}$). We are thus able to observe whether there is a home bias in credit supply and to identify the exact country for which this bias may be observed (Cerutti 2013).

Regarding bank characteristics, the objective is to identify those categories of banks that are the most affected by the banking crisis. A bank that is well-capitalized, liquid, with high-quality assets, substantial earnings, stable funding sources, and independent managers and supervisors will perform better and be able to maintain lending during a crisis (Peek and Rosengreen 2000, Hubbard, Kuttner, and Palia 2002, Beltratti and Stulz 2009, Ivashina and Scharfstein 2010, Popov and Udell 2010, Altunbas, Manganelli, and Marques-Ibanez 2011, Cetorelli and Goldberg 2011a, 2011b, Fahlenbrach and Stulz 2011, De Haas and Van Horen 2012, 2013, Fahlenbrach, Prilmeier, and Stulz 2012, Giannetti and Laeven 2012, Antoniades 2014). We thus use a vector of nine explanatory variables $LEN_{i,l}$ that are consistent with both the CAMEL model and the Basel regulation. First, to account for bank's capital, we use the Tier 1 ratio of common equity and retained earnings to risk-weighted assets, $T1_{i,l}$, in line with a large strand of the literature (Gambacorta 2008, Acharya and Steffen 2013, Drechsler, Drechsel, Marques-Ibanez, and Schnabl 2013, Kapan and Minoiu 2015). For asset quality, we employ the ratio of loan loss reserves to gross loans, $LLR_{i,l}$, as provided by Bankscope. To measure the management aspects of the bank, we build the variable $TL_{i,l}$, standing for Total Lending, which is the natural logarithm of the total amount lent by the lender in the previous year (Calomiris and Pornrojnangkool 2009). $TL_{i,l}$ captures the lender's reputation and a potential size effect. The level of banks' earnings is proxied by two variables: interest income as a percentage of total income, $II_{i,l}$, and the bank's $ROA_{i,l}$. Finally, two measures, $IB_{i,l}$ and $LA_{i,l}$, account for liquidity. $IB_{i,l}$ is the interbank ratio of the lender, i.e. what is due from banks to what is due to banks. $LA_{i,l}$ is a proxy of the liquid asset ratio and equals liquid assets as a percentage of deposits and short-term funding. For all these variables, when a loan is signed at time t, we take into account data at time t-1.

As mentioned previously, the model is run on the syndicated loan market. Hence, several banks may be involved in the same loan. Therefore, we assign the weighted average[8] of each financial characteristic of the lenders to each loan with more than one lender.[9] The vector of bank characteristics also includes a dummy, $SYNR_{i,l}$ equal to 1 if the sum of the amounts invested by the banks under study represents more than 50% of the total amount of the loan. As we only focus on syndicate members located in France, Germany, Italy, and Spain, this dummy variable allows to control for their weight in the whole syndicate. Finally, we also include a dummy variable, $GI_{i,l}$, equal to 1 during the banking crisis, when the government intervenes to support the supply of credit in its banking system. We expect all coefficients to be negatively correlated with the loan spread in the first equation of the model, except for the asset's variable, $LLR_{i,l}$ (Hubbard, Kuttner, and Palia 2002, Gambacorta 2008).

In line with previous literature, we also control for the borrower's ($BOR_{i,b}$) and loan's characteristics (FAC_i), in addition to the relationship ($REL_{i,b,l}$) that may exist between the bank and the borrower. First, in the vector $BOR_{i,b}$, we include three yearly determinants to assess the financial position of the borrower: the natural logarithm of total assets ($TA_{i,b}$), the natural logarithm of the borrower's long-term

[8] The weights equal the share invested by each lender to the total amount granted.
[9] We control for this decision by running a bank-by-bank test.

debt ($LTD_{i,b}$), and its return on equity ($ROE_{i,b}$). Again, we consider data for the year preceding the loan. We expect these variables to have a negative impact on the loan spread, except for the long-term debt (Hubbard, Kuttner, and Palia 2002, Brick and Palia 2007, Chakravarty and Yilmazer 2009). A borrower with a better-than-average financial position should be able to get a lower spread on its loan. Second, eight variables are used to describe the loan's characteristics in the vector FAC_i: the natural logarithm of its maturity (MAT_i), a dummy equal to 1 if the loan is denominated in euro ($CRCY_i$), its type, i.e. a revolver or a term loan (REV_i, $TERM_i$), and its objective, i.e. intended for corporate purposes or for debt repayment ($CORP_i$, $DEBT_i$), a variable ($SYNS_i$) to control for the size of the syndicate and the Value-at-Risk (VaR_i) to assess the risk of the industry in which the borrower operates (Hubbard, Kuttner, and Palia 2002, Calomiris and Pornrojnangkool 2005, Brick and Palia 2007). We use industry indices produced by Datastream to compute a VaR_i per industry. Then, we manually match the SIC code of the borrowing company provided by Dealscan database with the indices provided by Datastream to be able to associate one VaR per loan, also considering the timing of the loan. Finally, we include two dummy variables in the vector $REL_{i,b,l}$, i.e. $PL1_{i,b,l}$ and $MCS_{i,b,l}$, to account for the potential influence of a relationship between the bank and its customers. The variable $PL1_{i,b,l}$ (Previous Lending) is a dummy which takes the value 1 if the same company has contracted a loan during the year before the loan under consideration.[10] The second dummy variable, $MCS_{i,b,l}$ (Multiple Credit Sources), is introduced to consider the opportunity for the borrower to have more than one credit source available.

We use the three-stage least squares approach when estimating the system over the period 2005-2013. We run two different tests. First, we estimate the model to assess the influence of the Lehman collapse on the geographical and sectoral orientation of loans. As such, we partition the series of the geographical location of the borrower and of the lender's specialty before and after 2008.[11] Second, we go deeper into the analysis by disentangling between the two different crises that occurred in Europe between 2008 and 2013 and which may have different impacts on credit supply and demand: the financial institution crisis and the sovereign debt crisis, with a break point in 2011. On one hand the financial institution crisis may render banks reluctant to lend while firms may refrain from investing waiting for more stable economic conditions. On the other hand, the sovereign debt crisis highlights excessive levels of sovereign debt requiring fiscal consolidation with a potential amplification of the financial institution crisis. The implied rise in tax burdens reduces the income of both households and firms lowering the demand for credit and increasing private sector default risk. A highly indebted government may also exacerbate banks' weaknesses through domestic sovereign bonds holdings and governmental pressure to get additional funds reducing credit supply (Lane 2012, Acharya, Drechsler, and Schnabl 2014).

[10] In the main regression we cannot control for the identity of the lender. However, we can refine the analysis of the bank-borrower relationship in the robustness test run at the bank level for each country. In this test, we add a dummy to account for the fact that the previous loan(s) have been contracted with the same bank.

[11] We start by estimating the system of equations distinguishing between the pre-crisis and the crisis periods for all variables, but this had no influence on coefficients related to our control variables. More precisely, we do not observe any change between the two periods in terms of sign, magnitude or significance of the coefficients associated with the loan, the borrower, the lender and their relationship. In other words, these characteristics are relevant when determining the spread and the amount of a loan but are not prone to the occurrence of a crisis. We therefore decided to focus on the impact of the crisis for the geographical and sectoral orientation of the loan only.

3. Descriptive statistics

In our final sample, we have 62 ultimate lenders providing 1,948 borrowers with a total of 3,749 loans. Table 1 provides the descriptive statistics for all the variables included in the empirical analysis.

Insert Table 1 here.

Tables 2 and 3 depict the average spread and the total amount respectively over the three sub-periods under study, i.e. before 2008 (PC), between the Lehman collapse and the outbreak of the European sovereign debt crisis (C08) and after 2011 (C11), taking into account two dimensions: the home country of the bank and of the borrower. We observe that spreads increase during the crisis period. However, there is no evidence of home bias. Italian and Spanish debtors seem to pay the highest spreads regardless of the nationality of the lender, especially after 2011. We notice a clear dominance of loans to North American borrowers by French, German and Italian banks.[12] Spanish banks are an exception in that they seem to allocate more funds to domestic companies. This observation is at odds with the figures recorded for the spreads, which, in the case of Spanish lenders, are the highest when the debtor is Spanish too, particularly in times of turmoil. Thus, although one might be tempted to conclude from the amount lent that Spanish banks are home-biased, this is not supported by the spread figures.[13]

Insert Tables 2 and 3 here.

In addition, we also provide detailed data on the lender's specialty ($LS_{i,l}$) in Table 4, computing the total amount lent by each of the four banking groups to the one-digit SIC sectors for the same three sub-periods. The banks in our sample seem to be specialized in loans to three main industries. Loans to companies belonging to the "Transportation, communication and utilities" sector (SIC 4) account for more than one third of banks' credit portfolios. The relative importance of this industry remains significant over the full period. "Mining and construction" (SIC 1) is particularly representative for French banks while "Finance, insurance and real estate" (SIC 6) absorbs a large percentage of loans from German and Italian banks especially before the crisis. However, after the collapse of Lehman Brothers, loans to financial companies (SIC 6) fall sharply while the share of loans to companies from SIC 1 increases. We underline that SIC 1 is riskier than SIC 4 in terms of risk as suggested by the Value-at-Risk figures. As such, we argue that banks remain specialized in the same industries even during the crisis, despite some adjustments in their portfolios. In addition, these adjustments are not driven by risk reduction.

Insert Table 4 here.

4. Results and Interpretation

The system of two equations presented in the methodology section is tested following several specifications aimed both at capturing the impact of the financial crisis on loan supply and demand and testing the robustness of our different findings.

[12] Due to this dominance of loans granted North American companies, the database may suffer from a selection bias for which we control by performing robustness checks.

[13] The same trend is observed if one looks at the number of loans (not reported here but available on request): Spanish banks allocate more loans to Spanish companies.

The main results are reported in Tables 5 and 6 below. Each table presents the results of the 3SLS estimations assessing the impact of the collapse of Lehman Brothers on credit supply and demand respectively for the whole sample of banks as well as for each group of banks. The model considers the crisis period (Sept. 2008 – Dec. 2013) as a whole. Specification tests are reported at the end of each table to assess the relevance and exogeneity of the instruments. In the different specifications and for both equations (credit supply and demand), we are unable to reject the null hypothesis of instrument exogeneity, while the test on the significance of our instruments allows us to conclude that they are relevant.[14] In the different specifications, the variables that characterize the lender, the borrower, the loan, and the relationship between banks and companies are taken into account over the whole time period under study, 2005-2013. Nevertheless, data on the variables that proxy the geographical origin of the borrower and two instruments (the lender's specialization in a particular industry and borrowers' sales growth) are partitioned to allow us to capture the impact of the financial crisis.

Insert Tables 5 and 6 here.

One major question we are asking in this paper is whether the crisis induced a change in banks' lending policy regarding the industrial sector they are willing to finance. More specifically, we are analyzing banks' industry specialization by using the total amount lent the previous year to companies in the same industry as the borrower under study. This variable is our proxy for the lender's specialty ($LS_{i,l}$). The results in Table 5 show evidence that before the Lehman collapse, the banks in our sample clearly favored companies in their industries of preference; indeed, those companies were granted significantly lower spreads. This result does not hold after the crisis, as the coefficients in front of our variable of interest become positive and significant. We can thus argue that the sectoral bias observed before 2008 no longer characterizes banks' post-crisis lending behavior. These conclusions hold disregarding the sample under study. The positive post-2008 coefficient on the banks' specialization variable indicates not only that the discount in the spread granted to companies in banks' preferred industries disappeared but also that, during the crisis, these companies had to pay a wider spread than those operating in other sectors. This increase in spreads for bank-favored industries may suggest both a crisis effect and an adjustment of the loan cost to better reflect the risk conditions of those particular loans. This argument is supported by our discussion regarding the changes in banks' portfolio weights during the crisis, with a re-balancing in favor of riskier sub-sectors.

The other major question relates to the occurrence of a home bias during the crisis signaling banks' willingness to favor access to credit for domestic companies, easier to assess in terms of credit risk (Epstein 2001). Considering the whole sample of banks with the distinction between domestic and foreign companies, we are unable to validate the hypothesis of a flight-to-home effect. On the contrary, the impact of the crisis on loan spreads is positive and equal to 0.133 for domestic companies implying an increase in borrowing costs. During a crisis, banks become vulnerable to runs and liquidity shocks. After the collapse of Lehman Brothers, financial institutions suffered not only from a run on the repo market, one of the main sources of short-term funds, but also from a disruption on the interbank market. Concerned about their ability to raise funds in the future, they preferred hoarding funds and became reluctant to lend or lent at higher spreads (Brunnermeier 2009, Panetta, Faeh, Grande, Ho, King, Levy,

[14] The only exceptions are for the whole sample of banks and for Italian banks in the demand equation. In these two estimations we reject the null hypothesis of exogenous instruments (with probabilities equal to 0.138 and 0.016 respectively). Despite this issue, the conclusions remain highly similar.

Signoretti, Taboga, and Zaghini 2009, De Haas and Van Horen 2013, Antoniades 2014). Nevertheless, Aiyar, Calomiris, Hooley, Korniyenko, and Wieladek (2014) argue that a strong relationship may have helped reduce the credit crunch in cross-border loans. When we disentangle between French, German, Italian, and Spanish banks, we observe significant differences among these four groups. The group composed by the Spanish banks seems to capture the entire effect recorded on the whole sample of banks, with positive and significant coefficients both before and during the crisis. On the contrary, French banks are characterized by a home bias behavior, especially before the crisis with a significant negative coefficient equal to -0.234. German and Italian banks do not distinguish between domestic companies and foreign borrowers. The conclusions remain roughly similar when running separate regressions on each banking group however allowing to set forth additional insights. First, the discount granted by French banks to their domestic companies becomes significant even during the crisis, albeit lower, reinforcing our previous results. In other words, French banks tend to offer better credit terms to their domestic borrowers despite the occurrence of the crisis. Second, Spanish banks apply higher spreads for their domestic borrowers, mostly before the crisis. This result has to be interpreted with care as we suspect that distinguishing between the types of crisis following 2008, e.g. financial institutions crisis and sovereign debt crisis, may impact the conclusions regarding the behavior of Spanish banks. Third, contrary to the pre-crisis period, German banks do not grant higher spreads to their domestic companies during the crisis period which may also suggest, to a lesser extent, a flight-to-home effect. These results may be linked to those obtained when analyzing the impact of the currency of the loan. French banks seem to clearly favor loans in euros while Italian and Spanish banks apply higher spreads to loans expressed in the same currency. For Spain, such a behavior supports the former conclusion related to the lack of home-bias as the market share of loans to domestic companies is the largest over the period and we can reasonably suppose that the majority of those loans is expressed in euros.

The results related to the influence of banks' characteristics on loan pricing are in line with previous studies. Kapan and Minoiu (2013) conclude that a bank with a strong balance sheet and a large amount of high-quality and highly liquid capital is better able to sustain lending supply. Our results on the whole sample support this evidence as loan spreads decrease significantly when banks' interest income, return-on-assets and liquidity ratios increase. From a balance sheet perspective, a bank anticipating a liquidity shock will allocate more funds to increase its liquid assets and less funds for loan origination. As a result, banks highly liquid, with more deposit funding than short-term debt, and a lower exposure to credit lines are less vulnerable and better able to sustain credit supply during a crisis (Ivashina and Scharfstein 2010, Antoniades 2014, Carlson and Rose, 2015). Moreover, De Haas and Van Horen (2012) conclude that shocked banks with significant funding constraints have greater difficulties in sustaining the credit supply to foreign and especially to small borrowers. This result supports the implementation of the Basel regulatory framework, namely the increase of liquidity requirements for banks. When we disentangle the results per country, we notice that French banks significantly decrease borrowing costs when their total lending used as a proxy for reputation increases while Italian banks adjust loan spreads to the level of the loan loss ratio. In addition, in almost all estimations, the coefficient for the Tier 1 ratio is positive and significant. Over the period under study, the banks in our sample reinforce their capital to meet regulatory requirements, contributing to the increase in borrowing costs as highlighted by Kashyap, Stein, and Hanson (2010). Aiyar, Calomiris, and Wieladek (2014b) also provide evidence that an increase in the minimum capital requirement contributes to a decrease in lending while Howcroft, Kara, and Marques-Ibanez (2014) argue that banks with large capital base tend to decrease their investment in the syndicated loan market during the crisis period. Finally, the increase in government interventions following the

collapse of Lehman Brothers is associated with an increase in loan spread highlighting the failure of these measures to support the banking system and its lending activities. Despite the huge effort put in place by the different public authorities, banks remain reluctant to lend. Considering the fact that 32% of our sampling banks have received financial support from their government, it may also underline capital and/or liquidity shortages weakening their ability to lend.

Our modeling framework also takes into account the financial characteristics of the borrower. Our findings are as expected. A company with a high level of assets is able to secure better credit terms, while a higher level of long-term debt leads to an increase in the spread. This result is in line with the conclusions of Hubbard, Kuttner, and Palia (2002) and Chakravarty and Yilmazer (2009) namely that there is a significant relationship between the financial position of borrowing companies and the constraints they experience when getting access to credit, especially for small businesses. The loan's characteristics also have the expected influence on the spread. We observe a decrease in the loan spreads when the amount of the loan is larger (Angbazo, Mei, and Saunders 1998, Carey and Nini 2007 among others) while it increases along with loan maturity. Finally, the relationship between the bank and its borrowers significantly influences credit supply and contributes to a decrease in the loan spread with Spanish banks being the exception. This is in line with Brick and Palia (2007) who show how a firm can benefit from a long-term relationship with its lender to gain better access to credit with lower fees and without having to post collateral (Jiangli, Unal, and Yom 2008, Chakravarty and Yilmazer 2009). As such, a company with a good credit history benefits from a lower spread.

Considering our demand shifters in Table 6, the coefficient associated to the sales growth of the borrower is never significant while the dummy variable signaling a company that contracts several loans simultaneously within the same deal is significant and with the expected sign. The demand of a company engaged simultaneously in several loans tends to be lower per bank. In general, the demand from companies to their domestic banks decreases during the crisis, mainly driven by Spanish and Italian companies when French and German companies tend to increase their demand for loans over the period. The characteristics of the lender do have a significant impact on the amount of the loan too. Liquid banks with high-quality assets, a good reputation, and large earnings provide higher amount loans. Government interventions do not have the expected impact of credit demand either as the coefficient is negative and significant. As previously emphasized, the collapse of Lehman Brothers and the following crisis contribute to the increase in spread as banks are reluctant to lend and push companies to delay investments reducing the demand for loans (Martin and Santomero 1997). However, the demand from companies holding large amounts of assets and the demand for long-term debt is significantly higher tempering the previous conclusion. Finally, loans with long maturity, denominated in euro and with a large syndicate tend to be larger. The relationship between the lender and the borrower also contributes to an increase the size of the loan.

5. The financial crisis versus the sovereign debt crisis

In our main analysis, we consider the collapse of Lehman Brothers as the breaking point to study how this event and the ongoing crisis have impacted bank lending activities in France, Germany, Italy and Spain. However, between 2008 and 2013, European economies do not suffer one but two different types of financial turmoil, i.e. a financial institution crisis followed by a sovereign debt crisis. As such, disentangling between these two periods may be particularly relevant for banks within the Euro zone, as the supply of

credit by Spanish and Italian banks might be based on loans that these banks themselves contracted from banks situated in the two core countries, Germany and France. As such, omitting this breakpoint may lead to an underestimation of the credit supply in the core countries in our sample coupled to an overestimation of loan supply in the two peripheral countries.[15] In addition, the two crises may have different effects on bank lending activities requiring the implementation of alternative solutions. Hence, subdividing the crisis period in the vectors $DEM_{i,b}$, $SUP_{i,b}$, and $GEO_{i,b}$ allow us to deepen the analysis and provide a better understanding of the determinants of credit supply.

Insert Tables 7 and 8 here.

In terms of industry bias, the results reported previously still hold. Companies belonging to industries that the banks are specialized in benefited from significantly lower spreads pre-Lehman. Having banks granting credit to industries they have strong experience in contribute to a more efficient monitoring of companies, reduce the risk of adverse selection, and ultimately improve credit quality associated with lower spreads (Acharya, Hasan, and Saunders 2006, Hauswald and Marquez 2006). This is no longer the case during both crisis episodes with positive and significant coefficients in front of our variable of interest for all banks. Consequently, the discount on the spread granted to industries banks are specialized in disappeared during the two crises. Moreover, the borrowing companies must even pay a larger spread than those in the other sectors, possibly reflecting an increase in the risk of banks' portfolios, as underlined previously.

Previous conclusions on a potential home bias in bank lending also hold and are even more precise. In the whole sample of banks, loan spreads get significantly larger during the sovereign debt crisis, this phenomena being driven mainly by Spanish banks lending to their domestic companies. As suspected, the behavior of Spanish banks is impacted by the European sovereign debt crisis, with significantly larger spreads granted to Spanish companies starting with 2011. The flight-to-home effect characterizing French banks during the period under study tends to be significant before the collapse of Lehman Brothers and during the sovereign debt crisis; no significant effects are observed during the financial crisis. We may thus argue that the European sovereign debt crisis amplified the perceived risks thus contributing to an additional increase in the spread applied to companies in the countries most affected by this crisis.

Similarly to the results reported previously, the credit demand of companies engaged simultaneously in several loans tends to be lower per bank, while the sales growth of the borrower do not affect the loan amount. The results are also more clear-cut concerning the pattern of demand for loans and the nationality of the borrower when compared with those reported for the previous modelling framework. On the one hand, as already pointed out, credit demand from French and German companies to their domestic banks tended to increase significantly. On the other hand, loan demand from Spanish companies decreased over the period under study, and the size of the decrease is larger during the 2011 sovereign debt crisis. Again, tighter credit terms implemented by banks in the core countries may explain this result.

The overall conclusions for all the control variables in the two equations remain valid with this new specification.

[15] We also run the full model over the period 2005-2010 to remove the potential influence of the sovereign debt crisis and the results remain the same.

6. Robustness

In the following section, we run additional tests to assess the robustness of our results.

6.1 The behavior of lead lenders

Calomiris and Pornrojnangkool (2009) argue that lead lenders in a syndicated loan are those who matter for relationship banking. They show that the degree of participation and the influence on the price of the transactions depend on the role played by the members of the syndicate. We thus check whether our results hold if we focus on lead lenders only. To disentangle between lead lenders and participants, we consider the classification provided by LPC Dealscan. Our findings remain strictly identical for the sectoral bias regardless of the nationality of the bank. The same is observed in terms of home-bias for French and German banks. However, slight changes appear in the case of Italian and Spanish lead lenders. Italian lead lenders seem to apply larger spreads to their domestic borrowers in the pre-Lehman period while the contrary is observed for Spanish lead lenders. These differences should be interpreted with a lot of care. Indeed, the estimation technique solely based on lead lenders is run at the bank level instead of the loan level and considers the proportion lent by the lead lender rather than the total loan amount. One loan may have several lead lenders depending on how roles are assigned. Hence, the main limit of this approach is that a loan may appear several times depending on the number of lead lenders in the syndicate. This argument can be illustrated when comparing the number of observations in Tables 5 and 6 with the number of observations in Tables 9 and 10; in the case of Spain, the number of observations more than doubles. The characteristics of the Spanish bank market, i.e. having syndicates often composed exclusively by Spanish banks sharing the role of lead lenders explain this result. On the contrary, the number of observations for the Italian banks shrinks dramatically. This result is explained by the fact that the whole Italian banks sample has the lowest number of observations coupled to the fact that Italian banks are rarely lead lenders. These differences in the treatment of loans and in the induced changes in the number of observations may lead to the observed differences.

Insert Tables 9 and 10 here.

6.2 Different benchmark rate

The loans in our sample are markup over different benchmark rates, among which the most common ones are the LIBOR and the EURIBOR. Following Gaul and Uysal (2013), we estimate our system of equations on a subsample of loans with one unique reference rate, i.e. EURIBOR to assess whether differences in these base rates influence our results. This choice is justified by our sample composed of Euro-zone banks. The results remain qualitatively similar.

Insert Tables 11 and 12 here.

6.3 Results are not driven by borrowers in one country

As illustrated in Table 2, the share of loans allocated to North American companies is quite significant, particularly for French, German and Italian banks representing more than one third of banks' portfolios.

As such, we check whether our results are driven by these loans running our estimations on a subsample that excludes U.S. borrowers. Our conclusions remain qualitatively unchanged.

Insert Tables 13 and 14 here.

6.4 Alternative estimation methods

The use of 3SLS approach is essentially justified by an increase in efficiency. However, this estimation technique imposes a diagonal covariance matrix for the equation disturbances. Moreover, if the identifying assumptions of the 3SLS estimation technique are reasonable, the Generalized Method of Moments (GMM) as well as the two-Stage-Least-Square (2SLS)[16] approach should provide consistent estimates. We perform our estimations using these two methods and obtain qualitatively the same results.

Insert Tables 15 and 16 here.

7. Conclusion

The aim of this paper is to measure the lending supply shock that followed the collapse of Lehman Brothers and the 2008 banking crisis. We analyze the credit supply of four European banking samples, France, Germany, Italy and Spain, in terms of geographical and industry distribution. Moreover, we investigate how banks' characteristics affect their capacity to maintain the credit supply, especially during a banking crisis. The approach to these questions is innovative and confirms previous results provided by the literature while also expanding on a potential sectoral bias.

Combining five databases enables us to develop a rich dataset on the syndicated loans provided by banks in four European countries for the period 2005-2013. We collected information about the different stakeholders of these financial transactions, i.e. the bank and the borrowing company, and about their relationship, the loan itself and the macroeconomic context. The modeling set-up consists of a system of two equations describing the credit terms of the loan, namely the spread and the amount. Including supply shifters in the first equation and demand shifters in the second enables us to distinguish between supply and demand effects in the changing pattern of bank lending. Moreover, the model is supplemented with information about the country where the borrowing company is located as well as its industry.

The results may be summarized as follows.

The findings set forth banks' preference for specialization before the crisis, regardless of their nationality. However, this sectoral bias disappears post-Lehman. Even if specific sectors still dominate in terms of amounts received, they do not benefit from any discount in terms of spreads after the crisis. Moreover, the observed changes in the weights of banks' portfolios are not driven by risk reduction concerns. As such, the behavior of spreads may be the result of the crisis but also an adjustment of loan costs, in line with a perceived increase in risk.

[16] 2SLS estimates the two equations separately and relaxes the assumptions on the errors imposed by the 3SLS approach.

Regarding the geographical orientation of loans, French banks prefer to lend to domestic companies after the collapse of Lehman Brothers, thus exhibiting a flight-to-home effect. Indeed, they significantly decrease the spread on loans to domestic companies after the Lehman collapse. When we focus specifically on the French banks subsample, we notice that this home bias becomes significant regardless of the period (normal or crisis conditions). To a lesser extent, German banks may also be characterized by a home-bias behavior, particularly during the crisis, when the spreads they apply to their domestic companies do not exhibit significant increase compared to the pre-crisis period. These conclusions do not hold on the Italian of Spanish subsamples. On the contrary, Spanish banks tend to impose higher borrowing costs on domestic companies, especially during the sovereign debt crisis.

The analysis also supports previous evidence on the effects of banks' characteristics on credit supply. A bank is able to maintain lending, even during distressed times, if it has a strong financial position. The most significant variables are those related to earnings and liquidity. They confirm the importance of implementing banking regulations, such as the Basel framework, to limit the impact of a banking crisis on a country's economy. Access to more detailed information on the stakeholders involved in financial transactions would enable us to enlarge the sample and hence obtain even clearer results regarding the impact of a bank's characteristics on its capacity to lend during crisis times.

Further developments of this analysis may enable to detail even more our conclusions. As an example, the inclusion in the sample of the lenders' foreign branches, located in and outside Europe, may provide additional evidence on the flight-to-home effect.

References

Acharya, Viral. V., Itamar Drechsler, and Philipp Schnabl. (2014) “A Pyrrhic Victory? Bank Bailouts and Sovereign Credit Risk.” *Journal of Finance*, LXIX, 2689-2739.

Acharya, Viral. V., Iftekhar Hasan, and Anthony Saunders. (2006) “Should Banks be Diversified? Evidence from Individual Bank Loan Portfolios.” *Journal of Business*, 79, 1355-1412.

Acharya, Viral. V. and Sascha Steffen. (2013) “Analyzing Systemic Risk of the European Banking Sector.” Cambridge University Press.

Aiyar, Shekhar, Charles W. Calomiris, John Hooley, Yevgeniya Korniyenko, and Tomasz Wieladek. (2014) “The International Transmission of Bank Capital Requirements: Evidence from the UK.” *Journal of Financial Economics*, 113, 368-382.

Aiyar, Shekhar, Charles W. Calomiris, and Tomasz Wieladek. (2014a) “Does Macro-Prudential Regulation Leak? Evidence from a UK Policy Experiment.” *Journal of Money, Credit & Banking*, 46, 181-214.

Aiyar, Shekhar, Charles W. Calomiris, and Tomasz Wieladek. (2014b) “Identifying Credit Substitution Channels.” Economic Policy January, 47-77.

Altunbas, Yener, Simone Manganelli, and David Marques-Ibanez. (2011) “Bank Risk during the Financial Crisis - Do Business Models Matter?” ECB Working Paper No. 1394.

Amiti, Mary and David E. Weinstein. (2013) “How much do Bank Shocks Affect Investment? Evidence from Matched Bank-Firm Loan Data.” NBER Working Paper No. 18890.

Angbazo, Lazarus A., Jianping Mei and Anthony Saunders. (1998) “Credit Spreads in the Market for Highly Leveraged Transaction Loans.” *Journal of Banking & Finance*, 22, 1249-1282.

Antoniades, Adonis. (2014) “Liquidity Risk and the Credit Crunch of 2007-2008: Evidence from Micro-Level Data on Mortgage Loan Applications.” BIS Technical report.

Beltratti, Andrea and René M. Stulz. (2009) “Why did some Banks Perform Better during the Crisis? A Cross-Country Study of the Impact of Governance and Regulation.” NBER Working Paper No. 15180.

Brick, Ivan E. and Darius Palia. (2007) “Evidence of Jointness in the Terms of Relationship Lending.” *Journal of Financial Intermediation*, 16, 452-476.

Brunnermeier, Markus K. (2009) “Deciphering the Liquidity and Credit Crunch 2007-2008.” *Journal of Economic Perspectives*, 23, 77-100.

Calomiris, Charles W. and Thanavut Pornrojnangkool. (2005) “Monopoly-Creating Bank Consolidation? The Merger of Fleet and BankBoston.” NBER Working Paper No. w11351.

Calomiris, Charles W. and Thanavut Pornrojnangkool. (2009) “Relationship Banking and the Pricing of Financial Services.” *Journal of Financial Services Research,* 35, 189-224.

Carey, Mark and Greg Nini. (2007) “Is the Corporate Loan Market Globally Integrated? A Pricing Puzzle.” *Journal of Finance*, LXII, 2969-3007.

Carlson, Mark and Jonathan D. Rose. (2015) “Credit Availability and the Collapse of the Banking Sector in the 1930s.” *Journal of Money, Credit & Banking*, 47, 1239-1271.

Cerutti, Eugenio. (2013) “Drivers of Cross-Border Banking Exposures during the Crisis.” IMF Working Paper No. 13/9.

Cerutti, Eugenio, Galina Hale and Camelia Minoiu. (2015) “Financial Crises and the Composition of Cross-Border Lending.” *Journal of International Money and Finance*, 52, 60-81.

Cetorelli, Nicola and Linda S. Goldberg. (2011a) “Global Banks and International Shock Transmission: Evidence from the Crisis.” IMF Economic Review, Palgrave Macmillan 59, 41-76.

Cetorelli, Nicola and Linda S. Goldberg. (2011b) “Liquidity Management of US Global Banks: Internal Capital Markets in the Great Recession.” Federal Reserve Bank of New York Staff report No. 511.

Chakravarty, Sugato and Tansel Yilmazer. (2009) “A Multistage Model of Loans and the Role of Relationships.” *Financial Management*, 38, 781-816.

Chava, Sudheer and Michael R. Roberts. (2008) “How does Financing Impact Investment? The Role of Debt Covenants.” *Journal of Finance*, LXIII, 2085-2121.

De Haas, Ralph and Neeltje Van Horen. (2012) “International Shock Transmission After the Lehman Brothers Collapse Evidence from Syndicated Lending.” *American Economic Review Papers & Proceedings*, 102, 231-237.

De Haas, Ralph and Neeltje Van Horen. (2013) “Running for the Exit: International Banks and Crisis Transmission.” *Review of Financial Studies*, 26, 244-285.

Delis, Manthos D. and Georgios P. Kouretas. (2011) “Interest Rates and Bank Risk-Taking.” *Journal of Banking & Finance*, 35, 840-855.

Dell' Ariccia, Giovanni, Enrica Detragiache, and Raghuram Rajan. (2007) “The Real Effect of Banking Crises.” *Journal of Financial Intermediation*, 17, 89-112.

Dennis, Steven, Debarshi Nandy and Lan G. Sharpe. (2000) “The Determinants of Contract Terms in Bank Revolving Credit Agreements.” *Journal of Financial and Quantitative Analysis*, 35, 87-110.

Drechsler, Itamar, Thomas Drechsel, David Marques-Ibanez, and Philipp Schnabl. (2013) “Who Borrows from the Lender of Last Resort?” NYU and ECB Technical report.

Epstein, Larry G. (2001) “Sharing Ambiguity.” *American Economic Review*, 91, 45-50.

Fahlenbrach, Rüdiger, Robert Prilmeier, and René M. Stulz. (2012) “This Time is the same: Using Bank Performance in 1998 to Explain Bank Performance during the Recent Financial Crisis.” *Journal of Finance*, LXVII, 2139-2185.

Fahlenbrach, Rüdiger and René M. Stulz. (2011) “Bank CEO Incentives and the Credit Crisis.” *Journal of Financial Economics*, 99, 11-26.

Fazzari, Steven M., Glenn R. Hubbard, Bruce C. Petersen, Alan S. Blinder, and James M. Poterba. (1988) “Financing Constraints and Corporate Investment.” Brookings Papers on Economic Activity, 141-206.

Gambacorta, Leonardo. (2008) “How do Banks set Interest Rates?” *European Economic Review*, 52, 792-819.

Gan, Jie. (2007) “The Real Effects of Asset Market Bubbles: Loan- and Firm-Level Evidence of a Lending Channel.” *Review of Financial Studies*, 20, 1941-1973.

Gaul, Lewis and Pinar Uysal. (2013) “Can Equity Volatility Explain the Global Loan Pricing Puzzle?” *Review of Financial Studies*, 26, 3225-3265.

Giannetti, Mariassunta and Luc Laeven. (2012) “The Flight Home Effect: Evidence from the Syndicated Loan Market during Financial Crises.” *Journal of Financial Economics*, 104, 23-43.

Hauswald, Robert and Robert Marquez. (2006) “Competition and Strategic Information Acquisition in Credit Markets.” *Review of Financial Studies*, 19, 967-1000.

Howcroft, Barry, Alper Kara, and David Marques-Ibanez. (2014) “Determinants of Syndicated Lending in European Banks and the Impact of the Financial Crisis.” *Journal of International Financial Markets, Institutions and Money*, 32, 473-490.

Hubbard, Glenn R., Kenneth N. Kuttner, and Darius N. Palia. (2002) “Are there Bank Effects in Borrowers’ Costs of Funds? Evidence from a Matched Sample of Borrowers and Banks.” *Journal of Business*, 75, 559-581.

Ivashina, Victoria and David Scharfstein. (2010) “Bank Lending during the Financial Crisis of 2008.” *Journal of Financial Economics*, 97, 319-338.

Jiangli, Wenying, Haluk Unal, and Chiwon Yom. (2008) “Relationship Lending, Accounting Disclosure, and Credit Availability during the Asian Financial Crisis.” *Journal of Money, Credit & Banking*, 40, 25-55.

Jiménez, Gabriel, Steven Ongena, José-Luis Peydró, and Jesus Saurina. (2012) “Credit Supply Versus Demand: Bank and Firm Balance-Sheet Channels in Good and Crisis Times.” Tilburg University, Tilburg.

Kapan, Tumer and Camelia Minoiu. (2015) “Balance Sheet Strength and Bank Lending during the Global Financial Crisis.” IMF Working Paper No. 13/102.

Kashyap, Anil K., Jeremy C. Stein, and Samuel Hanson. (2010) "An Analysis of the Impact of 'Substantially Heightened' Capital Requirements on Large Financial Institutions." Booth School of Business, University of Chicago, mimeo, 2.

Khwaja, Asim I. and Atif Mian. (2008) "Tracing the Impact of Bank Liquidity Shocks: Evidence from an Emerging Market." *American Economic Review*, 98, 1413-1442.

Laeven, Luc and Fabiàn Valencia. (2008) "Systemic Banking Crises: A new Database." IMF Working Paper No. 08/224.

Laeven, Luc and Fabiàn Valencia. (2010) "Resolution of Banking Crises: The Good, the Bad, and the Ugly." IMF Working Paper No. 10/146.

Laeven, Luc and Fabiàn Valencia. (2013) "The Real Effects of Financial Sector Interventions during Crises." *Journal of Money, Credit & Banking*, 45, 147-177.

Lane, Philip R. (2012) "The European Sovereign Debt Crisis." *Journal of Economic Perspectives*, 26, 49-68.

Lim, Jongha, Bernadette A. Minton, and Michael S. Weisbach. (2012) "Syndicated Loan Spreads and the Composition of the Syndicate." NBER Working Paper No. 18356.

Martin, J. Spencer and Anthony M. Santomero. (1997) "Investment Opportunities and Corporate Demand for Lines of Credit." *Journal of Banking & Finance*, 21, 1331-1350.

Melnik, Arie and Steven Plaut. (1986) "Loan Commitment Contracts, Terms of Lending, and Credit Allocation." *Journal of Finance*, XLI, 425-435.

Panetta, Fabio, Thomas Faeh, Giuseppe Grande, Corrinne Ho, Michael King, Aviram Levy, Federico M. Signoretti, Marco Taboga, and Andrea Zaghini. (2009) "An Assessment of Financial Sector Rescue Programmes." BIS Technical Report No. 48.

Peek, Joe and Eric S. Rosengren. (2000) "Collateral Damage: Effects of the Japanese Bank Crisis on Real Activity in the United States." *American Economic Review*, 90, 30-45.

Popov, Alexander and Gregory Udell. (2010) "Cross-Border Banking and the International Transmission of Financial Distress during the Crisis of 2007-2008." ECB Working Paper No. 1203.

Ureche-Rangau, Loredana and Aurore Burietz. (2013) "One Crisis, Two Crises...the Subprime Crisis and the European Sovereign Debt Problems." *Economic Modelling*, 35, 35-44.

TABLE 1

DESCRIPTIVE STATISTICS

Variables	Definition	Unit	France		Germany		Italy		Spain	
			Mean	St. dev.	Mean	St. dev.	Mean	St. dev.	Mean	St. dev.
$Spread_i$	The all-in spread (including all interest payments and fees) of loan i issued by borrower b and purchased by lender l	Bps	136.02	114.73	137.54	114.49	118.52	110.43	183.65	144.24
$Amount_i$	The amount of loan i issued by borrower b and purchased by lender l	Million USD	973.46	1,857.11	1,191.12	2,414.98	1,645.07	3,291.65	1,329.60	3,126.72
		$DEM_{i,b}$: Loan demand determinants								
$SG_{i,b}^{C}$	Sales growth of borrower b issuing loan i (for loans issued during the crisis)	%	98.82	1,564.73	98.18	1,591.76	79.06	463.30	89.05	1,140.59
$DEAL_{i,b}$	Loan i extended by borrower b as part of a larger deal/package	Dummy	0.39	0.49	0.41	0.49	0.45	0.50	0.58	0.49
		$SUP_{i,l}$: Loan supply determinants								
$LS_{i,l}^{PC}$	The total amount lent by the lender l during the previous year to companies belonging to the same industry as the borrower b issuing loan i (for loans issued before the crisis)	Million USD	1,271.91	2,487.60	702.51	921.18	416.80	1,190.90	726.70	1,683.37
$LS_{i,l}^{C}$	The total amount lent by the lender l during the previous year to companies belonging to the same industry as the borrower b issuing loan i (for loans issued during the crisis)	Million USD	1,361.18	1,649.50	806.59	1,067.05	304.06	540.68	561.15	909.53
		$GEO_{i,b}$: Borrower's country								
$DOM_{i,b}^{PC}$	Loan i extended by a bank to a domestic borrower b before the Lehman collapse	Dummy	0.08	0.28	0.04	0.19	0.14	0.34	0.40	0.49
$DOM_{i,b}^{C}$	Loan i extended by a bank to a domestic borrower b after the Lehman collapse	Dummy	0.05	0.21	0.04	0.20	0.04	0.19	0.68	0.47
		$LEN_{i,l}$: Lender's characteristics								
$T1_{i,l}$	The Tier 1 ratio (common equity and retained earnings to risk-weighted assets) of lender l extending loan i	%	9.19	1.65	9.58	2.78	6.62	3.90	7.96	2.52
$LLR_{i,l}$	The loan loss to gross loans ratio of lender l extending loan i	%	3.23	0.97	1.85	0.93	3.44	2.22	2.37	1.27

$TL_{i,l}$	The total amount lent by the lender l over the year preceding the extension of loan i	Million USD	25,028.01	12,126.92	15,463.00	9,001.56	8,012.66	5,796.04	11,205.40	6,024.70
$II_{i,l}$	The interest income as a percentage of total income of lender l extending loan i	%	35.27	24.92	41.07	110.00	61.52	9.79	58.01	12.48
$ROA_{i,l}$	The return on assets of lender l extending loan i	%	0.35	0.21	0.15	0.23	0.59	1.08	0.65	0.66
$IB_{i,l}$	The interbank ratio (what is due from lender l to what is due to lender l) of lender l extending loan i	%	61.77	15.60	124.54	86.15	72.70	33.07	54.29	37.47
$LA_{i,l}$	The liquid asset ratio (liquid assets as a percentage of deposits and short-term funding) of lender l extending loan i	%	92.71	35.96	82.40	39.99	37.16	13.51	32.74	37.59
$SYNR_{i,l}$	Dummy variable that equals one if the sum of the amounts invested by all the banks under study represents more than 50% of the total amount of the loan i	Dummy	0.05	0.21	0.02	0.15	0.04	0.19	0.40	0.49
$GI_{i,l}$	Dummy variable that equals one if the national government of lender l intervenes to support the banking system when loan i is issued	Dummy	0.18	0.38	0.14	0.35	0.12	0.33	0.16	0.37
	$BOR_{i,b}$: Borrower's characteristics									
$TA_{i,b}$	The level of total assets of borrower b issuing loan i	Million USD	598.81	5,028.76	263.88	2,532.66	247.46	1,445.28	170.37	1,072.64
$LTD_{i,b}$	The level of long-term debt of borrower b issuing loan i	Million USD	134.61	1,094.66	73.56	651.18	66.77	456.60	43.72	288.73
$ROE_{i,b}$	The return on equity of borrower b issuing loan i	%	11.69	129.95	10.86	129.19	14.01	225.79	1.88	171.95
	FAC_i: Loan characteristics									
MAT_i	The maturity of loan i	Months	52.20	31.03	51.03	29.58	52.03	30.42	67.62	60.43
$CRCY_i$	Dummy variable that equals one if loan i is denominated in Euro	Dummy	0.20	0.40	0.20	0.40	0.41	0.49	0.71	0.45
REV_i	Dummy variable that equals one if loan i is a revolver loan	Dummy	0.53	0.50	0.55	0.50	0.47	0.50	0.37	0.48
$TERM_i$	Dummy variable that equals one if loan i is a term loan	Dummy	0.36	0.48	0.33	0.47	0.39	0.49	0.50	0.50
$CORP_i$	Dummy variable that equals one if loan i is issued to finance corporate purposes	Dummy	0.41	0.49	0.48	0.50	0.47	0.50	0.45	0.50
$DEBT_i$	Dummy variable that equals one if loan i is issued to finance debt repayment	Dummy	0.19	0.39	0.15	0.36	0.18	0.38	0.13	0.34
$SYNS_i$	The number of lenders participating to loan i	Numerical	15.42	9.43	16.84	9.62	18.92	10.56	14.66	11.84

VaR_i	The Value-at-Risk of the industry of borrower b issuing loan i	%	-0.02	0.01	-0.02	0.01	-0.02	0.01	-0.02	0.01
	$REL_{i,b,l}$: Relationship characteristics									
$PL1_{i,b,l}$	Dummy variable that equals one if borrower b issued loan i within the year following previous loan	Dummy	0.33	0.47	0.33	0.47	0.33	0.47	0.25	0.43
$MCS_{i,b,l}$	Dummy variable that equals one if borrower b has access to more than one credit source available	Dummy	0.79	0.41	0.79	0.41	0.93	0.25	0.94	0.24

Notes: This table provides the descriptive statistics for the variables included in the empirical analysis. The two dependent variables, i.e. the spread and the amount of the loan, in addition to the determinants of loan supply, the country of the borrower, two lender's characteristics (i.e. $TL_{i,l}$ and $SYNR_{i,l}$), the characteristics of the loan (except the Value-at-Risk for borrower's industry computed from Datastream) and the relationship variables are computed by the authors using data from LPC Dealscan database. The determinants of loan demand and the characteristics of the borrower are computed combining data from Compustat, Orbis and Diane. Finally, the remaining characteristics of the lender are from Bankscope except for the variable $GI_{i,l}$ based on the database developed by Ureche-Rangau and Burietz (2013). $DOM_{i,b}^{PC}$ and $DOM_{i,b}^{C}$ are computed for the sample of French, German, Italian and Spanish banks separately considering the domestic companies accordingly. All lender's characteristics are aggregated at the loan level using a weighted average procedure. For each loan with more than one lender, we assign the weighted average of each financial characteristic of all lenders involved in the loan according to their investment in the loan. Our final sample consists in 62 ultimate lenders providing 1,948 borrowers with a total of 3,749 loans.

TABLE 2

AVERAGE LOAN SPREAD

Average Spread (bps)	France			Germany		
	Pre-crisis	2008-2010	2011-2013	Pre-crisis	2008-2010	2011-2013
France	84.21	212.31	172.94	47.10	120.00	91.56
Germany	94.63	247.25	193.81	124.18	241.46	163.80
Italy	68.88	180.00	242.50	53.09	205.00	225.00
Spain	67.58	202.33	330.48	88.51	226.50	351.20
Europe	69.53	260.42	223.88	61.94	235.14	190.79
North America	93.91	271.87	169.55	81.22	273.23	173.69
Asia	65.25	191.02	180.88	76.79	229.58	154.71
Average Spread (bps)	Italy			Spain		
	Pre-crisis	2008-2010	2011-2013	Pre-crisis	2008-2010	2011-2013
France	48.79	146.25	83.64	39.21	141.67	160.36
Germany	159.00	214.38	139.44	123.13	183.93	148.13
Italy	94.77	208.00	231.67	34.00	208.00	200.00
Spain	100.01	219.41	372.50	100.87	239.84	349.20
Europe	54.63	161.82	134.91	55.66	200.45	205.00
North America	40.11	227.73	129.34	45.85	223.86	98.69
Asia	55.40	174.93	220.56	34.28	130.83	138.57

Notes: This table depicts the average loan spread in basis points over the three sub-periods under study, i.e. before 2008 (Pre-crisis), between the Lehman collapse and the outbreak of the European sovereign debt crisis (2008-2010) and after 2011 (2011-2013), taking into account two dimensions: the home country of the bank and of the borrower.

TABLE 3

TOTAL LOAN AMOUNT

Amount (%)	France				Germany			
	Pre-crisis	2008-2010	2011-2013	Total	Pre-crisis	2008-2010	2011-2013	Total
France	9.11	5.10	10.75	8.84	6.65	3.90	9.16	6.93
Germany	2.74	8.65	5.04	4.51	7.28	9.71	5.39	7.13
Italy	2.96	5.13	1.56	2.96	8.35	5.18	1.53	5.82
Spain	11.67	5.97	3.76	8.31	9.57	4.81	2.62	6.74
Europe	13.67	12.67	9.18	12.17	15.67	12.82	7.10	12.68
North America	42.47	50.18	59.31	48.81	42.12	55.29	67.49	51.75
Asia	6.92	8.00	6.83	7.09	4.65	4.19	3.54	4.25
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Amount (%)	Italy				Spain			
	Pre-crisis	2008-2010	2011-2013	Total	Pre-crisis	2008-2010	2011-2013	Total
France	12.29	5.54	18.08	12.43	14.90	7.61	23.19	14.80
Germany	3.65	15.60	11.17	7.90	4.40	13.30	10.93	7.66
Italy	17.77	9.67	3.69	12.61	15.81	9.23	5.23	12.31
Spain	18.25	10.29	6.40	13.69	28.17	18.26	21.07	24.57
Europe	12.88	10.52	11.65	12.11	14.51	17.92	14.34	15.26
North America	23.39	40.10	42.83	31.60	14.65	29.36	18.46	18.72
Asia	3.23	3.97	0.94	2.79	1.05	1.55	3.41	1.61
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Notes: This table depicts the total loan amount over the three sub-periods under study, i.e. before 2008 (Pre-crisis), between the Lehman collapse and the outbreak of the European sovereign debt crisis (2008-2010) and after 2011 (2011-2013) as well as over the full sample period (Total), taking into account two dimensions: the home country of the bank and of the borrower. The total loan amount is computed as a percentage of the total amount lent by bank over the period under consideration.

TABLE 4

LENDERS' SPECIALTY (SIC 1 SECTORS)

Lender's Specialty (%)	France			Germany		
	Pre-crisis	2008-2010	2011-2013	Pre-crisis	2008-2010	2011-2013
1 - Mining and construction	18.67	50.88	36.35	4.36	10.39	11.11
2 - Manufacturing	24.02	6.69	6.61	6.95	24.60	10.79
3 - Retail trade	5.86	3.36	4.48	6.76	9.94	6.87
4 - Transportation, communications, utilities	38.19	32.60	44.58	50.70	44.84	55.44
5 - Wholesale trade	0.95	1.58	0.86	1.67	1.38	1.13
6 - Finance, insurance and real estate	8.94	4.36	4.78	25.54	8.02	11.95
7 - Services (Leisure)	3.05	0.27	1.38	3.73	0.35	2.34
8 – Services (Society)	0.33	0.26	0.95	0.28	0.47	0.37
Lender's Specialty (%)	Italy			Spain		
	Pre-crisis	2008-2010	2011-2013	Pre-crisis	2008-2010	2011-2013
1 - Mining and construction	4.19	21.04	7.48	9.08	17.86	13.34
2 - Manufacturing	4.25	16.36	11.55	4.83	9.66	8.37
3 - Retail trade	5.01	15.02	11.11	5.04	5.38	5.79
4 - Transportation, communications, utilities	63.04	41.99	63.04	72.58	60.41	54.94
5 - Wholesale trade	0.84	0.00	0.18	0.28	0.04	0.80
6 - Finance, insurance and real estate	18.31	4.64	5.42	6.32	4.61	8.64
7 - Services (Leisure)	4.31	0.10	1.20	1.80	1.57	6.61
8 – Services (Society)	0.05	0.85	0.00	0.07	0.46	1.51

Notes: This table displays the lenders' specialty by SIC 1 sectors over the three sub-periods under study, i.e. before 2008 (Pre-crisis), between the Lehman collapse and the outbreak of the European sovereign debt crisis (2008-2010) and after 2011 (2011-2013), taking into account two dimensions: the home country of the bank and of the borrower. The total amount lent by each of the four banking groups to the SIC 1 sectors is computed as a percentage of the total amount lent by each banking group over the period under consideration.

TABLE 5

THE COLLAPSE OF LEHMAN BROTHERS AND ITS IMPACT ON CREDIT SUPPLY OF SYNDICATED LOANS

		One-crisis model					
		Panel A		Panel B			
		All banks		French banks	German banks	Italian banks	Spanish banks
$Amount_i$		-0.113***	-0.111***	-0.043	-0.174***	-0.271***	-0.120*
		(0.040)	(0.040)	(0.040)	(0.062)	(0.093)	(0.064)
$SUP_{i,l}$	$LS_{i,l}^{PC}$	-0.030***	-0.030***	-0.021***	-0.030***	-0.029***	-0.037***
		(0.002)	(0.002)	(0.003)	(0.003)	(0.005)	(0.005)
	$LS_{i,l}^{C}$	0.010***	0.009***	0.017***	0.008**	0.011**	0.011***
		(0.002)	(0.002)	(0.003)	(0.003)	(0.005)	(0.004)
$GEO_{i,b}$	$DOM_{i,b}^{PC}$	0.044		-0.340***	0.242*	-0.068	0.216**
		(0.055)		(0.075)	(0.125)	(0.137)	(0.095)
	$DOM_{i,b}^{C}$	0.133**		-0.217**	0.037	0.190	0.155
		(0.065)		(0.110)	(0.125)	(0.220)	(0.102)
	$FR_{i,b}^{PC}$		-0.234***				
			(0.080)				
	$FR_{i,b}^{C}$		-0.098				
			(0.114)				
	$GE_{i,b}^{PC}$		0.128				
			(0.126)				
	$GE_{i,b}^{C}$		-0.053				
			(0.151)				
	$IT_{i,b}^{PC}$		0.076				
			(0.106)				
	$IT_{i,b}^{C}$		0.318				
			(0.249)				
	$SP_{i,b}^{PC}$		0.296***				
			(0.082)				
	$SP_{i,b}^{C}$		0.204***				
			(0.076)				
$LEN_{i,l}$	$T1_{i,l}$	0.035***	0.037***	0.011	0.057***	-0.023**	0.047**
		(0.008)	(0.008)	(0.017)	(0.011)	(0.011)	(0.022)
	$LLR_{i,l}$	0.002	0.006	0.018	-0.025	0.050**	0.019
		(0.011)	(0.011)	(0.017)	(0.023)	(0.021)	(0.035)
	$TL_{i,l}$	-0.005	0.009	-0.080***	-0.003	-0.012	-0.061
		(0.016)	(0.016)	(0.026)	(0.024)	(0.027)	(0.040)
	$II_{i,l}$	-0.000**	-0.000**	0.000	-0.000***	0.028***	-0.006
		(0.000)	(0.000)	(0.001)	(0.000)	(0.004)	(0.004)
	$ROA_{i,l}$	-0.241***	-0.272***	-0.366***	-0.226**	0.038	-0.230***
		(0.036)	(0.038)	(0.103)	(0.089)	(0.047)	(0.061)
	$IB_{i,l}$	-0.000	-0.000	-0.001	-0.000	-0.001	-0.002***
		(0.000)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)
	$LA_{i,l}$	-0.002***	-0.001***	-0.003***	0.001	-0.010**	-0.001
		(0.000)	(0.000)	(0.001)	(0.000)	(0.004)	(0.001)
	$SYNR_{i,l}$	0.045	0.022	0.066	-0.029	0.142	-0.071
		(0.047)	(0.046)	(0.077)	(0.120)	(0.181)	(0.096)
	$GI_{i,l}$	0.174***	0.173***	0.176**	0.433***	0.079	-0.065
		(0.055)	(0.055)	(0.074)	(0.096)	(0.158)	(0.117)

$BOR_{i,b}$	$TA_{i,b}$	-0.099***	-0.099***	-0.102***	-0.099***	-0.087***	-0.058***
		(0.006)	(0.006)	(0.006)	(0.010)	(0.017)	(0.017)
	$LTD_{i,b}$	0.023***	0.021***	0.018***	0.027***	0.031***	0.015
		(0.004)	(0.004)	(0.005)	(0.006)	(0.012)	(0.011)
	$ROE_{i,b}$	0.000	0.000	-0.000	-0.000	0.000	0.001***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FAC_i	MAT_i	0.126***	0.122***	0.161***	0.173***	0.220***	0.094***
		(0.019)	(0.019)	(0.025)	(0.031)	(0.052)	(0.034)
	$CRCY_i$	-0.111**	-0.095**	-0.103**	-0.078	0.230***	0.171*
		(0.049)	(0.047)	(0.046)	(0.050)	(0.083)	(0.093)
	REV_i	0.022	0.030	-0.014	-0.081	-0.133	-0.101
		(0.041)	(0.040)	(0.051)	(0.059)	(0.099)	(0.082)
	$TERM_i$	0.064	0.067	0.095*	0.032	0.036	0.016
		(0.047)	(0.047)	(0.056)	(0.079)	(0.113)	(0.081)
	$CORP_i$	-0.236***	-0.239***	-0.259***	-0.278***	-0.230***	-0.338***
		(0.025)	(0.025)	(0.031)	(0.036)	(0.061)	(0.053)
	$DEBT_i$	-0.340***	-0.344***	-0.322***	-0.365***	-0.417***	-0.434***
		(0.041)	(0.041)	(0.042)	(0.056)	(0.094)	(0.090)
	$SYNS_i$	0.005*	0.005	-0.001	0.010***	0.019***	0.005
		(0.003)	(0.003)	(0.003)	(0.004)	(0.006)	(0.005)
	VaR_i	-18.30***	-18.36***	-16.400***	-17.690***	-27.830***	-19.800***
		(1.954)	(1.943)	(2.484)	(2.820)	(5.453)	(4.693)
$REL_{i,b,l}$	$PL1_{i,b,l}$	-0.064**	-0.063**	-0.081***	-0.181***	-0.202***	-0.072
		(0.025)	(0.025)	(0.030)	(0.033)	(0.060)	(0.059)
	$MCS_{i,b,l}$	-0.143***	-0.137***	-0.160***	-0.168***	-0.027	-0.089
		(0.030)	(0.030)	(0.038)	(0.045)	(0.117)	(0.114)
Constant		7.737***	7.357***	8.498***	8.339***	8.459***	8.954***
		(0.652)	(0.685)	(1.089)	(0.940)	(1.210)	(0.937)
Observations		3,719	3,719	2,455	2,020	725	807
R-squared		0.525	0.530	0.538	0.523	0.553	0.644
F-stat (H0: exogenous inst.)		0.769	0.718	0.824	0.625	0.743	0.910
Chi-sq(1) (H0: irrelevant inst.)		0.000	0.000	0.000	0.000	0.000	0.000

Notes: The dependent variable is the all-in spread of the syndicated loan taken as a natural logarithm. We run a 3SLS regression to estimate the one-crisis model at the loan level. In Panel A, the sample is composed by all the banks while we consider each banking group separately in Panel B. Table 1 provides variables definitions. Standard errors in parentheses are robust; ***Significant at 1%, ** Significant at 5%, * Significant at 10%. For the specification tests, the probabilities are displayed.

TABLE 6

THE COLLAPSE OF LEHMAN BROTHERS AND ITS IMPACT ON CREDIT DEMAND OF SYNDICATED LOANS

		One-crisis model					
		Panel A		Panel B			
		All banks		French banks	German banks	Italian banks	Spanish banks
$Spread_i$		0.061	0.117	0.435**	0.181	1.022***	0.018
		(0.103)	(0.104)	(0.178)	(0.170)	(0.330)	(0.181)
$DEM_{i,b}$	$SG^C_{i,b}$	0.000	0.000	0.000	0.000	0.000	-0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	$DEAL_{i,b}$	-0.591***	-0.581***	-0.744***	-0.526***	-0.764***	-0.758***
		(0.047)	(0.047)	(0.056)	(0.060)	(0.130)	(0.098)
$GEO_{i,b}$	$DOM^{PC}_{i,b}$	-0.163		0.361**	0.762***	-0.136	-0.008
		(0.109)		(0.156)	(0.215)	(0.295)	(0.192)
	$DOM^C_{i,b}$	-0.828***		0.524**	0.549**	-0.114	-0.569***
		(0.115)		(0.218)	(0.225)	(0.485)	(0.198)
	$FR^{PC}_{i,b}$		-0.098				
			(0.161)				
	$FR^C_{i,b}$		0.031				
			(0.228)				
	$GE^{PC}_{i,b}$		0.875***				
			(0.243)				
	$GE^C_{i,b}$		0.235				
			(0.302)				
	$IT^{PC}_{i,b}$		-0.584***				
			(0.210)				
	$IT^C_{i,b}$		0.375				
			(0.499)				
	$SP^{PC}_{i,b}$		-0.517***				
			(0.162)				
	$SP^C_{i,b}$		-1.172***				
			(0.127)				
$LEN_{i,l}$	$T1_{i,l}$	0.047***	0.037**	0.004	-0.011	0.014	0.021
		(0.017)	(0.017)	(0.034)	(0.027)	(0.024)	(0.047)
	$LLR_{i,l}$	-0.073***	-0.079***	-0.077**	-0.129***	0.077*	-0.095
		(0.022)	(0.022)	(0.032)	(0.040)	(0.043)	(0.071)
	$TL_{i,l}$	0.157***	0.140***	-0.063	0.214***	0.180***	0.358***
		(0.029)	(0.029)	(0.048)	(0.042)	(0.054)	(0.068)
	$II_{i,l}$	-0.000	-0.000	-0.002	0.000	-0.034**	-0.006
		(0.000)	(0.000)	(0.001)	(0.000)	(0.016)	(0.009)
	$ROA_{i,l}$	0.204***	0.300***	1.090***	-0.247	0.281***	0.088
		(0.079)	(0.082)	(0.212)	(0.167)	(0.088)	(0.141)
	$IB_{i,l}$	-0.000	-0.001	-0.011***	-0.002***	-0.005*	0.001
		(0.000)	(0.000)	(0.002)	(0.000)	(0.003)	(0.002)
	$LA_{i,l}$	-0.000	-0.001	-0.002	0.002**	0.055***	0.004***
		(0.001)	(0.001)	(0.001)	(0.001)	(0.010)	(0.001)
	$SYNR_{i,l}$	-0.548***	-0.494***	-0.558***	-0.791***	0.243	-1.016***
		(0.081)	(0.081)	(0.146)	(0.207)	(0.395)	(0.140)
	$GI_{i,l}$	-0.247**	-0.273**	-0.467***	-0.585***	0.279	-0.354
		(0.113)	(0.113)	(0.155)	(0.205)	(0.339)	(0.233)

$BOR_{i,b}$	$TA_{i,b}$	0.0473***	0.045***	0.029	0.086***	0.169***	0.122***
		(0.015)	(0.015)	(0.022)	(0.024)	(0.051)	(0.031)
	$LTD_{i,b}$	0.027***	0.030***	0.029***	0.036***	0.054**	0.040*
		(0.007)	(0.007)	(0.009)	(0.011)	(0.023)	(0.022)
	$ROE_{i,b}$	0.000***	0.000**	0.000	0.000	0.000	0.001***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FAC_i	MAT_i	0.085**	0.087**	-0.025	0.178***	-0.063	0.116*
		(0.040)	(0.040)	(0.055)	(0.059)	(0.122)	(0.069)
	$CRCY_i$	0.863***	0.816***	0.761***	0.493***	0.600***	1.031***
		(0.077)	(0.076)	(0.081)	(0.081)	(0.136)	(0.132)
	REV_i	0.041	0.013	0.041	-0.227**	0.089	-0.056
		(0.081)	(0.081)	(0.098)	(0.108)	(0.218)	(0.166)
	$TERM_i$	-0.564***	-0.567***	-0.591***	-0.846***	-0.812***	-0.089
		(0.083)	(0.083)	(0.102)	(0.114)	(0.227)	(0.164)
	$CORP_i$	-0.141***	-0.099*	0.109	-0.155**	0.157	-0.046
		(0.054)	(0.055)	(0.074)	(0.078)	(0.148)	(0.123)
	$DEBT_i$	-0.568***	-0.552***	-0.283***	-0.406***	-0.349*	-0.641***
		(0.072)	(0.072)	(0.092)	(0.102)	(0.199)	(0.180)
	$SYNS_i$	0.069***	0.069***	0.073***	0.056***	0.062***	0.065***
		(0.003)	(0.003)	(0.003)	(0.003)	(0.006)	(0.005)
	VaR_i	-11.990**	-10.350**	-10.120*	0.497	8.440	-18.770*
		(4.686)	(4.687)	(6.147)	(6.749)	(15.69)	(10.820)
$REL_{i,b,l}$	$PL1_{i,b,l}$	0.174***	0.173***	0.194***	0.033	0.412***	0.217*
		(0.051)	(0.050)	(0.060)	(0.069)	(0.159)	(0.116)
	$MCS_{i,b,l}$	0.377***	0.387***	0.501***	0.291***	0.872***	0.833***
		(0.058)	(0.058)	(0.076)	(0.087)	(0.244)	(0.216)
Constant		12.980***	13.280***	17.870***	11.620***	6.599***	6.942***
		(0.919)	(0.897)	(1.589)	(1.460)	(2.150)	(2.081)
Observations		3,719	3,719	2,455	2,020	725	807
R-squared		0.401	0.410	0.371	0.340	0.295	0.620
F-stat (H0: exogenous inst.)		0.138	0.141	0.410	1.000	0.016	0.449
Chi-sq(1) (H0: irrelevant inst.)		0.000	0.000	0.000	0.000	0.000	0.000

Notes: The dependent variable is the total amount of the syndicated loan taken as a natural logarithm. We run a 3SLS regression to estimate the one-crisis model at the loan level. In Panel A, the sample is composed by all the banks while we consider each banking group separately in Panel B. Table 1 provides variables definitions. Standard errors in parentheses are robust; ***Significant at 1%, ** Significant at 5%, * Significant at 10%. For the specification tests, the probabilities are displayed.

TABLE 7

THE FINANCIAL CRISIS VERSUS THE SOVEREIGN DEBT CRISIS IMPACT ON CREDIT SUPPLY OF SYNDICATED LOANS

		Two-crisis model					
		Panel A		Panel B			
		All banks		French banks	German banks	Italian banks	Spanish banks
$Amount_i$		-0.122***	-0.117***	-0.040	-0.182***	-0.282***	-0.129**
		(0.039)	(0.040)	(0.040)	(0.062)	(0.093)	(0.063)
$SUP_{i,l}$	$LS_{i,l}^{PC}$	-0.030***	-0.030***	-0.021***	-0.030***	-0.030***	-0.036***
		(0.002)	(0.002)	(0.003)	(0.003)	(0.005)	(0.004)
	$LS_{i,l}^{C08}$	0.014***	0.014***	0.015***	0.014***	0.016**	0.023***
		(0.003)	(0.003)	(0.004)	(0.004)	(0.007)	(0.005)
	$LS_{i,l}^{C11}$	0.008***	0.007***	0.020***	0.003	0.007	0.004
		(0.003)	(0.003)	(0.004)	(0.004)	(0.006)	(0.005)
$GEO_{i,b}$	$DOM_{i,b}^{PC}$	0.040		-0.343***	0.245*	-0.057	0.202**
		(0.055)		(0.075)	(0.125)	(0.138)	(0.094)
	$DOM_{i,b}^{C08}$	-0.018		-0.171	0.136	-0.064	-0.118
		(0.079)		(0.189)	(0.210)	(0.325)	(0.121)
	$DOM_{i,b}^{C11}$	0.222***		-0.234*	0.038	0.421	0.350***
		(0.076)		(0.127)	(0.147)	(0.293)	(0.119)
	$FR_{i,b}^{PC}$		-0.235***				
			(0.080)				
	$FR_{i,b}^{C08}$		-0.047				
			(0.191)				
	$FR_{i,b}^{C11}$		-0.105				
			(0.137)				
	$GE_{i,b}^{PC}$		0.142				
			(0.126)				
	$GE_{i,b}^{C08}$		0.063				
			(0.194)				
	$GE_{i,b}^{C11}$		-0.230				
			(0.233)				
	$IT_{i,b}^{PC}$		0.078				
			(0.106)				
	$IT_{i,b}^{C08}$		0.350				
			(0.380)				
	$IT_{i,b}^{C11}$		0.324				
			(0.326)				
	$SP_{i,b}^{PC}$		0.279***				
			(0.082)				
	$SP_{i,b}^{C08}$		0.019				
			(0.092)				
	$SP_{i,b}^{C11}$		0.311***				
			(0.086)				
Lender's characteristics		Yes	Yes	Yes	Yes	Yes	Yes
Borrower's characteristics		Yes	Yes	Yes	Yes	Yes	Yes
Loan characteristics		Yes	Yes	Yes	Yes	Yes	Yes
Relationship characteristics		Yes	Yes	Yes	Yes	Yes	Yes
Constant		Yes	Yes	Yes	Yes	Yes	Yes
Observations		3,719	3,719	2,455	2,020	725	807
R-squared		0.524	0.531	0.538	0.524	0.549	0.648

F-stat (H0: exogenous inst.)	0.883	0.882	0.814	0.867	0.505	0.424
Chi-sq(1) (H0: irrelevant inst.)	0.000	0.000	0.000	0.000	0.000	0.000

Notes: The dependent variable is the all-in spread of the syndicated loan taken as a natural logarithm. We run a 3SLS regression to estimate the two-crisis model, i.e. the financial crisis (Sept. 2008 – Dec. 2010) and the sovereign debt crisis (Jan. 2011 – Dec. 2013) at the loan level. In Panel A, the sample is composed by all the banks while we consider each banking group separately in Panel B. Table 1 provides variables definitions. All regressions include a constant (not reported). Standard errors in parentheses are robust; ***Significant at 1%, ** Significant at 5%, * Significant at 10%. For the specification tests, the probabilities are displayed.

TABLE 8

THE FINANCIAL CRISIS VERSUS THE SOVEREIGN DEBT CRISIS IMPACT ON CREDIT DEMAND OF SYNDICATED LOANS

		Two-crisis model					
		Panel A		Panel B			
		All banks		French banks	German banks	Italian banks	Spanish banks
$Spread_i$		0.042	0.094	0.457**	0.209	0.915***	-0.016
		(0.101)	(0.102)	(0.179)	(0.163)	(0.310)	(0.172)
$DEM_{i,b}$	$SG_{i,b}^{C08}$	0.000	0.000	-0.000	0.000	0.003	0.001
		(0.000)	(0.000)	(0.000)	(0.000)	(0.004)	(0.002)
	$SG_{i,b}^{C11}$	-0.000	-0.000	0.000	0.000	0.000	-0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	$DEAL_{i,b}$	-0.597***	-0.584***	-0.744***	-0.528***	-0.754***	-0.757***
		(0.047)	(0.047)	(0.057)	(0.060)	(0.127)	(0.098)
$GEO_{i,b}$	$DOM_{i,b}^{PC}$	-0.153		0.367**	0.761***	-0.146	0.016
		(0.108)		(0.157)	(0.216)	(0.288)	(0.192)
	$DOM_{i,b}^{C08}$	-0.384**		0.517	0.533	0.140	-0.344
		(0.152)		(0.368)	(0.385)	(0.686)	(0.227)
	$DOM_{i,b}^{C11}$	-1.072***		0.537**	0.557**	-0.306	-0.729***
		(0.131)		(0.252)	(0.263)	(0.635)	(0.229)
	$FR_{i,b}^{PC}$		-0.124				
			(0.160)				
	$FR_{i,b}^{C08}$		0.169				
			(0.381)				
	$FR_{i,b}^{C11}$		-0.096				
			(0.274)				
	$GE_{i,b}^{PC}$		0.856***				
			(0.242)				
	$GE_{i,b}^{C08}$		0.176				
			(0.387)				
	$GE_{i,b}^{C11}$		0.302				
			(0.464)				
	$IT_{i,b}^{PC}$		-0.554***				
			(0.209)				
	$IT_{i,b}^{C08}$		0.833				
			(0.760)				
	$IT_{i,b}^{C11}$		0.087				
			(0.651)				
	$SP_{i,b}^{PC}$		-0.464***				
			(0.162)				
	$SP_{i,b}^{C08}$		-0.732***				
			(0.172)				
	$SP_{i,b}^{C11}$		-1.376***				
			(0.142)				
Lender's characteristics		Yes	Yes	Yes	Yes	Yes	Yes
Borrower's characteristics		Yes	Yes	Yes	Yes	Yes	Yes
Loan characteristics		Yes	Yes	Yes	Yes	Yes	Yes
Relationship characteristics		Yes	Yes	Yes	Yes	Yes	Yes
Constant		Yes	Yes	Yes	Yes	Yes	Yes
Observations		3,719	3,719	2,455	2,020	725	807

R-squared	0.405	0.413	0.367	0.336	0.331	0.622
F-stat (H0: exogenous inst.)	0.339	0.384	0.450	0.974	0.022	0.717
Chi-sq(1) (H0: irrelevant inst.)	0.000	0.000	0.000	0.000	0.000	0.000

Notes: The dependent variable is the total amount of the syndicated loan taken as a natural logarithm. We run a 3SLS regression to estimate the two-crisis model, i.e. the financial crisis (Sept. 2008 – Dec. 2010) and the sovereign debt crisis (Jan. 2011 – Dec. 2013) at the loan level. In Panel A, the sample is composed by all the banks while we consider each banking group separately in Panel B. Table 1 provides variables definitions. All regressions include a constant (not reported). Standard errors in parentheses are robust; ***Significant at 1%, ** Significant at 5%, * Significant at 10%. For the specification tests, the probabilities are displayed.

TABLE 9

THE COLLAPSE OF LEHMAN BROTHERS AND ITS IMPACT ON CREDIT SUPPLY OF SYNDICATED LOANS (AT THE BANK LEVEL)

		One-crisis model			
		French banks - Lead lenders	German banks - Lead lenders	Italian banks - Lead lenders	Spanish banks - Lead lenders
$Amount_i$		-0.000	-0.341***	-0.315***	-0.150***
		(0.034)	(0.076)	(0.110)	(0.030)
$SUP_{i,l}$	$LS_{i,l}^{PC}$	-0.026***	-0.034***	-0.035***	-0.023***
		(0.003)	(0.004)	(0.008)	(0.003)
	$LS_{i,l}^{C}$	0.011***	0.010***	0.008	0.007***
		(0.003)	(0.004)	(0.005)	(0.002)
$GEO_{i,b}$	$DOM_{i,b}^{PC}$	-0.426***	0.524***	0.586***	-0.141**
		(0.063)	(0.128)	(0.181)	(0.061)
	$DOM_{i,b}^{C}$	-0.291***	0.092	0.249	0.417***
		(0.074)	(0.098)	(0.164)	(0.052)
Lender's characteristics		Yes	Yes	Yes	Yes
Borrower's characteristics		Yes	Yes	Yes	Yes
Loan characteristics		Yes	Yes	Yes	Yes
Relationship characteristics		Yes	Yes	Yes	Yes
Constant		Yes	Yes	Yes	Yes
Observations		1,996	1,165	349	1,919
R-squared		0.596	0.395	0.558	0.586
F-stat (H0: exogenous inst.)		0.916	0.968	0.572	0.987
Chi-sq(1) (H0: irrelevant inst.)		0.000	0.000	0.000	0.000

Notes: The dependent variable is the all-in spread of the syndicated loan taken as a natural logarithm. We run a 3SLS regression per group of banks to estimate the one-crisis model at the bank level. For each banking group, we run two estimations based on the full sample of lenders and on the more restricted sample of lead lenders respectively. The loan amount is then the amount lent by each bank instead of the total loan amount as in previous estimations. Table 1 provides variables definitions. All regressions include a constant (not reported). Standard errors in parentheses are robust; ***Significant at 1%, ** Significant at 5%, * Significant at 10%. For the specification tests, the probabilities are displayed.

TABLE 10

THE COLLAPSE OF LEHMAN BROTHERS AND ITS IMPACT ON CREDIT DEMAND OF SYNDICATED LOANS (AT THE BANK LEVEL)

		One-crisis model			
		French banks - Lead lenders	German banks - Lead lenders	Italian banks - Lead lenders	Spanish banks - Lead lenders
$Spread_i$		0.167	0.063	2.622***	-0.017
		(0.198)	(0.212)	(0.855)	(0.286)
$DEM_{i,b}$	$SG^C_{i,b}$	0.000	0.000	-0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)
	$DEAL_{i,b}$	-0.917***	-0.676***	-1.419***	-0.951***
		(0.069)	(0.113)	(0.334)	(0.089)
$GEO_{i,b}$	$DOM^{PC}_{i,b}$	0.570***	0.504**	1.251***	0.360*
		(0.163)	(0.250)	(0.420)	(0.199)
	$DOM^C_{i,b}$	0.319*	0.339*	0.279	-0.374*
		(0.172)	(0.194)	(0.469)	(0.216)
Lender's characteristics		Yes	Yes	Yes	Yes
Borrower's characteristics		Yes	Yes	Yes	Yes
Loan characteristics		Yes	Yes	Yes	Yes
Relationship characteristics		Yes	Yes	Yes	Yes
Constant		Yes	Yes	Yes	Yes
Observations		1,996	1,165	349	1,919
R-squared		0.276	0.167	-0.461	0.405
F-stat (H0: exogenous inst.)		0.834	0.955	0.679	0.097
Chi-sq(1) (H0: irrelevant inst.)		0.000	0.000	0.001	0.000

Notes: The dependent variable is the amount lent by each bank taken a natural logarithm instead of the total loan amount as in previous estimations. We run a 3SLS regression per group of banks to estimate the one-crisis model at the bank level. For each banking group, we run two estimations based on the full sample of lenders and on the more restricted sample of lead lenders respectively. Table 1 provides variables definitions. All regressions include a constant (not reported). Standard errors in parentheses are robust; ***Significant at 1%, ** Significant at 5%, * Significant at 10%. For the specification tests, the probabilities are displayed.

TABLE 11

THE COLLAPSE OF LEHMAN BROTHERS AND ITS IMPACT ON CREDIT SUPPLY OF SYNDICATED LOANS ASSOCIATED TO THE EURIBOR

		One-crisis model			
		French banks	German banks	Italian banks	Spanish banks
$Amount_i$		-0.365***	-0.622***	-0.751***	-0.345***
		(0.071)	(0.152)	(0.184)	(0.073)
$SUP_{i,l}$	$LS_{i,l}^{PC}$	-0.014**	-0.020***	-0.028**	-0.031***
		(0.006)	(0.008)	(0.011)	(0.006)
	$LS_{i,l}^{C}$	0.022***	0.018**	0.004	0.012***
		(0.007)	(0.007)	(0.009)	(0.004)
$GEO_{i,b}$	$DOM_{i,b}^{PC}$	-0.190**	0.784***	-0.027	0.069
		(0.095)	(0.222)	(0.236)	(0.114)
	$DOM_{i,b}^{C}$	0.053	0.394	0.476	0.265**
		(0.149)	(0.269)	(0.318)	(0.117)
Lender's characteristics		Yes	Yes	Yes	Yes
Borrower's characteristics		Yes	Yes	Yes	Yes
Loan characteristics		Yes	Yes	Yes	Yes
Relationship characteristics		Yes	Yes	Yes	Yes
Constant		Yes	Yes	Yes	Yes
Observations		466	401	290	563
R-squared		0.638	0.301	0.099	0.542
F-stat (H0: exogenous inst.)		0.906	0.965	0.913	0.951
Chi-sq(1) (H0: irrelevant inst.)		0.000	0.000	0.000	0.000

Notes: The dependent variable is the all-in spread of the syndicated loan associated to the Euribor only and taken as a natural logarithm. We run a 3SLS regression to estimate the one-crisis model at the loan level and per banking group. Table 1 provides variables definitions. All regressions include a constant (not reported). Standard errors in parentheses are robust; ***Significant at 1%, ** Significant at 5%, * Significant at 10%. For the specification tests, the probabilities are displayed.

TABLE 12

THE COLLAPSE OF LEHMAN BROTHERS AND ITS IMPACT ON CREDIT DEMAND OF SYNDICATED LOANS ASSOCIATED TO THE EURIBOR

		One-crisis model			
		French banks	German banks	Italian banks	Spanish banks
$Spread_i$		1.048	-0.081	0.622	-0.110
		(0.646)	(0.387)	(0.710)	(0.255)
$DEM_{i,b}$	$SG^C_{i,b}$	0.002	0.000	0.000	-0.000
		(0.003)	(0.000)	(0.000)	(0.000)
	$DEAL_{i,b}$	-1.283***	-0.597***	-1.017***	-0.817***
		(0.271)	(0.194)	(0.394)	(0.131)
$GEO_{i,b}$	$DOM^{PC}_{i,b}$	0.310	0.980***	-0.313	-0.168
		(0.255)	(0.248)	(0.324)	(0.195)
	$DOM^C_{i,b}$	1.409***	1.195***	-0.109	-0.225
		(0.364)	(0.296)	(0.518)	(0.246)
Lender's characteristics		Yes	Yes	Yes	Yes
Borrower's characteristics		Yes	Yes	Yes	Yes
Loan characteristics		Yes	Yes	Yes	Yes
Relationship characteristics		Yes	Yes	Yes	Yes
Constant		Yes	Yes	Yes	Yes
Observations		466	401	290	563
R-squared		0.309	0.501	0.603	0.679
F-stat (H0: exogenous inst.)		0.403	0.638	0.085	0.747
Chi-sq(1) (H0: irrelevant inst.)		0.002	0.000	0.006	0.000

Notes: The dependent variable is the total amount of the syndicated loan associated to the Euribor only and taken as a natural logarithm. We run a 3SLS regression to estimate the one-crisis model at the loan level and per banking group. Table 1 provides variables definitions. All regressions include a constant (not reported). Standard errors in parentheses are robust; ***Significant at 1%, ** Significant at 5%, * Significant at 10%. For the specification tests, the probabilities are displayed.

TABLE 13

THE COLLAPSE OF LEHMAN BROTHERS AND ITS IMPACT ON CREDIT SUPPLY OF SYNDICATED LOANS (U.S. BORROWERS EXCLUDED)

		One-crisis model			
		French banks	German banks	Italian banks	Spanish banks
$Amount_i$		-0.129***	-0.363***	-0.602***	-0.209***
		(0.043)	(0.100)	(0.171)	(0.064)
$SUP_{i,l}$	$LS_{i,l}^{PC}$	-0.023***	-0.035***	-0.038***	-0.034***
		(0.004)	(0.005)	(0.008)	(0.005)
	$LS_{i,l}^{C}$	0.016***	0.017***	0.012	0.015***
		(0.005)	(0.005)	(0.009)	(0.004)
$GEO_{i,b}$	$DOM_{i,b}^{PC}$	-0.204**	0.405**	-0.080	0.216**
		(0.083)	(0.159)	(0.190)	(0.098)
	$DOM_{i,b}^{C}$	-0.146	0.160	0.407	0.126
		(0.120)	(0.157)	(0.301)	(0.105)
Lender's characteristics		Yes	Yes	Yes	Yes
Borrower's characteristics		Yes	Yes	Yes	Yes
Loan characteristics		Yes	Yes	Yes	Yes
Relationship characteristics		Yes	Yes	Yes	Yes
Constant		Yes	Yes	Yes	Yes
Observations		1,430	1,016	536	717
R-squared		0.522	0.377	0.202	0.606
F-stat (H0: exogenous inst.)		0.953	0.892	0.961	0.894
Chi-sq(1) (H0: irrelevant inst.)		0.000	0.000	0.000	0.000

Notes: The dependent variable is the all-in spread of the syndicated loan taken as a natural logarithm. We run a 3SLS regression to estimate the one-crisis model at the loan level and per banking group. We exclude the loans granted to U.S. borrowers. Table 1 provides variables definitions. All regressions include a constant (not reported). Standard errors in parentheses are robust; ***Significant at 1%, ** Significant at 5%, * Significant at 10%. For the specification tests, the probabilities are displayed.

TABLE 14

THE COLLAPSE OF LEHMAN BROTHERS AND ITS IMPACT ON CREDIT DEMAND OF SYNDICATED LOANS (U.S. BORROWERS EXCLUDED)

		One-crisis model			
		French banks	German banks	Italian banks	Spanish banks
$Spread_i$		0.458*	0.319	1.372***	0.066
		(0.249)	(0.211)	(0.507)	(0.210)
$DEM_{i,b}$	$SG^C_{i,b}$	0.000	0.000	0.000	-0.000
		(0.000)	(0.000)	(0.000)	(0.000)
	$DEAL_{i,b}$	-0.916***	-0.580***	-0.935***	-0.835***
		(0.084)	(0.100)	(0.220)	(0.110)
$GEO_{i,b}$	$DOM^{PC}_{i,b}$	0.344*	0.702***	-0.182	0.003
		(0.181)	(0.256)	(0.335)	(0.198)
	$DOM^C_{i,b}$	0.576**	0.596**	-0.254	-0.480**
		(0.252)	(0.267)	(0.563)	(0.213)
Lender's characteristics		Yes	Yes	Yes	Yes
Borrower's characteristics		Yes	Yes	Yes	Yes
Loan characteristics		Yes	Yes	Yes	Yes
Relationship characteristics		Yes	Yes	Yes	Yes
Constant		Yes	Yes	Yes	Yes
Observations		1,430	1,016	536	717
R-squared		0.354	0.302	0.244	0.609
F-stat (H0: exogenous inst.)		0.219	0.930	0.070	0.927
Chi-sq(1) (H0: irrelevant inst.)		0.000	0.000	0.000	0.000

Notes: The dependent variable is the total amount of the syndicated loan taken as a natural logarithm. We run a 3SLS regression to estimate the one-crisis model at the loan level and per banking group. We exclude the loans granted to U.S. borrowers. Table 1 provides variables definitions. All regressions include a constant (not reported). Standard errors in parentheses are robust; ***Significant at 1%, ** Significant at 5%, * Significant at 10%. For the specification tests, the probabilities are displayed.

TABLE 15

THE COLLAPSE OF LEHMAN BROTHERS AND ITS IMPACT ON CREDIT SUPPLY OF SYNDICATED LOANS (ALTERNATIVE ESTIMATION METHODS)

		One-crisis model							
		French banks		German banks		Italian banks		Spanish banks	
		2SLS	GMM	2SLS	GMM	2SLS	GMM	2SLS	GMM
$Amount_i$		-0.043	-0.045	-0.174***	-0.194***	-0.270***	-0.283***	-0.120*	-0.116*
		(0.042)	(0.041)	(0.064)	(0.063)	(0.097)	(0.097)	(0.069)	(0.069)
$SUP_{i,l}$	$LS_{i,l}^{PC}$	-0.021***	-0.022***	-0.030***	-0.030***	-0.030***	-0.030***	-0.036***	-0.037***
		(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
	$LS_{i,l}^{C}$	0.016***	0.016***	0.008**	0.008**	0.010*	0.010*	0.012***	0.012**
		(0.004)	(0.004)	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)	(0.005)
$GEO_{i,b}$	$DOM_{i,b}^{PC}$	-0.340***	-0.339***	0.242**	0.259**	-0.067	-0.073	0.214**	0.214**
		(0.085)	(0.085)	(0.120)	(0.121)	(0.127)	(0.129)	(0.099)	(0.099)
	$DOM_{i,b}^{C}$	-0.220**	-0.218**	0.037	0.043	0.198	0.197	0.153	0.160
		(0.102)	(0.102)	(0.103)	(0.103)	(0.196)	(0.199)	(0.099)	(0.098)
Lender's characteristics		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower's characteristics		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan characteristics		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Relationship characteristics		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations		2,455	2,455	2,020	2,020	725	725	807	807
R-squared		0.538	0.538	0.523	0.516	0.554	0.546	0.644	0.645
F-stat (H0: exogenous inst.)		0.823	0.831	0.625	0.631	0.738	0.754	0.906	0.922
Chi-sq(1) (H0: irrelevant inst.)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Notes: The dependent variable is the all-in spread of the syndicated loan taken as a natural logarithm. We run a 2SLS and a GMM regression respectively to estimate the one-crisis model at the loan level and per banking group. Table 1 provides variables definitions. All regressions include a constant (not reported). Standard errors in parentheses are robust; ***Significant at 1%, ** Significant at 5%, * Significant at 10%. For the specification tests, the probabilities are displayed.

TABLE 16

THE COLLAPSE OF LEHMAN BROTHERS AND ITS IMPACT ON CREDIT DEMAND OF SYNDICATED LOANS (ALTERNATIVE ESTIMATION METHODS)

		One-crisis model							
		French banks		German banks		Italian banks		Spanish banks	
		2SLS	GMM	2SLS	GMM	2SLS	GMM	2SLS	GMM
$Spread_i$		0.435**	0.462**	0.180	0.180	1.021***	1.011***	0.017	0.005
		(0.195)	(0.195)	(0.178)	(0.178)	(0.323)	(0.324)	(0.181)	(0.181)
$DEM_{i,b}$	$SG_{i,b}^{C}$	0.000	0.000	0.000***	0.000***	0.000	0.000	-0.000*	-0.000*
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	$DEAL_{i,b}$	-0.744***	-0.741***	-0.526***	-0.526***	-0.764***	-0.797***	-0.758***	-0.769***
		(0.060)	(0.060)	(0.066)	(0.066)	(0.129)	(0.128)	(0.100)	(0.100)
$GEO_{i,b}$	$DOM_{i,b}^{PC}$	0.361**	0.374**	0.762***	0.763***	-0.136	-0.188	-0.009	0.030
		(0.167)	(0.168)	(0.272)	(0.272)	(0.299)	(0.298)	(0.204)	(0.201)
	$DOM_{i,b}^{C}$	0.524**	0.530**	0.548**	0.548**	-0.114	-0.193	-0.569***	-0.534***
		(0.260)	(0.261)	(0.250)	(0.249)	(0.366)	(0.368)	(0.208)	(0.206)
Lender's characteristics		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower's characteristics		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan characteristics		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Relationship characteristics		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations		2,455	2,455	2,020	2,020	725	725	807	807
R-squared		0.371	0.366	0.340	0.340	0.295	0.296	0.620	0.620
F-stat (H0: exogenous inst.)		0.410	0.406	1.000	1.000	0.016	0.017	0.447	0.483
Chi-sq(1) (H0: irrelevant inst.)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Notes: The dependent variable is the total amount of the syndicated loan taken as a natural logarithm. We run a 2SLS and a GMM regression respectively to estimate the one-crisis model at the loan level and per banking group. Table 1 provides variables definitions. All regressions include a constant (not reported). Standard errors in parentheses are robust; ***Significant at 1%, ** Significant at 5%, * Significant at 10%. For the specification tests, the probabilities are displayed.