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International Banking and Cross-Border Effects of Regulation: Lessons from France

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Résumé

Cet article présente la contribution de la Banque de France à un projet de recherche mené au sein du réseau international de banques centrales IBRN (International Banking Research Network) et qui porte sur les répercussions internationales des politiques prudentielles. Plus particulièrement, cet article se concentre sur l’ajustement des prêts bancaires transfrontaliers des banques françaises, suite à des changements réglementaires mis en œuvre en France ou dans les pays étrangers. Nous distinguons dans cet exercice les prêts au secteur financier et au secteur non-financier. Les résultats indiquent que les prêts transfrontaliers des banques françaises augmentent suite à un durcissement de la réglementation dans les pays partenaires, les banques françaises n’étant pas soumises à la même réglementation. Cette réaction peut être mise en évidence pour certaines mesures prudentielles ; cependant, elle n’est quantitativement pas très forte. Les résultats indiquent également que la réponse des prêts transfrontaliers aux changements prudentiels mis en œuvre en France est influencée par les caractéristiques des banques françaises en termes de bilan.

Mots-clés : activités bancaires internationales, régulation prudentielle, effets de débordement Codes JEL : F36, G21, G28

Abstract

As part of the International Banking Research Network, the Banque de France contribution to the research project on prudential policy spillovers concentrates on the “outward” adjustment of French banks’ cross-border lending. We consider both adjustment of cross-border lending to foreign (“destination country”) as well as French (“home country”) regulation and investigate differences between financial and non-financial counterparties. For some regulatory measures, we find that French banks increase their cross-border lending growth in response to regulatory tightening abroad – presumably because they are not subject to these regulatory changes. All in all, we do not find particularly large quantitative adjustments to changes in foreign regulatory policies. Lastly, we find that balance sheet variables are important for the adjustment of cross-border lending growth in response to French regulatory policy changes.

Keywords: International banking, prudential regulation, international spillovers
JEL-Classification: F36, G21, G28

Non-technical summary

This paper presents the Banque de France contribution to a global research project undertaken within the International Banking Research Network (IBRN), which aims to analyze issues related to global banks and their international activities.¹ This particular project, whose objective is to better understand the international effects of prudential regulation, comprises contributions from 15 countries and three international organizations: the International Monetary Fund (IMF), the Bank for International Settlements (BIS) and the European Central Bank (ECB).

As part of this project, this paper focuses on the adjustment of cross-border lending by French banks following a change in foreign as well as French prudential regulation. Prudential regulation has gone through deep changes in recent years, particularly since 2007 with the implementation of so-called Basel II Agreements, followed by Basel 2.5 and Basel III. The database used for prudential measures is the one set up by Cerutti *et al.* (2016), which reports changes in the intensity of macro- and micro-prudential measures for a broad set of 64 countries, with quarterly data going back to the year 2000. The measures considered in the Cerutti *et al.* (2016) database include capital buffers, interbank exposure limits, concentration limits, loan-to-value ratio limits, and reserve requirements. This database is the most comprehensive database showing the intensity in the use of prudential measures that is currently available.

The empirical exercise presented here builds on the fact that French banks are large and very active internationally. We use data on a locational (in contrast to consolidated) basis, which allows better econometric identification of regulatory changes abroad as these are not targeted at French banks. As a result, the paper focuses on direct cross-border lending and not local lending through affiliates. Another key feature of the paper is that we distinguish lending to the financial and to the non-financial sectors; empirically, this distinction turns out to play an important role.

Three main findings stand out. *First*, cross-border lending growth is driven by the business cycle in the respective destination countries, but less so by regulatory changes. We only find consistent and significant outward adjustment in response to changes in capital requirements, reserve requirements and interbank exposure limits. In quantitative terms, these effects are rather small.

¹The steering committee of IBRN includes the two co-directors Claudia Buch (Bundesbank) and Linda Goldberg (Federal Reserve Bank of New York), as well as Matthieu Bussière (Banque de France) and Robert Hills (Bank of England). Julia Schmidt contributed to the methodological preparation of this study within IBRN, where she represented the Banque de France.

Second, we find that French banks' reaction to a regulatory tightening abroad depends on the type of regulatory policy. Whereas French banks decrease their cross-border lending growth in response to a tightening in interbank exposure limits, they increase their cross-border lending growth when reserve requirements are tightened abroad. Our results show that the capacity of French banks to adjust their cross-border loans depends on their balance sheet variables (as do most of the other comparable country studies included in this IBRN project), in particular the illiquid assets ratio and the dependence on net intragroup funding. If the latter two are very high, banks might be constrained in their ability to extend cross-border loans and actually decrease lending growth in response to a regulatory tightening. All in all, we interpret our findings as indicative of regulatory leakages (for selected policy measures): while lending growth by banks resident in the destination country that is tightening regulation ("locally regulated banks") presumably decreases, French banks not subject to this foreign regulation substitute for the activities of locally regulated banks by increasing their cross-border lending growth. Since the results are driven by lending to the non-financial sector, we conclude that French banks do not use their affiliate network to substitute for a reduction in lending by "locally regulated banks", but rather lend directly to (non-financial) counterparties.

Third, the results show that banks' balance sheet characteristics are important for the cross-border transmission of domestic capital regulation. We find that a high tier 1 capital ratio and a high reliance on net intra-group funding significantly reduce cross-border lending growth in the case of a French tightening of capital requirements. On the contrary, the availability of cheap and stable funding due to a high reliance on core deposits can facilitate the maintenance of strong cross-border lending growth in the case of such tightening. However, the economic magnitudes of these effects remain small.

To our knowledge, this IBRN project is the first one that systematically compares the international effects of prudential measures using bank-level data. The empirical exercise stresses the importance of collecting comprehensive bank-level data to better understand the role of banks in international capital flows. The results highlight the general debate on global banking (Cetorelli and Goldberg, 2012a,b), and more in particular on the international spillovers of prudential measures and the issue of regulatory arbitrage (Houston *et al.*, 2012; Aiyar *et al.*, 2014b,a). We hope that the present paper will contribute to this academic discussion, but also to the policy debates on banking regulation and macroprudential policy.

1 Introduction

The recent financial turmoil in industrialized countries and the particular vulnerabilities of the banking sector have led to an increased discussion about how to strengthen the resilience of the financial system via banking regulation and macroprudential policy. France, which is characterized by a concentrated banking system in which the four largest banking groups are classified as Global Systemically Important Banks, is particularly concerned: regulatory changes are potentially transmitted cross-border through the international activities of large banks. In this paper², we try to tackle these issues using French micro-level bank data in order to explore whether French banks adjust their external positions in response to both regulatory changes in the destination country as well as to French regulation.

International banking regulation was characterized by a stable environment over 2000–2006. While Basel II negotiations started in 2004, implementation in many European countries only began in 2007.³ Thus, the time period we cover (2000–2013) is marked by a first period with few regulatory changes (over 2000Q1–2007Q2), and a second time period marked by many regulatory changes from Basel II, Basel 2.5, and Basel III in parallel to the subprime crisis and the European debt crisis.⁴

In 2000, the main regulatory tools used in France⁵ are capital requirements for credit and market risks⁶, concentration limits on large exposures as well as liquidity ratios. Neither a counter-cyclical capital buffer nor a leverage ratio were used prior to the introduction of Basel III regulation. Capital requirements significantly changed with the implementation of Basel II in 2007–2008, Basel 2.5 at the end of 2011 and Basel III starting from 2014 (with a phase-in).

While liquidity regulation evolved in 2010, the main changes come from the introduction of Basel III, namely the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR). An observation period for both ratios started in 2014Q1 prior to the implementation of the LCR with a phase-in over 2015–2019. The NSFR is planned to be implemented in 2018.

²This paper presents the Banque de France contribution to a research project undertaken within the International Banking Research Network (IBRN), which aims to analyze issues related to global banks and their international activities.

³See Cornford (2006) for a detailed illustration.

⁴For example, as illustrated from the IBRN Prudential Instruments Database by Cerutti *et al.* (2016), one regulatory change concerning capital requirements occurred in the period 2000Q1–2006Q4, one in 2007Q1–2010Q4 and 98 in 2011Q1–2014Q4.

⁵We abstract here from a discussion on reserve requirements in France as these are mainly used as a monetary policy tool in the Eurosystem. Reserve requirements are however used as a regulatory tool in emerging market economies.

⁶Implemented respectively in 1993 and 1996, see Thoraval (1996).

In the context of this IBRN project, we concentrate on the external adjustment to regulatory changes abroad (“outward transmission”). We do so because the French banking system is strongly dominated by French banks. The first nine French banking groups cover 85% of credit to the real economy in France in 2006Q4. With regards to the remaining market share, foreign banking groups are not very highly represented. Thus, we do not expect large effects of regulatory changes “imported” to France by affiliates of foreign banks (“inward transmission”).

More importantly, during the financial turmoil of 2008–09 as well as 2010–2012 (periods that coincide also with the introduction of various regulatory changes abroad), French domestic bank lending was relatively stable, reflecting the fact that banks paid particular attention to their core business in France. As such, we do not expect large adjustments at home, on the one hand since there were governmental actions aimed at facilitating the resolution of credit disputes and curbing risks of a credit crunch, on the other hand since domestic retail business proved to be quite resilient to financial market distress.⁷

We thus expect more adjustments to take place abroad which is why we concentrate on how *foreign* lending growth was adjusted. The fact that French banks are large and very active abroad, both through cross-border lending and the establishment of affiliates abroad, is useful in this sense as we can include a relatively high number of countries and banks in our analysis.⁸ Using locational data (in contrast to consolidated data), however, we can only concentrate on cross-border loans from French banks and thus cannot include lending by affiliates abroad in our measure of foreign loans. This notwithstanding, the use of locational data allows better econometric identification of regulatory changes abroad as these are not targeted at French banks. For the regulatory data, we use the IBRN Prudential Instruments Database by Cerutti *et al.* (2016).

Our findings can be summarized as follows: *First*, we find that cross-border lending growth is driven by the business cycle in the respective destination countries, but less so by regulatory changes. We only find consistent and significant outward adjustment in response to changes in capital requirements, reserve requirements and interbank exposure limits. In quantitative terms, these effects are rather small. This finding is not surprising given that the bulk of regulatory changes was implemented during the Great Recession.

Second, we find that French banks’ reaction to a regulatory tightening abroad depends on the type of regulatory policy. Whereas French banks decrease their cross-border lending

⁷Figure 2 traces the growth rates of domestic as well as foreign lending (cross-border as well as lending by French banks’ branches abroad). As shown, the low variability of domestic lending, especially to the non-financial sector, exemplifies the importance of the domestic retail market for the overall stability of the French banking sector.

⁸Though we include a large number of banks, one should keep in mind that those belong to a smaller number of banking groups.

growth in response to a tightening in interbank exposure limits, they increase their cross-border lending growth when reserve requirements are tightened abroad. Our results show that the capacity of French banks to adjust their cross-border loans depends on their balance sheet variables, in particular the illiquid assets ratio and the dependence on net intragroup funding. If the latter two are very high, banks might be constrained in their ability to extend cross-border loans and actually decrease lending growth in response to a regulatory tightening. All in all, we interpret our findings as indicative of regulatory leakages (for selected policy measures): while lending growth by banks resident in the destination country that is tightening regulation (“locally regulated banks”) presumably decreases, French banks not subject to this foreign regulation substitute for the activities of locally regulated banks by increasing their cross-border lending growth. Since the results are driven by lending to the non-financial sector, we conclude that French banks do not use their affiliate network to substitute for a reduction in lending by “locally regulated banks”, but rather lend directly to (non-financial) counterparties.

Third, the results show that banks’ balance sheet characteristics are important for the cross-border transmission of domestic capital regulation. We find that a high tier 1 capital ratio and a high reliance on net intra-group funding significantly reduce cross-border lending growth in the case of a French tightening of capital requirements. On the contrary, the availability of cheap and stable funding due to a high reliance on core deposits can facilitate the maintenance of strong cross-border lending growth in the case of such tightening. However, the economic magnitudes of these effects remain small.

2 Data and Stylized Facts for France

2.1 Bank-level data

Our bank-level data come from the Statistics Department of the Banque de France and the Autorité de Contrôle Prudentiel et de Résolution (ACPR), the French supervisory body for the banking sector.⁹ We use locational data for our analysis, thus concentrating on the unconsolidated balance sheet of individual entities within a banking group.¹⁰ However, as a robustness check, we include balance sheet variables from the consolidated level in

⁹The data are confidential. They can be accessed if the application for data access has been approved by the Banque de France. Both external researchers as well as Banque de France staff have to apply for data access.

¹⁰We do so for several reasons: The French banking system is very concentrated, thus not allowing for a large number of banking groups to be analyzed. Further, mergers and acquisitions lead to a considerable change of the size of banks and their respective cross-border loans – a problem that is more pronounced on the consolidated than on the locational level. In addition, consolidated balance sheet data is only available at biannual frequency.

the regressions to check whether these affect the results.¹¹ We specifically rely on data of French banks' outstanding amounts of cross-border loans for which we know the country (as well as the sector) of the counterparty. Though we also have information on French banks' branches abroad (as they are regulated by the French supervisor), a disaggregation of their assets with regards to the country of residence of the counterparty is not available. This is why we use these information only for aggregate statistics and to restrict the sample of banks in robustness checks.¹²

We cover the time period of 2000Q1–2013Q2 (2013Q2 being the last available data point at the time we started implementing this project). We restrict the sample in several dimensions. First, we only consider countries reported in the IBRN Prudential Instruments Database by Cerutti *et al.* (2016). This leads us to consider 64 countries of which 53 are included in the final dataset. Second, we only include French banks and exclude banks that are very small or have non-significant cross-border activities. Thus, we exclude bank observations with loans to non-banks smaller than 100 million EUR, or total assets smaller than 1 billion EUR. We also restrict the sample to banks for which foreign assets represent at least 0.5% of total assets all of the time. Third, we only include bank observations if a bank has a positive stock of loans in at least five countries.¹³ We impose continuity by including only observations with eight consecutive quarters of non-missing observations of the LHS variable. We truncate observations if cross-border lending growth exceeds +100/-100%.

From an initial sample of more than 500 banks, we finally retain only 42 banks which have a stable presence over the entire sample and have significant cross-border lending activity. Though the use of locational data reduces the incidence of mergers and acquisitions (in comparison to consolidated data), our individual bank series contain a few breaks. These are most likely due to mergers and acquisitions, but are taken care of by the truncation of the left-hand side variable.

¹¹The sample size is thus reduced for these robustness checks.

¹²The underlying data in figures 1, 2 (cross-border loans), 3, 4 and 5 are based on locational data of French banks' cross-border loans which are collected by the Statistics Department of the Banque de France for the purpose of the Locational Banking Statistics of the Bank for International Settlements (BIS). The underlying data of figure 2 (domestic loans and loans by branches) and table 3 are derived from balance sheet data collected by the ACPR. The underlying data of table 2 are based on consolidated data of French banking groups' foreign loans which are collected by the Statistics Department of the Banque de France for the purpose of the Consolidated Banking Statistics of the BIS.

¹³We do so in order to only include banks with significant international activity.

Dependent variables

The dependent variable, $\Delta Y_{b,j,t}$, is the change in the log of loans granted by bank b to counterparties in destination country j at time t . We notably consider all cross-border loans as well as loans to the non-financial and financial sectors only to specifically investigate the importance of intra-group flows.

Balance sheet characteristics

We include the following balance sheet variables:

- log of total real assets, i.e. assets deflated by the GDP deflator (Log Total Assets $_{b,t-1}$)
- share of Tier 1 capital to total assets in % (Tier1 Ratio $_{b,t-1}$)
- share of illiquid assets over total assets in % (Illiquid Assets Ratio $_{b,t-1}$)
- share of a bank’s foreign assets relative to total assets in % (International Activity $_{b,t-1}$)
- share of a bank’s net intragroup funding, i.e. liabilities of the bank vis-à-vis its branches abroad minus the corresponding assets, this difference is scaled by total assets and reported in % (Net Intragroup Funding $_{b,t-1}$)
- share of core deposits over total assets in % (Deposit Ratio $_{b,t-1}$)

2.2 Data on prudential instruments

For the measures of regulatory changes, we rely on the IBRN Prudential Instruments Database by Cerutti *et al.* (2016). Regulatory changes associated with a tightening of regulation are coded as 1 in the database whereas a loosening of regulation is associated with -1 . However, for the case of reserve requirements and the sector-specific capital buffers, the numbers can take on absolute values larger than one to capture the intensity of the change. We consider seven instruments for the analysis: capital requirements, sector-specific capital buffers, loan-to-value ratios, reserve requirements (both for foreign and local currency deposits), interbank exposure limits as well as concentration ratios. An aggregate index (PruC) that sums the changes across all seven instruments is also included. We use the following definitions to measure the impact of regulatory changes:

- DestP $_{j,t-l}$ (where $l = 0, 1, 2$): Destination country regulation (destination = foreign country receiving a loan) with 0, 1, and 2 lags
- HomeP $_{t-l}$ (where $l = 0, 1, 2$): Home country regulation (home = France) with 0, 1, and 2 lags

2.3 Stylized Facts

The French banking sector is made up of a small number of banking groups of which most are characterized as universal banks. This concentration is illustrated in the French credit registry: 85% of the credit exposure to the real economy in France is carried out by nine banking groups in 2006Q4. Four among those groups have important international activities leading the FSB to classify them as Global Systematically Important Banks after the 2008 crisis.¹⁴ On the contrary, activities by foreign banking groups in the domestic French market are rather limited.

Foreign lending by French banks

Figure 1 describes the sum of outstanding cross-border loans for the banks that we retain in our sample. Compared to the overall cross-border loans by banks resident in France (depicted by the official data series in the BIS' International Banking Statistics), our restricted sample closely follows the dynamics of the total amount though it only represents about half of the outstanding amounts. The series show a strong upward trend, especially from 2004 to 2007, before stagnating due to the Lehman shock in 2008 and the European sovereign debt crisis.

Figure 2 depicts the growth rates of French banks' domestic and cross-border lending over the time period in question. Whereas cross-border lending growth fluctuates to a substantial amount, domestic lending growth is more stable, displaying growth rates that are smaller in absolute terms. In figure 2, we also compare these growth rates to the one of lending by foreign branches – data for which we do not have the disaggregation by destination country and which can therefore only be used for comparison purposes. Figure 2 shows that lending growth by branches abroad is also very volatile, thus confirming that foreign lending is inherently more volatile than domestic lending. Panel (b) of figure 2 shows that this is especially the case for lending to the non-financial sector, thus pointing to the resilience of the French domestic retail market.

Much of French banks' foreign lending is done through local lending by their affiliates abroad. Using consolidated data for six major French banking groups over the period 2006Q4–2013Q2, one can see in table 2 that affiliates abroad mainly engage in lending to the non-financial sector.¹⁵ At the locational level, we only have access to cross-border loans. Figure 3 splits the sum of cross-border loans into different counterparties, notably loans to

¹⁴Financial Stability Board (2014): “2014 Update of list of global systemically important banks (G-SIBs)”: http://www.fsb.org/wp-content/uploads/r_141106b.pdf.

¹⁵Discrepancies between the numbers in table 2 and 3 mainly stem from the fact that consolidated data do not include intra-group positions.

the private financial (bank and non-bank) and non-financial sectors as well as the public sector. In terms of magnitudes, loans to the private financial sector (left scale of figure 3) make up the bulk of the stock of cross-border loans. Within the category of lending to the financial sector, we are specifically interested in the part stemming from lending to banks as these represent largely intra-group flows (“internal capital markets”). Table 3 shows that cross-border interbank loans are largely composed of intra-group flows: for the year 2010¹⁶, the sum of outstanding amounts of intra-group loans for the banks in the sample is on average 328.11 billion EUR and make up about 55% of overall cross-border loans to the bank sector. Out of these intra-group positions, only 28% are vis-à-vis subsidiaries whereas the remaining 72% are vis-à-vis branches. The importance of intra-group flows within the category of cross-border flows to the financial sector is important for the interpretation of the regression results. As will be explained later in more detail, intra-group flows represent one potential transmission channel and we will test its importance by running regressions for the subsample of lending to the financial-sector only.

Figure 4 traces the mean of the dependent variable, the difference of the log of loans. Cross-border lending growth to the non-financial sector closely follows the pattern of overall cross-border lending growth whereas cross-border lending growth to the financial sector fluctuates to a larger extent. Though highly volatile, the growth rates are clearly positive in 2005–07 before slumping into negative territory from 2008 onwards. While regulatory changes could be one of the factors behind these negative growth rates, the financial crisis, the turmoil in interbank and wholesale funding markets as well as large changes in monetary policy have certainly also contributed to the adjustments in foreign lending.

French banks’ cross-border loans are mainly directed at euro area countries and the UK, followed by the US and Asian countries (figure 5). With regards to the UK, this predominant position is mainly driven by flows to the financial sector, reflecting the importance of the London interbank market. The large exposure of French banks towards industrialized countries implies that there is very little time variation of the regulatory changes in the countries that French banks are mainly exposed to: These countries did not implement a large number of regulatory changes (in comparison to emerging market economies) and often implement regulatory changes simultaneously (due to Basel II–III or in the case of reserve requirements due to the common monetary policy in the Eurosystem). In addition, these countries have been affected the most by financial market distress during the recent financial crisis.

¹⁶Unfortunately, we only have access to this data for 2010 which is why table 3 is restricted to this time period.

Balance sheet characteristics

Summary statistics in table 1 describe the balance sheet features. Real total assets continuously grew since 2002 before abating in 2008. The tier1 capital ratio equals 6% on average. The illiquid assets ratio rises from a mean of around 87% to 93% in 2009 when this trend stalled, possibly due to increased liquidity holding during the European sovereign debt crisis. The variable capturing banks' international activities fluctuates around 24% before decreasing steadily from 2010 onwards. Once again, this might be driven by the retrenchment from foreign markets and in particular from periphery euro area countries. Net intragroup funding, which was positive at the beginning of the sample, steadily declined over 2000–2013 to values as low as -5%, suggesting that French banks supported their affiliates abroad during the financial troubles of 2007–2009 as well as during the European sovereign debt crisis. The mean core deposit ratio fluctuates around 31% before increasing steadily from 2010Q3 to over 40% in 2013, reflecting banks' desire as well as regulatory pressure to rely on more stable sources of funding.

Prudential instruments

We use locational data and thus only include cross-border loans (loans granted by French banks resident in France to non-residents) in our measure of foreign loans. In comparison to the other type of foreign lending, namely local lending by French banks' affiliates abroad, this has one advantage though, as we can be sure that the regulatory change in a respective destination country is not directly targeted at French banks resident in France (while their affiliates abroad might be subject to regulation in the host country).

The effect of a regulatory change in a given destination country on cross-border lending growth by French banks might be driven by several channels. Let us assume a regulatory tightening that is associated with a reduction in lending. On the one hand, French banks' affiliates in the respective destination country could be subject to the regulation, thus reducing their lending and potentially requiring less funding from the head office in France. This is the case for French subsidiaries abroad, but potentially also their branches in the case where the prudential regulation is targeted at the borrowers as could be the case for loan-to-value limits. On the other hand, the reduction in lending by domestic and foreign banks resident in the destination country implementing the regulatory change could lead to increased cross-border lending by French banks as these are substituting for the reduction in lending by locally-regulated banks. They can do so either by increasing their direct cross-border lending or by using their branches abroad that are presumably not subject to the regulatory tightening in question. We therefore test all regressions both in terms of overall lending growth as well as growth of lending to the non-financial sector (direct

adjustment) and financial sector (adjustment via branch network) to test these different channels of adjustment.

As a first – preliminary and unconditional – look at the data, we track the evolution of foreign loans around a regulatory tightening in figure 6. Loans are normalized to 1 on the date of the regulatory tightening and the graph shows the median evolution of loans around the tightening. The graphs show that prior to a regulatory tightening, stocks fluctuate around their normalized value of one and pick up afterwards for the case of capital requirements, sector-specific capital buffers and reserve requirements (both for local and foreign currency). An opposite trend can be seen with regards to the loan-to-value ratio, interbank exposure limits as well as concentration ratios: a decrease in lending can be observed following the implementation of a regulatory tightening. In the following analysis, we will show that this preliminary assessment holds—in terms of statistical significance—for reserve requirements in local and foreign currency as well as interbank exposure limits.

3 Empirical Method and Regression Results

3.1 Baseline analysis of outward transmission of prudential policies

The analysis explores the effect of regulatory changes on banks’ lending growth, following the approach described in Buch and Goldberg (2016).

Specification 1: Outward transmission of destination country policy (see table 5).

$$\begin{aligned} \Delta Y_{b,j,t} = & \alpha_0 + (\alpha_1 DestP_{j,t} + \alpha_2 DestP_{j,t-1} + \alpha_3 DestP_{j,t-2}) \\ & + \alpha_4 X_{b,t-1} + \alpha_5 Z_{j,t} + f_b + f_j + f_t + \varepsilon_{b,j,t} \end{aligned}$$

where $DestP$ denotes the prudential policy of the destination country where the loan goes to. The regressions include bank, country and time fixed effects. In this first specification, we test the effect of contemporaneous and lagged regulatory changes on cross-border lending growth, controlling both for bank balance sheet characteristics $X_{b,t-1}$ and destination country demand factors $Z_{j,t}$ (financial and business cycle). Table 5 describes these results. One first notes the highly significant and positive coefficient of the financial and business cycle indicators, thus suggesting that demand factors played a significant role in the adjustment process. With regards to the balance sheet variables, the regression results in table 5 show that a low tier 1 capital ratio and a high dependence on net intragroup funding are associated with higher cross-border lending growth. The latter suggests that banks relying to a large extent on affiliate funding are the ones increasing lending growth the most via cross-border activities. This could on the one hand be related to large banks’

affiliates obtaining cheap wholesale funding abroad which is then invested cross-border by the head office in France (i.e. the “global banking glut” story, see Shin, 2012). On the other hand, those banks that supported their foreign affiliates to a large extent were thus constrained in their ability to increase cross-border lending growth.

Our variable of interest is the regulatory change in the destination country. At the bottom of table 5, we summarize the effect of destination country regulation by summing the coefficients α_1 , α_2 and α_3 and evaluating their joint significance with an F-test. In response to a tightening of interbank exposure limits (column 7), French banks’ cross-border lending growth slows down or contracts. On the contrary, a tightening of reserve requirements (columns 5 and 6) in the destination country leads to an increase of cross-border lending growth by French banks. As already alluded to above, these differences in reaction can be attributed to the ability of French banks to substitute for the presumed contraction in lending by the banks resident in the destination country who are subject to the regulatory tightening: Whereas tightened reserve requirements affect the banks regulated in the destination country, French banks are able to maintain cross-border lending growth as they are not concerned by this destination country policy. In the case of interbank exposure limits, however, French banks’ counterparties are directly affected and, as a consequence, French banks are affected as well, thus explaining the negative effect on cross-border lending growth.

In terms of economic magnitudes, these effects are relatively small. A regulatory tightening of reserve requirements has a positive cumulative effect (sum of α_1 , α_2 and α_3) on cross-border lending growth, increasing it by 2.3%. Given the extremely large standard deviation of the dependent variable (30.69%), this effect can be categorized as quantitatively small. The cumulative reduction due to interbank exposure limits is also rather small, amounting to -7.1%.

In the following specification, we want to investigate the role of balance sheet variables in characterizing banks’ ability to maintain or expand cross-border lending growth in response to a regulatory tightening in the destination country. We therefore include interaction effects between regulatory changes and the afore mentioned balance sheet characteristics.

Specification 2: Outward transmission of destination country policy: the role of balance sheet characteristics (see table 6).

$$\begin{aligned} \Delta Y_{b,j,t} = & \alpha_0 + (\alpha_1 DestP_{j,t} + \alpha_2 DestP_{j,t-1} + \alpha_3 DestP_{j,t-2}) + \alpha_4 X_{b,t-1} + \alpha_5 Z_{j,t} \\ & + (\beta_1 DestP_{j,t} X_{b,t-1} + \beta_2 DestP_{j,t-1} X_{b,t-1} + \beta_3 DestP_{j,t-2} X_{b,t-1}) \\ & + f_b + f_j + f_t + \varepsilon_{b,j,t} \end{aligned}$$

The interaction terms show how banks with different balance sheet characteristics adjust their lending growth in response to regulatory changes. Thus, as in specification 1, we measure the impact of regulatory changes abroad on cross-border lending growth by French banks, but differentiate between the impact when balance sheet characteristics are zero and the one provoked via balance sheet characteristics.

Table 6 reports the results for this regression. Throughout all regressions, the cycle variables are positively and significantly associated with higher foreign lending growth as in table 5. With regards to the regulatory variables, we concentrate on the sum of α_1 , α_2 and α_3 (F-statistic at the bottom of table 6), which measures the effect of regulatory changes if all balance sheet variables were equal to zero, as well as the sum of β_1 , β_2 and β_3 presented in the bottom half of table 6. With respect to reserve requirements (columns 5 and 6), table 6 shows that there is no statistically significant differential impact of a tightening in reserve requirements when differentiating between its direct impact (sum of α_1 , α_2 and α_3) and its impact via balance sheet variables (sum of β_1 , β_2 and β_3).

However, the overall negative impact of regulatory tightening of capital requirements (column 2) and interbank exposure limits (column 7) can be decomposed into a positive direct effect (sum of α_1 , α_2 and α_3) and a negative effect (sum of β_1 , β_2 and β_3). The latter is brought about by large bank size and a high illiquid assets ratio in the case of capital requirements and a high illiquid assets ratio and a high dependence on net intragroup funding in the case of interbank exposure limits. Banks with a high illiquid assets ratio might therefore not be able to mobilize the funds necessary to increase cross-border lending growth. Overall, the findings suggest that, on average, balance sheet constraints can limit French banks' ability to substitute for the presumed contraction of lending by the banks subject to regulatory tightening. In terms of economic magnitudes, we note that the cumulative direct effect of regulatory tightening (assuming balance sheet variables are zero) is not only positive for capital requirements and interbank exposure limits, but also one order of magnitude larger (in absolute terms).

Our results are robust to the following modifications of the baseline specifications. We include parent bank controls (in this case, the sample runs only from 2000Q4 to 2013Q2). We also restrict the bank sample to only comprise banks which have a very large presence abroad and are present in the sample with at least 1000 observations. Another robustness check that we perform is the restriction of the country sample to include only those destination countries that actually changed one of the instruments over the time period in

question. The use of exchange rate adjusted stocks for the calculation of cross-border loan growth rates¹⁷ does not alter the results.

We also include all prudential instruments simultaneously (excluding the aggregate PruC measure) for the case of specification 1. Only the sums of $\alpha_1 + \alpha_2 + \alpha_3$ for foreign currency reserve requirements and interbank exposure limits are statistically significant and show the same sign as in table 5. Since specification 2 concentrates on the importance of balance sheet variables for the adjustment to policy changes in destination countries (lower panel of table 6), we also run this specification including country-time fixed effects as well as a saturated model including country-time, bank-time and bank-country fixed effects. Whereas most of the significant results carry over to the set-up with country-time fixed effects, only the respective interactions of interbank exposure limits with the illiquid asset ratio and net intra-group funding remain significant in the case of the highly saturated model.

3.2 Exploration of loan growth to the non-financial and financial sectors

In this section, we explore the channels of the adjustments demonstrated in table 5. In particular, we want to test whether results differ when considering different counterparties: lending to the non-financial sector will automatically exclude intra-group flows whereas lending to the financial sector is presumably driven to a large extent by intra-group flows, notably to branches: as described in section 2.3, much of interbank lending is done with regards to branches and less so to subsidiaries abroad (see table 3).

The results for specification 1 are displayed in table 7 panel (a) (non-financial sector) and panel (b) (financial sector).¹⁸ The aggregate results in table 5 seem to be driven mainly by lending to the non-financial sector: the sum of α_1 , α_2 and α_3 is statistically significant and positive for both types of reserve requirements as well as negative for interbank exposure limits. However, we also note the significant and positive cumulative effect of foreign currency reserve requirements for lending to the financial sector. In this case, the economic magnitudes are even double the size of the one for lending to the non-financial sector (0.36 vs. 0.18).

We thus do not find convincing evidence that French banks increase their lending growth to branches abroad because these are not regulated by the supervisory authority in the host country (the destination country). Instead of these branches substituting for the

¹⁷We follow the BIS methodology and calculate stocks in original currency by using average-of-period exchange rates and then calculate exchange rate adjusted flows using end-of-period exchange rates. These flows are then used to construct exchange rate adjusted stocks.

¹⁸We note that the number of observations drops considerably when restricting cross-border loans to financial counterparties.

decrease in lending growth by the locally regulated banks, French banks rather lend directly cross-border (to the non-financial sector), thus potentially substituting for a presumed reduction in lending by locally-regulated banks. Interestingly, we also note the high significance of the financial cycle in the destination country for lending growth to the financial sector whereas it is the business cycle that shows a high significance for lending growth to the non-financial sector.

3.3 Exploration of external adjustment in response to French regulation

As pointed out in the introduction, the main regulatory instruments used during the time period in question were capital requirements and concentration limits on large exposures. These regulatory changes motivate the choice of instruments for the analysis of outward transmission of French regulation. We also include reserve requirements for local currency deposits, but keep in mind that this is primarily a monetary policy tool in the euro area. In particular, we estimate the following specification to measure the adjustment of external lending growth to regulatory changes in France:

Specification 3: Outward transmission of French policy (see table 8).

$$\begin{aligned} \Delta Y_{b,j,t} = & \alpha_0 + (\alpha_1 DestP_{j,t} + \alpha_2 DestP_{j,t-1} + \alpha_3 DestP_{j,t-2}) + \alpha_4 X_{b,t-1} + \alpha_5 Z_{j,t} \\ & + (\beta_1 HomeP_t X_{b,t-1} + \beta_2 HomeP_{t-1} X_{b,t-1} + \beta_3 HomeP_{t-2} X_{b,t-1}) \\ & + f_j + f_b + f_t + \varepsilon_{b,j,t} \end{aligned}$$

where all variables are defined as above and $HomeP_{j,t}$ denotes changes in French regulation. Table 8 shows the impact of French regulatory changes on the growth of cross-border credit by French banks. As time fixed effects are set in the regressions, we measure only the differential impact of regulatory changes through banks' balance sheet characteristics. With regards to the aggregate prudential index (column 1), French banks with a high tier1 ratio are the ones that are more constrained in their ability to maintain cross-border lending growth. Most likely, this effect is driven by the variation in French regulation on capital requirements (column 2).

Overall, we find that the adjustment of cross-border lending growth to French regulation due to balance sheet characteristics is economically small: In case of a regulatory tightening, a bank with a one-standard-deviation higher capital ratio decreases its growth of cross-border loans by 0.34% ($=0.052 \times 6.52\%$). The same goes for the effect on intragroup borrowing: a bank that is characterized by a one standard deviation higher reliance on intra-group funding (7.87%), will decrease cross-border lending growth by 0.07%. A high core deposit ratio is associated with a better ability to extend loans abroad in response to a tightening

of capital requirements in France, but once again economic magnitudes are small: a one standard deviation higher dependence on core deposit funding (26.97%) increases lending growth by 0.22%. We note that the economic magnitudes for the significant variables in column 2 of table 8 are nevertheless higher than in the case of destination-country capital requirements (column 2 of table 6). This can be related to the fact that French capital regulation specifically targets French banks' balance sheets and these constraints thus have a larger impact on the outward adjustment of foreign lending growth than in the case of destination country policy which is not directed at French banks.

4 Concluding Remarks

In this paper, we investigate the outward adjustment of French cross-order lending growth to changes in regulatory policies in destination countries as well as in reaction to French domestic policy changes. We first note that we cannot rule out that the scarcity of regulatory changes, both in France and in countries to which French banks are exposed, might drive some of the results. This problem is further exacerbated by the fact that most regulatory changes were implemented during times of financial turmoil.

This caveat notwithstanding, we find that French banks sometimes expand their cross-border loans in response to a regulatory tightening abroad, thus suggesting that international banking might be contributing to regulatory leakages. This is especially the case for the tightening of reserve requirements. For the case of capital requirements and interbank exposure limits, banks are only able to increase cross-border lending growth if their balance sheet characteristics allow them to do so. Differentiating between lending to the financial and non-financial sector shows that the overall results are driven by lending to the latter. Combining these results with the stylized facts on French banks' cross-border lending, we thus do not find evidence that French banks use their branch network abroad to substitute for the presumed contraction in lending by locally regulated banks; they rather do so directly using their cross-border operations.

The findings also imply that balance sheet characteristics such as the tier1 capital ratio, dependence on intragroup funding or the core deposit ratio matter for the transmission of French domestic regulation to foreign lending growth. This is coherent given the fact that French domestic regulation specifically targets changes in the balance sheet structure of French banks whereas French banks that are not subject to foreign regulation can adjust their cross-border lending growth independently of their balance sheet constraints.

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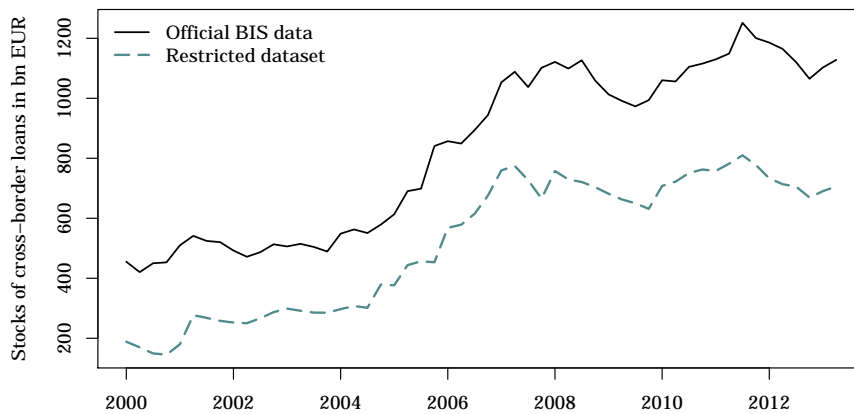
Data appendix

Construction of Balance Sheet Variables

Variable	Description
Log Total Assets	$\log(\text{Total assets, deflated by GDP deflator})$
Tier-1-Capital Ratio	$\text{Capital without subordinated debt} / \text{Total assets}$
Illiquid asset ratio	$\text{Total assets} - (\text{Cash} + \text{central bank accounts} + \text{assets from repo transactions} + \text{other liquid financial securities}) / \text{Total assets}$
International Activity	$\text{Assets vis-à-vis non-residents} / \text{Total assets}$
Net Intragroup Funding	$(\text{Borrowing from branches abroad} - \text{Lending to branches abroad}) / \text{Total assets}$
Core Deposit Ratio	$\text{Deposits (without term deposits, nor special savings accounts like "Livret A")} / \text{Total assets}$

Figures

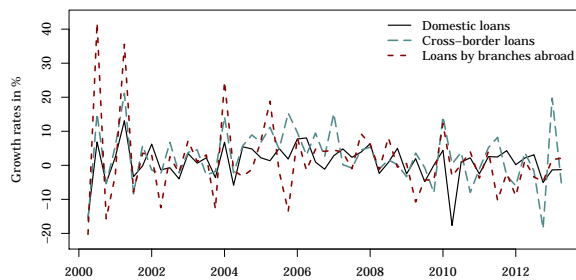
Figure 1: Sum of cross-border loans



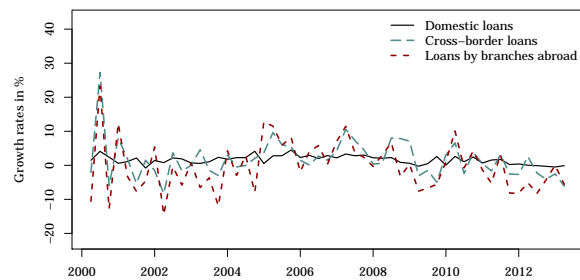
Notes: The figure depicts the sum of outstanding amounts of cross-border loans by banks resident in France over 2000Q1–2013Q2. The straight line represents the overall sum whereas the dashed line represents the sum computed from the banks that are retained in the sample.

Figure 2: Growth rates of domestic and foreign loans

(a) Loans to all sectors

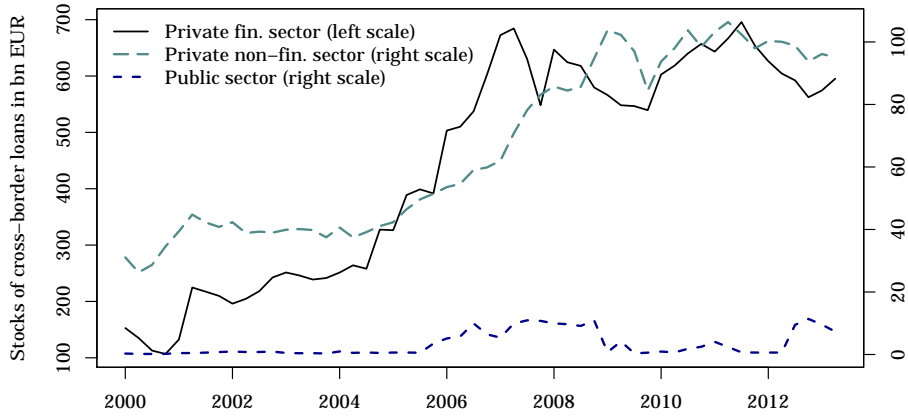


(b) Loans to non-financial sector



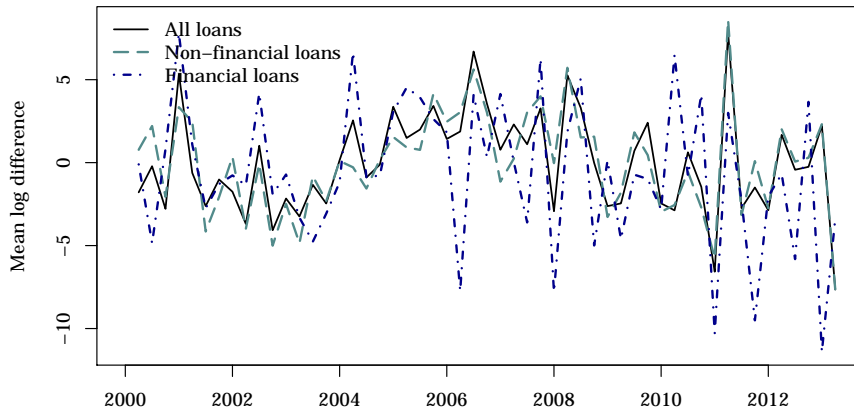
Notes: The figure depicts the growth rate of the sum of outstanding amounts of loans for a sub-sample of banks (those present over the entire sample 2000Q1–2013Q2). Domestic loans denote loans to French residents whereas cross-border loans are extended to non-residents. Loans by branches abroad are extended by the branches of the same sub-sample of banks.

Figure 3: Sum of cross-border loans, by counterparty



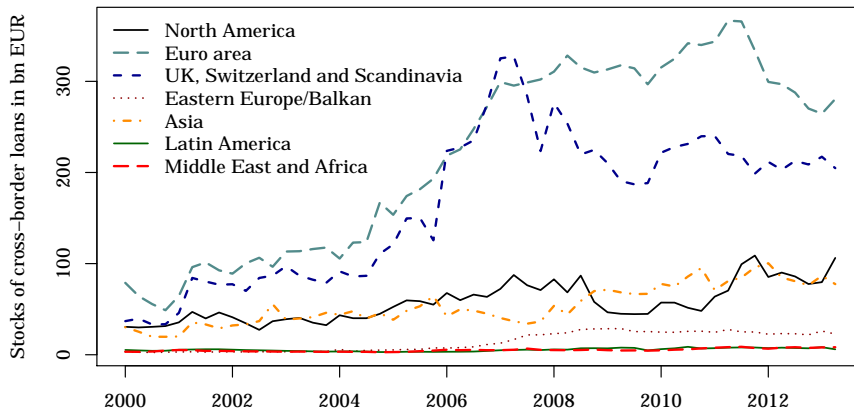
Notes: The figure depicts the sum of outstanding amounts of cross-border loans by the banks in the sample over the period 2000Q1–2013Q2. The counterparties denote the sectors that receive the loans.

Figure 4: Log difference of cross-border loans (means across banks)



Notes: The figure depicts the mean of the dependent variables (in percentages) across the banks in the sample over the period 2000Q1–2013Q2.

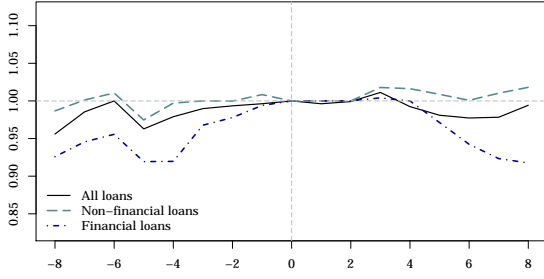
Figure 5: Sum of cross-border loans, different regions



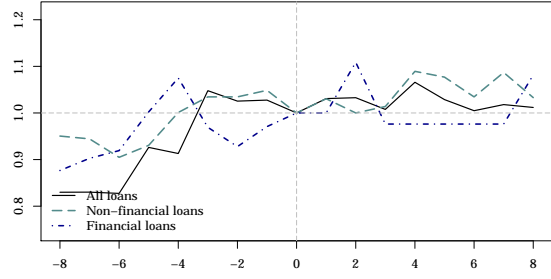
Notes: The figure depicts the sum of outstanding amounts of cross-border loans by the banks in the sample for different regions of residence of the counterparty.

Figure 6: Median time series behavior around regulatory changes (tightening)

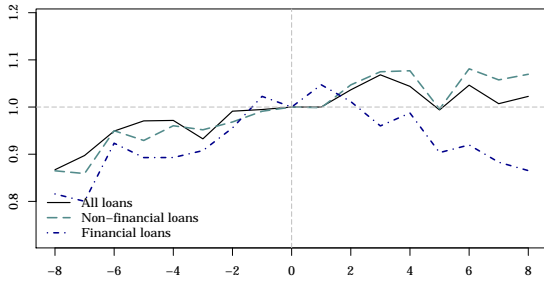
(a) Prudential Index



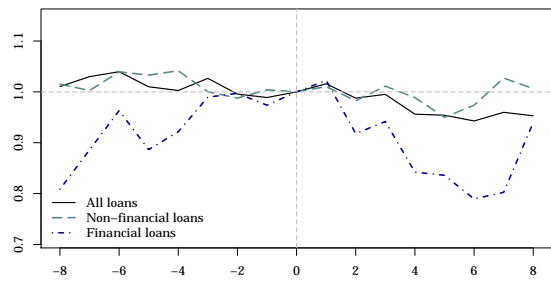
(b) Capital Requirements



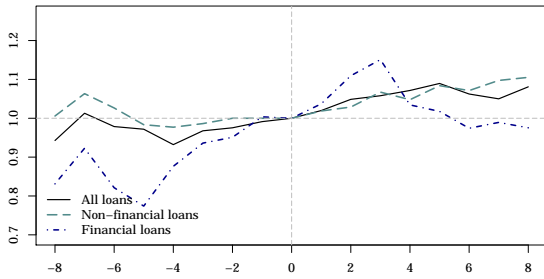
(c) Sector-Specific Capital Buffer



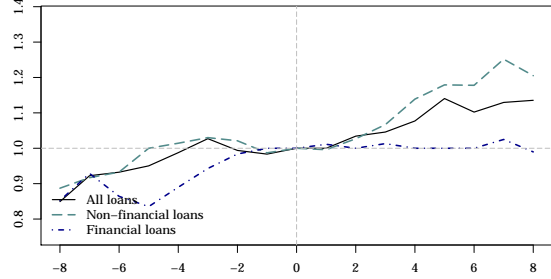
(d) Loan To Value Ratio



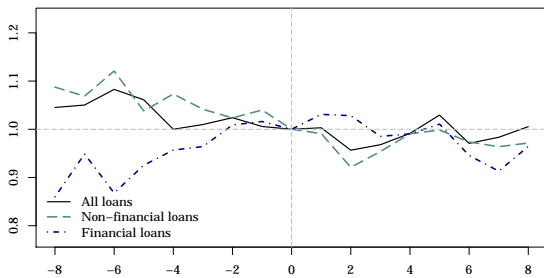
(e) Reserve Requirements Foreign



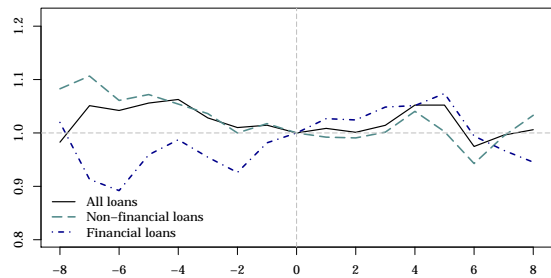
(f) Reserve Requirements Local



(g) Interbank Exposure Limits



(h) Concentration Ratios



Notes: The figure depicts the median of the time series behaviour around a regulatory tightening event which happens at 0. Before taking the median, the series have been normalized to one at the time of the regulatory tightening.

Tables

Table 1: Summary statistics

Variable	Mean	Median	SD
<i>Dependent Variables</i>			
Δ Cross-border loans	0.16	-0.19	30.69
Δ Cross-border non-financial loans	0.19	-0.44	27.32
Δ Cross-border financial loans	-0.66	0.00	36.92
<i>Independent Variables</i>			
Log Total Assets	16.97	16.79	1.76
Tier1 Ratio	6.02	5.10	6.52
Illiquid Assets Ratio	90.14	98.81	16.70
International Activity	23.25	11.48	23.32
Net Intragroup Funding	-0.75	0.00	7.87
Deposit Ratio	32.96	30.09	26.97

Notes: This table provides summary statistics for bank balance sheet and lending data. Data are observed quarterly from 2000Q1–2013Q2. Banking data are reported at the locational level, i.e. the level of the individual bank. Only banks resident in France and of French nationality are included in the sample. The Net Intragroup Funding variable measures the difference of borrowing minus lending from branches abroad and is scaled by total assets. All are expressed in percentages.

Table 2: Sum of foreign lending of six major French banking groups (consolidated data), mean over 2006Q4–2013Q2, in bn EUR

Variable	Mean	Min	Max
Foreign lending	1356.74	937.41	1535.05
Cross-border lending	607.98	515.26	673.17
of which: lending to financial sector	276.54	150.94	419.16
of which: lending to non-financial sector	286.24	149.72	370.41
Lending by affiliates abroad	748.76	422.15	956.60
of which: lending to financial sector	121.36	34.98	201.36
of which: lending to non-financial sector	543.76	271.19	733.78

Notes: The table lists the sum of outstanding amounts of different types of loans averaged over the period 2006Q4–2013Q2. Data are reported at the consolidated level of six major banking groups and thus exclude intra-group flows. Foreign lending is the sum of cross-border lending as well as local lending by affiliates abroad. The financial and non-financial sector both exclude public entities.

Table 3: Sum of cross-border interbank positions, mean over 2010Q1–2010Q4

Variable	Billions EUR
Interbank loans to subsidiaries	91.17
Interbank loans to branches	236.94
Interbank loans to financial sector outside of group	268.03
Interbank borrowing from subsidiaries	78.18
Interbank borrowing from branches	319.06
Interbank borrowing from financial sector outside of group	339.83

Notes: The table lists the sum of outstanding amounts of cross-border interbank lending and borrowing averaged over the period 2010Q1–2010Q4. Data are reported at the locational level.

Table 4: Summary statistics on changes in macroprudential instruments

Instrument	Policy Changes in Destination Country				Proportion Base - MPP Nonzero
	# of Country-Time Changes	# of Country-Time Changes (Tightening)	# of Country-Time Changes (Loosening)	# of Bank-Country-Time Changes	
Prudential Index	4110	2618	1492	27414	0.150
Capital Requirements	491	491	0	27414	0.018
Sector-Specific Capital Buffers	608	422	186	27414	0.022
Loan To Value Ratio	864	582	282	27414	0.032
Reserve Requirement Foreign	1138	637	501	27414	0.042
Reserve Requirement Local	2076	952	1124	27414	0.076
Interbank Exposure Limits	212	212	0	27414	0.008
Concentration Ratios	276	246	30	27414	0.010

Notes: This table shows summary statistics on changes in macroprudential instruments for banks located in France over the period 2000Q1–2013Q2. Data on the eight instruments come from the “Macroprudential Instruments Database” by Cerutti et al. (2015) and are on the quarterly level. The number of changes in macroprudential instruments is reported on several dimensions, i.e. on the country-time level and on the bank-time level. The last column of the table shows the share of prudential changes to total observations (i.e. the share of nonzero observations).

Table 5: Outward transmission of destination country policy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Prudential Index C	Capital Requirements	Sector-Specific Capital Buffer	Loan To Value Ratio	Reserve Requirement Foreign	Reserve Requirement Local	Interbank Exposure Limits	Concentration Ratios
Destination country regulation DestP_t	0.006 [0.005]	0.007 [0.016]	0.010 [0.015]	0.011 [0.012]	0.006 [0.005]	0.009* [0.005]	-0.015 [0.024]	0.021 [0.017]
Destination country regulation DestP_{t-1}	0.002 [0.005]	-0.034** [0.013]	-0.006 [0.008]	0.009 [0.016]	0.010 [0.007]	-0.003 [0.004]	-0.031* [0.016]	0.022 [0.014]
Destination country regulation DestP_{t-2}	-0.001 [0.005]	-0.020 [0.019]	0.008 [0.010]	-0.027* [0.014]	0.008* [0.004]	0.011** [0.005]	-0.025 [0.019]	-0.002 [0.020]
Log Total Assets $_{t-1}$	-0.009 [0.012]	-0.009 [0.012]	-0.009 [0.013]	-0.009 [0.012]	-0.009 [0.012]	-0.010 [0.012]	-0.010 [0.013]	-0.009 [0.013]
Tier1 Ratio $_{t-1}$	-0.002** [0.001]	-0.002** [0.001]	-0.002** [0.001]	-0.002** [0.001]	-0.002** [0.001]	-0.002** [0.001]	-0.002** [0.001]	-0.002** [0.001]
Illiquid Assets Ratio $_{t-1}$	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]
International Activity $_{t-1}$	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]
Net Intragroup Funding $_{t-1}$	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]
Core Deposits Ratio $_{t-1}$	-0.001 [0.000]	-0.001 [0.000]	-0.001 [0.000]	-0.001 [0.000]	-0.001 [0.000]	-0.001 [0.000]	-0.001 [0.000]	-0.001 [0.000]
BIS financial cycle (Destination country)	0.046*** [0.016]	0.047*** [0.016]	0.046*** [0.017]	0.047*** [0.016]	0.046*** [0.016]	0.046*** [0.016]	0.046*** [0.016]	0.048*** [0.016]
BIS business cycle (Destination country)	0.552*** [0.112]	0.561*** [0.113]	0.557*** [0.113]	0.558*** [0.111]	0.553*** [0.114]	0.566*** [0.114]	0.557*** [0.112]	0.557*** [0.113]
Observations	27 414	27 414	27 414	27 414	27 414	27 414	27 414	27 414
R-squared	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Adjusted R-squared	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Number of destination countries	53	53	53	53	53	53	53	53
Number of banks	42	42	42	42	42	42	42	42
Sum of $\alpha_1 + \alpha_2 + \alpha_3$	0.007	-0.047	0.012	-0.007	0.023***	0.017**	-0.071***	0.041
p(F-test)	[0.348]	[0.144]	[0.560]	[0.682]	[0.003]	[0.030]	[0.010]	[0.232]

Notes: This table reports the effects of changes in destination country regulation and bank characteristics on log changes in cross-border loans by destination country. Data are collected at the locational level. The data are quarterly from 2000Q1 to 2013Q2. DestP refers to the changes in regulation in the destination country of the loan. For DestP and its interaction effects, the reported coefficient is the sum of the contemporaneous term and two lags, with the corresponding p-values for significance in brackets. For more details on the variables see the table in the appendix. Each column gives the result for the regulatory measure specified in the column headline. All specifications include bank, country and time fixed effects. Standard errors (in brackets) are clustered at the country level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 6: Outward transmission of destination country policy: the role of balance sheet characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Prudential Index C	Capital Requirements	Sector-Specific Capital Buffer	Loan To Value Ratio	Reserve Requirement Foreign	Reserve Requirement Local	Interbank Exposure Limits	Concentration Ratios
Destination country regulation DestP_t	0.049 [0.083]	0.648*** [0.231]	0.124 [0.149]	0.178 [0.255]	0.073 [0.057]	-0.076 [0.103]	0.115 [0.234]	0.140 [0.173]
Destination country regulation DestP_{t-1}	0.002 [0.062]	0.234 [0.206]	-0.036 [0.140]	-0.197 [0.214]	-0.011 [0.086]	-0.033 [0.065]	0.174 [0.249]	-0.094 [0.332]
Destination country regulation DestP_{t-2}	-0.011 [0.076]	0.060 [0.282]	-0.005 [0.202]	-0.112 [0.261]	-0.019 [0.063]	0.067 [0.089]	0.330 [0.213]	-0.269 [0.272]
Log Total Assets $_{t-1}$	-0.010 [0.013]	-0.011 [0.013]	-0.009 [0.013]	-0.009 [0.013]	-0.009 [0.013]	-0.010 [0.012]	-0.010 [0.013]	-0.010 [0.013]
Tier1 Ratio $_{t-1}$	-0.002** [0.001]	-0.002** [0.001]	-0.002** [0.001]	-0.002** [0.001]	-0.002** [0.001]	-0.002** [0.001]	-0.002** [0.001]	-0.002** [0.001]
Illiquid Assets Ratio $_{t-1}$	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]
International Activity $_{t-1}$	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]
Net Intragroup Funding $_{t-1}$	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]
Core Deposits Ratio $_{t-1}$	-0.001 [0.000]	-0.001* [0.000]	-0.001 [0.000]	-0.001 [0.000]	-0.001 [0.000]	-0.001 [0.000]	-0.001 [0.000]	-0.001 [0.000]
BIS financial cycle (Destination country)	0.047*** [0.016]	0.048*** [0.016]	0.046*** [0.017]	0.046*** [0.016]	0.046*** [0.016]	0.046*** [0.017]	0.046*** [0.016]	0.048*** [0.016]
BIS business cycle (Destination country)	0.553*** [0.113]	0.561*** [0.113]	0.558*** [0.113]	0.555*** [0.111]	0.550*** [0.114]	0.566*** [0.114]	0.557*** [0.112]	0.563*** [0.112]
Log Total Assets \times DestP	-0.002 [0.638]	-0.035* [0.063]	-0.006 [0.487]	0.001 [0.892]	-0.002 [0.588]	0.002 [0.670]	0.005 [0.761]	0.017 [0.389]
Tier1 Ratio \times DestP	0.000 [0.817]	-0.014 [0.442]	0.004 [0.205]	0.002 [0.703]	0.002 [0.304]	0.000 [0.855]	0.010 [0.192]	0.000 [0.947]
Illiquid Assets Ratio \times DestP	0.000 [0.957]	-0.004* [0.087]	0.000 [0.993]	0.002 [0.422]	0.000 [0.922]	0.000 [0.788]	-0.009*** [0.000]	0.000 [0.905]
International Activity \times DestP	0.000 [0.658]	0.002 [0.381]	0.000 [0.963]	0.000 [0.716]	0.000 [0.854]	0.000 [0.617]	-0.003** [0.033]	-0.001 [0.576]
Net Intragroup Funding \times DestP	0.001 [0.362]	0.004 [0.402]	0.000 [0.975]	0.001 [0.681]	-0.001 [0.765]	0.002 [0.190]	-0.011*** [0.000]	0.004 [0.463]
Core Deposits Ratio \times DestP	0.000 [0.932]	0.002 [0.381]	0.000 [0.843]	-0.001 [0.254]	0.000 [0.731]	0.000 [0.977]	0.001 [0.198]	-0.001 [0.619]
Observations	27 414	27 414	27 414	27 414	27 414	27 414	27 414	27 414
R-squared	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Adjusted R-squared	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Number of destination countries	53	53	53	53	53	53	53	53
Number of banks	42	42	42	42	42	42	42	42
Sum of $\alpha_1 + \alpha_2 + \alpha_3$	0.040	0.942**	0.083	-0.131	0.044	-0.041	0.618*	-0.223
p(F-test)	[0.697]	[0.035]	[0.706]	[0.544]	[0.584]	[0.730]	[0.063]	[0.625]

Notes: This table reports the effects of changes in destination country regulation and bank characteristics on log changes in cross-border loans by destination country. Data are collected at the locational level. The data are quarterly from 2000Q1 to 2013Q2. DestP refers to the changes in regulation in the destination country of the loan. For DestP and its interaction effects, the reported coefficient is the sum of the contemporaneous term and two lags, with the corresponding p-values for significance in brackets. For more details on the variables see the table in the appendix. Each column gives the result for the regulatory measure specified in the column headline. All specifications include bank, country and time fixed effects. Standard errors (in brackets) are clustered at the country level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 7: Outward transmission of destination country policy: by counterparty sector

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Prudential Index C	Capital Requirements	Sector-Specific Capital Buffer	Loan To Value Ratio	Reserve Requirement Foreign	Reserve Requirement Local	Interbank Exposure Limits	Concentration Ratios
(a) Non-financial counterparties								
Destination country regulation DestP_t	0.007 [0.005]	-0.010 [0.016]	0.003 [0.010]	0.014 [0.010]	0.002 [0.005]	0.009 [0.006]	-0.021 [0.030]	0.015 [0.022]
Destination country regulation DestP_{t-1}	0.003 [0.005]	-0.022 [0.015]	-0.010 [0.009]	0.007 [0.014]	0.008 [0.007]	0.001 [0.005]	-0.020 [0.013]	-0.019 [0.017]
Destination country regulation DestP_{t-2}	0.001 [0.006]	-0.011 [0.020]	-0.001 [0.006]	-0.023* [0.013]	0.008 [0.005]	0.013*** [0.005]	-0.036 [0.025]	0.000 [0.021]
Observations	27 174	27 174	27 174	27 174	27 174	27 174	27 174	27 174
R-squared	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Adjusted R-squared	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Number of destination countries	53	53	53	53	53	53	53	53
Number of banks	40	40	40	40	40	40	40	40
Sum of $\alpha_1 + \alpha_2 + \alpha_3$	0.011	-0.043	-0.007	-0.002	0.018**	0.024***	-0.077**	-0.004
p(F-test)	[0.136]	[0.226]	[0.633]	[0.908]	[0.035]	[0.007]	[0.014]	[0.925]
(b) Financial counterparties								
Destination country regulation DestP_t	0.006 [0.008]	0.018 [0.027]	0.013 [0.023]	0.002 [0.018]	0.024** [0.011]	0.027*** [0.008]	0.002 [0.032]	-0.003 [0.027]
Destination country regulation DestP_{t-1}	0.000 [0.009]	0.013 [0.028]	0.002 [0.016]	0.019 [0.016]	0.006 [0.008]	-0.014 [0.013]	-0.022 [0.034]	-0.004 [0.030]
Destination country regulation DestP_{t-2}	-0.007 [0.010]	-0.010 [0.026]	-0.011 [0.021]	-0.003 [0.026]	0.006 [0.009]	-0.009 [0.012]	-0.013 [0.034]	0.023 [0.037]
Observations	11 988	11 988	11 988	11 988	11 988	11 988	11 988	11 988
R-squared	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Adjusted R-squared	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Number of destination countries	53	53	53	53	53	53	53	53
Number of banks	40	40	40	40	40	40	40	40
Sum of $\alpha_1 + \alpha_2 + \alpha_3$	-0.001	0.020	0.004	0.018	0.036*	0.005	-0.034	0.016
p(F-test)	[0.971]	[0.700]	[0.919]	[0.597]	[0.084]	[0.830]	[0.519]	[0.754]

Notes: This table reports the effects of changes in destination country regulation and bank characteristics on log changes in cross-border loans by destination country. The regression model corresponds to specification 1, but the coefficients on bank characteristics and the business and financial cycle are not reported. Data are collected at the locational level. The data are quarterly from 2000Q1 to 2013Q2. DestP refers to the changes in regulation in the destination country of the loan. For DestP and its interaction effects, the reported coefficient is the sum of the contemporaneous term and two lags, with the corresponding p-values for significance in brackets. For more details on the variables see the table in the appendix. Each column gives the result for the regulatory measure specified in the column headline. All specifications include bank, country and time fixed effects. Standard errors (in brackets) are clustered at the country level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 8: Outward transmission of French policy

	(1)	(2)	(3)	(4)
	Prudential Index C	Capital Requirements	Reserve Requirement Local	Concentration Ratios
Destination country regulation DestP_t	0.006 [0.005]	0.007 [0.016]	0.009* [0.005]	0.021 [0.017]
Destination country regulation DestP_{t-1}	0.002 [0.005]	-0.034** [0.013]	-0.003 [0.004]	0.022 [0.015]
Destination country regulation DestP_{t-2}	-0.001 [0.005]	-0.021 [0.018]	0.011** [0.005]	-0.001 [0.020]
Log Total Assets $_{t-1}$	-0.007 [0.013]	-0.009 [0.013]	-0.011 [0.012]	-0.009 [0.012]
Tier1 Ratio $_{t-1}$	-0.002** [0.001]	-0.002** [0.001]	-0.002* [0.001]	-0.002** [0.001]
Illiquid Assets Ratio $_{t-1}$	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]
International Activity $_{t-1}$	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]
Net Intragroup Funding $_{t-1}$	0.003*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]
Core Deposits Ratio $_{t-1}$	-0.001 [0.000]	-0.001 [0.000]	-0.001* [0.000]	-0.001 [0.000]
BIS financial cycle (Destination country)	0.046*** [0.016]	0.047*** [0.016]	0.046*** [0.017]	0.047*** [0.016]
BIS business cycle (Destination country)	0.552*** [0.112]	0.562*** [0.112]	0.566*** [0.114]	0.555*** [0.112]
Log Total Assets \times HomeP	0.004 [0.597]	-0.013 [0.457]	0.022 [0.201]	0.004 [0.612]
Tier1 Ratio \times HomeP	-0.006* [0.055]	-0.052** [0.013]	0.014 [0.353]	-0.004 [0.239]
Illiquid Assets Ratio \times HomeP	0.000 [0.982]	-0.004 [0.128]	0.003 [0.210]	0.000 [0.858]
International Activity \times HomeP	-0.001 [0.119]	-0.002 [0.442]	0.000 [0.871]	-0.001 [0.176]
Net Intragroup Funding \times HomeP	-0.001 [0.699]	-0.009* [0.069]	0.001 [0.841]	0.001 [0.770]
Core Deposits Ratio \times HomeP	0.001 [0.297]	0.008*** [0.000]	-0.003* [0.084]	0.000 [0.655]
Observations	27 414	27 414	27 414	27 414
R-squared	0.02	0.02	0.02	0.02
Adjusted R-squared	0.02	0.02	0.02	0.02
Number of destination countries	53	53	53	53
Number of banks	42	42	42	42
Sum of $\alpha_1 + \alpha_2 + \alpha_3$	0.007	-0.048	0.017**	0.042
p(F-test)	[0.337]	[0.127]	[0.028]	[0.233]

Notes: This table reports the effects of changes in destination country regulation and bank characteristics on log changes in cross-border loans by destination country. Data are collected at the locational level. The data are quarterly from 2000Q1 to 2013Q2. DestP refers to the changes in regulation in the destination country of the loan. For DestP and its interaction effects, the reported coefficient is the sum of the contemporaneous term and two lags, with the corresponding p-values for significance in brackets. For more details on the variables see the table in the appendix. Each column gives the result for the regulatory measure specified in the column headline. All specifications include bank, country and time fixed effects. Standard errors (in brackets) are clustered at the country level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

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