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The transmission of liquidity risk through international banks

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This letter presents the findings of research carried out at the Banque de France. The views expressed in this post are those of the authors and do not necessarily reflect the position of the Banque de France. Any errors or omissions are the responsibility of the authors.

This Rue de la Banque *presents the results for France of the first research project undertaken by the International Banking Research Network (IBRN). This project focuses on periods of financial stress, which are traditionally characterised by lower bank lending, especially for international lending. Results suggest that greater dependence on stable funding or liquidity provisions can be associated with higher lending growth. The negative effects of financial stress periods on bank lending are mitigated when banks have access to public liquidity. The quantitative importance of liquidity risk is more pronounced for foreign lending, which suggests that French banks' business model and the strong domestic retail sector contribute to the stability of domestic credit.*

The sharp retrenchment in international bank lending that took place in the wake of the 2008-09 financial crisis underlines the need to better understand the determinants of cross-border banking. The International Banking Research Network (IBRN) was set up to fill this gap, with the aim of pooling the efforts of different central banks and sharing their experience in collecting and analysing the relevant data. The IBRN brings together researchers from 27 participating central banks and international institutions,[1] each analysing their national micro-level data on international banking activities with comparable national datasets and a common methodology.

This issue of Rue de la Banque presents the results of the French contribution to the IBRN project on liquidity risk transmission (Bussière, Camara, Castellani, Potier and Schmidt, 2015).[2] The turmoil of the 2008-09 financial crisis and the European sovereign debt crisis in 2010-12 have had an impact on French banks' lending behaviour. Aggregate liquidity risk materialises via banks' balance sheets and affects both domestic and international activities of banks. We investigate which balance sheet vulnerabilities transmit this aggregate liquidity risk to certain types of lending.[3]

1 *At present the central banks of the following countries are part of the IBRN (though not all participated in the project on liquidity risk transmission): Australia, Austria, Brazil, Canada, Chile, France, Germany, Hong Kong, India, Ireland, Italy, Korea, Mexico, the Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Systemic Risk Board, the European Central Bank, the Bank for International Settlements and the International Monetary Fund also participate in the IBRN.*

2 *The overall results of all IBRN contributions are summarised in Buch and Goldberg (2015).*

3 *The variables of interest are different types of lending, in particular total loans, domestic loans, foreign loans, overall credit (the sum of loans and undrawn commitments), and net intra-group funding. For the case of foreign loans we specifically differentiate between cross-border loans by the entities resident in France and loans that a banking group's foreign affiliates extend locally to non-residents.*

The French banking sector and public liquidity assistance during the crisis

One important aspect of the French banking system is that a few large banking groups account for a significant share of total activities, including lending. These banks operate in a very mature domestic market (Xiao, 2009), but also have major investment banking activities as well as a strong presence abroad and engage in cross-border banking.[4] The six banking groups that are included in the French contribution to the IBRN project intermediate about three quarters of French households' financial wealth (IMF, 2013). Four out of the six banking groups are classified as global systemically important banks. The other noteworthy aspect of the French banking system is the small presence of foreign-owned banks in the domestic retail banking market. The French domestic market is very much dominated by French banks; foreign banks have not established a large network of affiliates in France (with the notable exception of HSBC France).

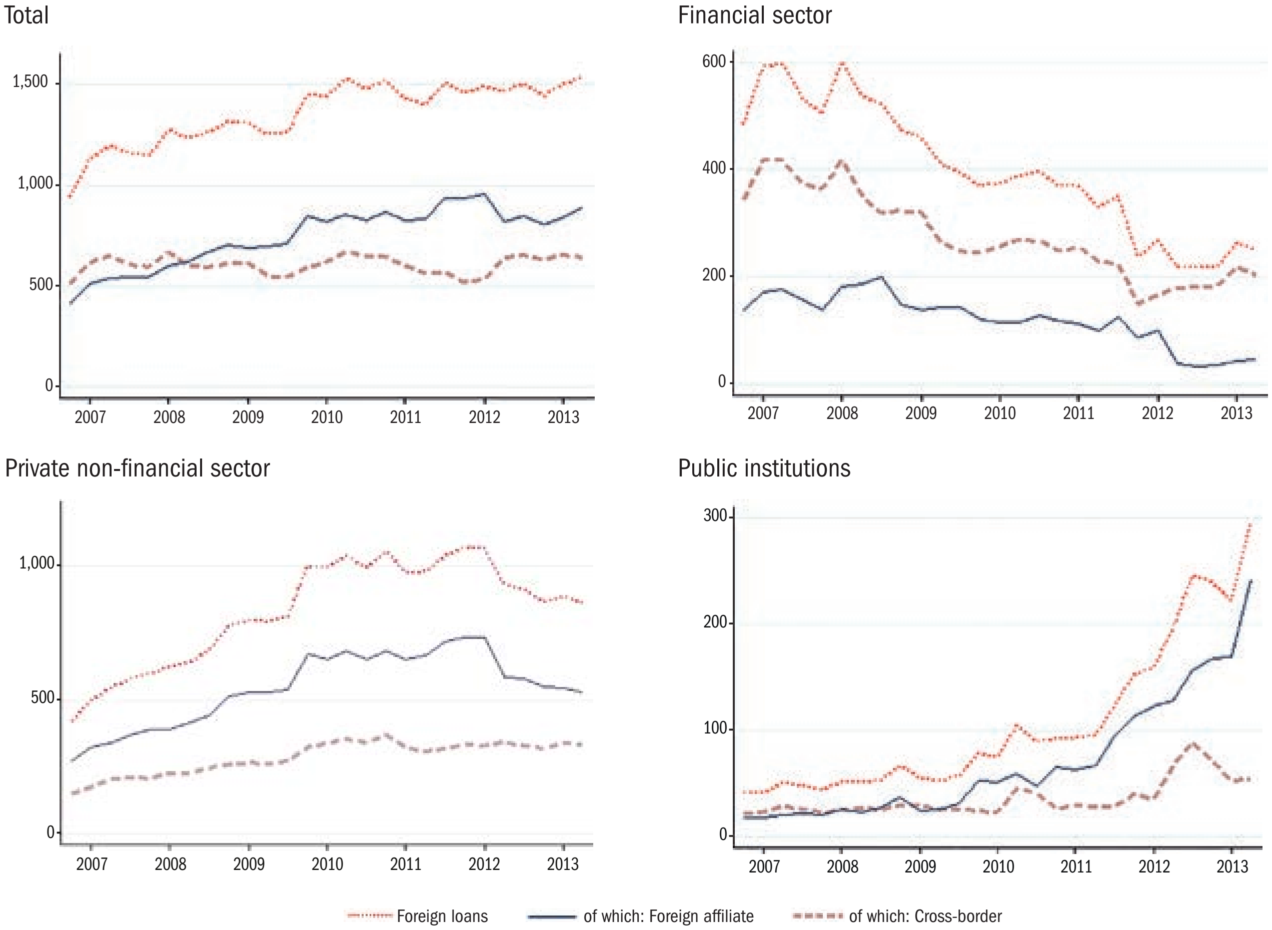
A comparison of the performance of French banks vis-à-vis their European and US counterparts during the crisis of 2008-09 is provided in Xiao (2009), who shows that French banks were relatively less profitable before the crisis, but were hit less severely than some of their counterparts. Compared to other industrialised countries, the French banking system proved to be relatively resilient to the financial crisis of 2008-09 thanks to its domestic retail activities (IMF 2012; IMF 2013).

The European Central Bank and the Banque de France reacted to the turmoil in financial markets by providing assistance in terms of liquidity support. The Banque de France provided liquidity through standing and

4 *The exception is La Banque Postale, which is active mostly domestically.*

Foreign lending

(amounts in billions EUR)



Notes: The figures show the levels of outstanding loans held by major French banking groups over the period 2006Q4 to 2013Q2.

exceptional facilities as part of the Eurosystem-wide effort to provide sufficient funds to the euro area banking system. The most prominent measure were the long-term refinancing operations (LTRO). Another form of central bank assistance was USD/EUR swap lines; the Federal Reserve provided USD liquidity to the Eurosystem, which in turn made these funds available to euro area banks faced with USD funding shortages.

Lending patterns of French banks

The French retail sector proved to be quite resilient during the financial crisis which is why the Chart focuses on the description of foreign lending[5] over 2006Q4-2013Q2. Foreign loans account for a significant amount of total loans (about 37%), mostly as a result of an expansion in French banks' foreign activities in the euro area. The maturity of the domestic market, French banks' comparative advantage in certain areas of banking as well as the necessity to accompany French firms abroad may have compelled French banks to expand their foreign activities.

Foreign lending is more volatile than domestic lending due to the resilience of the domestic retail sector. The Chart shows the time series behaviour of the outstanding amounts of foreign lending, broken down both by counterparty (financial, non-financial and public sector[6]) and by type of foreign lending (total, cross-border and through foreign affiliates). Lending patterns exhibit substantial heterogeneity: lending to the financial sector fell sharply over the period under review (panel b). Presumably, this deleveraging was strongly related to the stress in interbank markets as well as to a return to banks' core business (domestic lending and lending to the real sector).

In contrast, lending to the non-financial sector rose very substantially towards the end of 2008, before abating somewhat in the following years. The breaks in the series regarding loans to the non-financial sector are due to the acquisition of a foreign bank in 2006Q3 and another in 2009Q4.[7] Finally, lending to public institutions remained relatively stable until the end of 2010, when it started to increase markedly. Much of this increase was driven by the excess liquidity that French banks' affiliates were depositing at the Federal Reserve as well as at national central banks in the euro area.

Analysis

We investigate to what extent aggregate liquidity risk translates into bank-specific constraints via a bank's balance sheet. We consider the ratio of core deposits over total assets (core deposit ratio), the ratio of capital over assets (capital ratio), the ratio of illiquid assets over total assets (illiquid assets ratio), as well as the ratio of undrawn commitments such as credit lines over total assets and commitments (commitment ratio). We also include a measure of net intra-group funding, which is defined as the difference between the amount of outstanding liabilities and assets of the parent bank of the respective banking group vis-à-vis its foreign affiliates. This variable is also defined over total assets.

The above balance sheet variables capture various channels through which increased liquidity risk materialises into bank-specific shocks. A high share of core deposits is generally associated with cheap and stable funding and has been shown to be a good indicator of resilience to funding shocks. The capital ratio also proxies the cost of funding: banks are "collateral constrained" in the same way as other borrowers are; as a consequence, a higher capital ratio is associated with lower funding costs. The illiquid asset ratio captures a bank's sensitivity to a rise in short-term funding costs: confronted with important funding shortages, banks might have to liquidate some of their assets to keep on financing profitable long-term investment projects. In a similar vein, net intra-group funding can alleviate or aggravate funding constraints depending on whether the parent organisation supports, or is supported by, the foreign affiliate network. The commitment ratio captures to what extent a bank might have to extend lending if its clients draw on the previously agreed credit lines when they are themselves confronted with liquidity shortages.

The transmission of aggregate liquidity risk depends on whether a bank can access central bank liquidity or not. In the analysis, we thus use the liabilities held by French banks vis-à-vis the Banque de France as an indicator of central bank liquidity provision. We thus capture the liquidity provided via facilities such as long-term refinancing operations (LTROs) and currency swap lines.

Results

The main results can be summarised as follows. First, liquidity risk that materialises through banks' balance sheets does not have a large quantitative effect on domestic lending. In particular, we ask ourselves by how much would the dependent variable change if a bank were to shift from the median to the 75th percentile of the distribution for each of the respective balance sheet variables. To take an example,

5 *Hereafter defined as loans by French banks to non-residents.*
6 *Including, in particular, central banks.*
7 *See the explanations provided by the BIS:* http://www.bis.org/statistics/breakstablescons.pdf

moving from the 50th to the 75th percentile of illiquid asset holdings (i.e. from 69% to 80%) reduces domestic lending by EUR 23 billion and foreign lending by EUR 44 billion. Similar quantitative differences hold for the commitment ratio (an increase of EUR 6 billion for domestic lending compared with EUR 87 billion for foreign lending when moving from 17% to 21%, which suggests that commitments are primarily used in the context of domestic lending). Increasing the core deposit ratio (from 33% to 39%) results in an increase in domestic lending of EUR 20 billion, but an even larger amount of EUR 34 billion for foreign office loans.

All these results may reflect the fact that the relatively stable retail business activities and a high degree of diversification shielded French banks' domestic activities from market distress in 2008-09 and 2010-12. Another reason for this resilience is the high concentration of the French banking sector: the banks considered are large and thus less vulnerable to aggregate liquidity risk; see Kashyap and Stein (2000). The adjustments made in response to aggregate liquidity risk primarily concern foreign loans, in particular foreign office loans.

Second, we find that the effect of aggregate liquidity risk materialises via banks' commitment ratio, their illiquid assets ratio and their core deposit ratio. However, results differ across lending categories. Banks that have high commitments increase lending during times of liquidity stress as companies draw on their credit lines. Banks with a higher core deposit ratio are better able to maintain or increase their foreign lending. Similarly, banks with a high ratio of illiquid assets cut back lending in times of crisis. As regards the commitment ratio and the illiquid asset ratio, these effects are attenuated when banks have access to central bank liquidity, which suggests that the support extended to banks in the Eurosystem was conducive to ensuring lending growth.

Third, with regard to foreign lending, we find that most results are driven by local lending by affiliates abroad. Cross-border lending, which mainly consists of lending to the financial sector, cannot be significantly attributed to changes in liquidity risk. We interpret this finding as an indication of the general loss of confidence in interbank markets, which led to system-wide deleveraging, independently of balance sheet characteristics.

Conclusion

Overall, we find that movements in foreign lending are larger than those in domestic lending, which is due to the resilience of the domestic retail banking sector. Because the French banking sector was comparatively strong during the crisis, intra-group funding did not have to be used to support domestic lending. By contrast, the data show that affiliates abroad depended on the head offices in France to maintain or increase their lending. Adjustments were therefore primarily made through foreign loans and in particular through local lending by French banking groups' affiliates abroad. Pure cross-border lending (which mainly consists of lending to the financial sector) grew the least during the crisis, but did so independently of balance sheet vulnerabilities. The results also suggest that central bank liquidity support was effective in alleviating liquidity constraints.

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