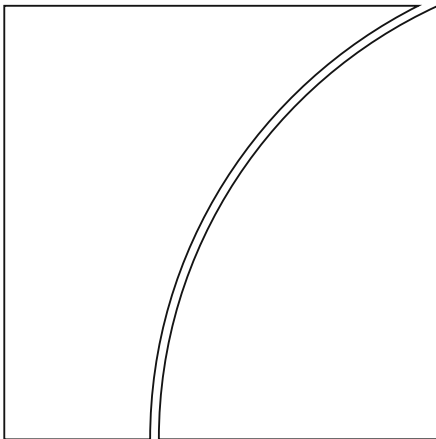




BANK FOR INTERNATIONAL SETTLEMENTS



BIS Working Papers No 801

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Monetary and Economic Department

July 2019

Paper produced as part of the BIS Consultative Council for the Americas (CCA) research project on “Changes in banks' business models and their impact on bank lending: an empirical analysis using credit registry data” implemented by a Working Group of the CCA Consultative Group of Directors of Financial Stability (CGDFS).

JEL classification: E43, E52, F23, F34, and F44.

Keywords: Bank-lending Channel, Internationalization of Banks, Banks' business models, Branches and Subsidiaries

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ISSN 1020-0959 (print)
ISSN 1682-7678 (online)

THE INTERNATIONALIZATION OF DOMESTIC BANKS AND THE CREDIT CHANNEL: AN EMPIRICAL ASSESSMENT¹

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This draft's version: July 11, 2019

Abstract

This paper analyses the extent to which the strength of the credit channel is affected by the expansion of domestic banks abroad, widely considered the most important structural change of Colombia banking system in recent years. Using loan-level quarterly data for the period between 2007 and 2016, we estimate panel specifications that relate changes in the loan amount and the loan interest rates to variations on the domestic policy rate, the number of foreign subordinates of the lender bank and the interaction between the two. The results suggest that the response of international banks (i.e., those that have significantly expanded abroad) in the face of changes to the domestic policy rate is not statistically different to that of purely local banks, while the cost of credit is found to be slightly higher. Even though in principle this could be interpreted to the effect that internationalization has had no significant effect on the potency of the credit channel, the results tend towards a more subtle conclusion. Specifically, in the face of increases in the domestic policy rate, international banks tend to switch more strongly from domestic to foreign sources of funding. Purely local banks are able thus to capture relatively more domestic funding under these conditions, which allows their credit activity to respond to monetary policy on a similar scale to that of international banks. This result supports the idea that banks switch funding activities between their operating jurisdictions depending on monetary policy conditions, and that the internationalization of domestic banks plays a cushioning role for the economy at times when the monetary policy stance changes significantly.

Keywords: Bank-lending Channel, Internationalization of Banks, Banks' business models, Branches and Subsidiaries.

JEL Codes: E43, E52, F23, F34, and F44.

¹ This paper was originally written as part of the project on "Changes in banks' business models and their impact on the bank-lending channel" of the research-working group of the Consultative Group of Directors of Financial Stability set up by the Bank for International Settlements (BIS) Americas Office. The authors gratefully acknowledge the support and guidance of Carlos Cantu and Leonardo Gambacorta in the preparation of this paper, as well as the invaluable comments of Johanna Francis and excellent research assistance of Jorge Caputo, María Camila Gutiérrez, Santiago Gomez e Isabella Contreras. The opinions contained herein are the sole responsibility of the authors and do not necessarily represent the views of the Central Bank of Colombia or its Board of Directors.

Paper produced as part of the BIS Consultative Council for the Americas (CCA) research project on "[Changes in banks' business models and their impact on bank lending: an empirical analysis using credit registry data](#)" implemented by a Working Group of the CCA Consultative Group of Directors of Financial Stability (CGDFS).

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1. Introduction

The credit channel of monetary policy operates whenever an increase in the policy rate (or more generally, a monetary policy tightening) induces an equilibrium towards lower credit for the economy at large. As can be gleaned from this broad definition (see Bernanke and Gertler, 1995), the extent to which the credit channel operates depends on several features of the economy: e.g., the business model of banks (i.e., preference of branches over subsidiaries or vice-versa, structure of the balance sheet), the availability of alternative sources of funding for firms and households, or the availability of alternative sources of bank funding vis-à-vis domestic core sources (e.g., foreign funds). A crucial empirical question for monetary policymakers, therefore, is to quantify the degree to which the credit channel has changed in response to changes in those critical features of the economy.

This paper focuses on the case of Colombia to provide a quantitative assessment of the systematic response of the credit channel to changes in the business models of domestic banks. Specifically, the paper examines whether or not the strength of the credit channel has changed because of the expansion of Colombian banks abroad, mainly in Central American jurisdictions, and primarily the largest banks of the country. This internationalization of Colombian banks is widely considered to be the most important structural change in the Colombian banking system in recent years, as it opened up new investment opportunities and, crucially, alternative sources of bank funding. In this sense, the research question posited here is whether the potency of the credit channel diminishes when some banks find access to funding other than their core domestic sources.

To answer this question, we employ quarterly, loan-level data from the Colombian Credit Registry for the period between 2007 and 2016. Our methodology follows that of Khwaja and Mian (2008). We focus on firms' borrowing from multiple banks, where the banks differ in terms of their characteristics (e.g., level of internationalization), and include borrower-time fixed effects to control for firm-specific changes in credit demand. Thus, the within-firm differences can be attributed to differences in bank characteristics. Our specifications relate changes in the loan amount and the interest rates of corporate loans with (among others) the interaction of changes in the domestic policy rate with changes in the number of Colombian subordinates abroad. A similar specification for the change in bank-level (and conglomerate-level) funding allows the mechanism for the change in the potency of the credit channel to be disentangled.

The primary results of the paper can be summarized as follows. There is no statistical evidence for a differential response in the amount of loans extended by internationalized banks (relative to purely local banks) in the face of changes to the domestic policy rate. The interest rate,

however, seems to be slightly higher for loans granted by banks that belong to a more internationalized conglomerates during periods of monetary policy tightening. Even though in principle this could be interpreted as internationalization not having an essential effect on the potency of the credit channel, the results point to a more subtle interpretation. Specifically, in the face of increases in the domestic policy rate, international banks tend to switch more strongly (than purely local banks) from domestic to foreign sources of funding. Purely local banks can capture relatively more domestic funding under these conditions, which allows their credit activity to respond on a scale similar to that of international banks. This result supports the idea that banks switch funding activities between their operating jurisdictions depending on monetary conditions. As a result, the internationalization of domestic banks plays a cushioning role in the economy at large with respect to changes in the monetary policy stance.

Further, our results suggest that the response of internationalized banks to changes in monetary policy depends on individual bank characteristics. In particular, larger international banks with larger loan-loss provisions increase the loan supply, and at the same time increase the cost of credit during contractionary periods of monetary policy. On the other hand, international banks with higher capital ratios, higher liquidity ratios or a higher share of short-term funding reduce the loan supply and at the same time lower the cost of credit during these periods. This suggests that some bank characteristics determine the specific internationalization business model.

This paper unfolds as follows. Section 1 presents a brief primer on the structure of the Colombian financial system and the recent internationalization of Colombian banks. Section 2 reviews the empirical literature on the relationship between banks' business models, monetary policy and lending activity. Section 3 provides an overview of the Colombian credit registry, which will be used throughout the paper, and Section 4 outlines the econometric specifications that are utilised to uncover the changing characteristics of the bank-lending channel in Colombia. Sections 5 and 6 discuss the empirical results of the paper and some reflections as concluding comments.

2. A Primer on the Colombian Financial System³

The Colombian financial system includes credit institutions, financial services companies (pension funds, mutual funds, brokers and other related institutions) and other financial firms

³ This section draws extensively on and serves as both an update and extension to Uribe's (2013) description of the Colombian financial system.

(insurance companies, state-owned financial firms, among others.). This overview will focus on credit institutions, as they are the primary agents of study in this paper.

The primary role of Colombian credit institutions is to transfer liquidity from surplus to deficit agents via deposit-taking activities, that ultimately fund loans. After the late-90's financial crisis, and because of several mergers and winding-up of many credit institutions, the total number of credit institutions has dropped considerably over time (from 105 in 1998 to 48 in March 2018). In addition, these institutions' assets to GDP ratio has increased from 56% to 62% (**Table 1**), which reflects a trend toward concentration in the Colombian financial system.

Table 1
Colombian credit institutions' statistics

Financial intermediary	Number of agents			Assets/GDP		
	Dec-98	Dec-08	June-18	Dec-98	Dec-08	June-18
Banks	38	18	24	44.50%	38.80%	59.10%
Financial corporations	16	3	5	6.40%	0.80%	1.37%
Finance companies (general)	27	17	12	2.00%	1.90%	1.03%
Finance companies (leasing only)	23	10	2	1.60%	2.90%	0.17%
Financial cooperatives	1	8	5	2.00%	0.60%	0.34%
Total	105	56	48	56.50%	45.00%	62.02%

Source: Superintendencia Financiera de Colombia (SFC), authors' calculations.

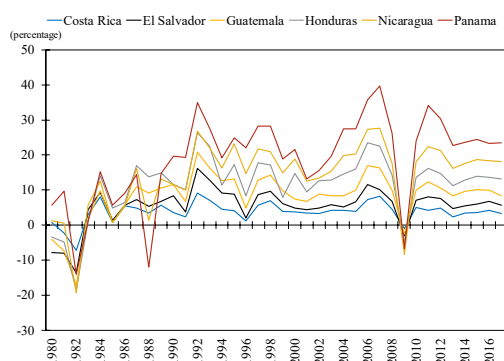
Since 1990, banks have evolved from a specialized banking scheme to a universal banking model, in which conglomerates are the primary actors. Specifically, financial regulation in Colombia has geared for banks to conduct financial services either via the bank-subsidary or via the bank-holding company models. As such, regulation has aimed at enhancing the supervision of credit institutions, controlling agency conflicts, and contagion risk. In 2017, Congress approved a bill that enhances the regulatory and supervisory powers over financial conglomerates for the Superintendencia Financiera de Colombia (Colombian financial regulatory agency for banks, insurance companies, and exchanges -- SFC). As financial conglomerates have become more complex, financial authorities intended with this bill to strengthen the prudential and risk management standards of these agents.

The latter is relevant given that, since 2000, the Colombian largest banks have expanded their cross-border activities considerably, quickly becoming important financial players in the region and becoming a challenge to financial authorities as their operations have become more complex and challenging to trace. As of April 2017, per information provided by the SFC, the financial conglomerates' subsidiaries and branches assets abroad amounted to USD\$ 85 billion. In Central America, the Colombian financial conglomerates owned approximately 23% of the

region's banking assets, leaving Colombian banks vulnerable to the region's shocks. By country, in El Salvador, these institutions held approximately 53% of the system's assets. For Panama, this figure was 22%. Overall, 12 financial conglomerates operated across 25 jurisdictions with 234 branches and subsidiaries in Central American countries only.

Interestingly, we find that Central America economies that host Colombian financial intermediaries' subsidiaries have exhibited a high degree of homogeneity of their business cycles through time (Figure 1). Since 1980, the time series of the GDP annual growth rates, in percentage, for Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua generally have co-moved sharply. To assess the degree of strength of these co-movements we calculate a correlation matrix of these time series, taking into consideration that all of the time series exhibit level-stationarity, according to the augmented Dickey-Fuller test. Nicaragua and Panama show the lowest correlations (Table 2). Overall, these results were expected, partly, because, as per the Observatory of Economic Complexity data, when excluding the USA, the three largest trading partners of each of the Central American countries cited are their neighbouring countries.

Figure 1: Real GDP in Central America: annual growth



Source: World Bank and International Monetary Fund; authors' calculations.

Table 2: Correlation Matrix for the time series of GDP annual growth rates in Central America

	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua	Panama
Costa Rica	1					
El Salvador	0,7377	1				
Guatemala	0,6344	0,5117	1			
Honduras	0,5273	0,3939	0,5012	1		
Nicaragua	0,0846	0,0667	0,2549	0,0169	1	
Panama	0,0946	0,067	0,2516	0,1719	0,5913	1

Source: authors' calculations.

Given that the expansion of domestic banks abroad radically alters their structure of funding sources/uses, this critical structural change in the business model of Colombian banks may have a substantial effect on their operation, and ultimately an impact on the domestic credit

channel. As per the latest data available, the number of foreign subsidiaries has increased over time for three of the largest Colombian financial conglomerates (**Figure 2**). In addition, in 2006-2016, the number of branches and subsidiaries abroad and foreign assets of financial conglomerates have followed a rising trend (**Figure 3**).

Figure 2
Average annual number of subsidiaries for the largest Colombian financial conglomerates

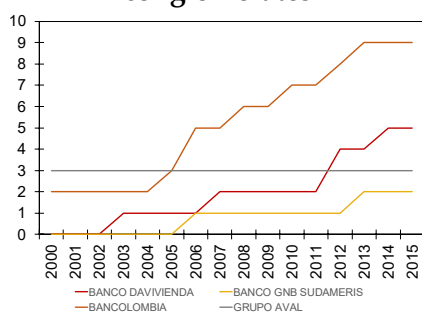
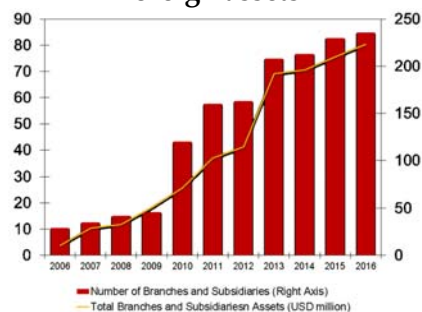


Figure 3
Colombian financial conglomerates' branches and subsidiaries abroad and foreign assets

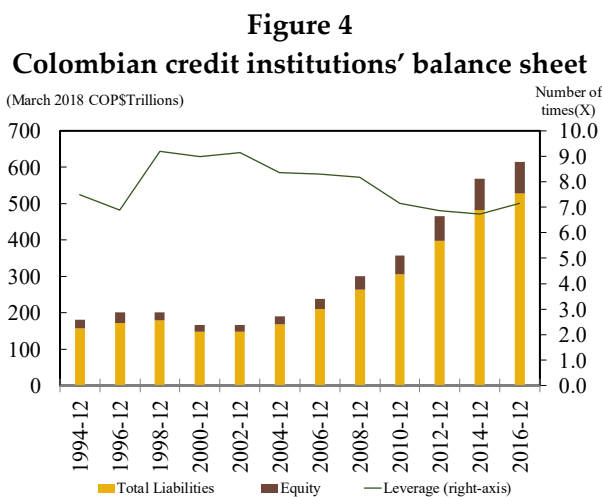


Source: SFC, authors' calculations.

Concerning the foreign bank presence in Colombia, Colombian-banking regulation does not restrict foreign banks to open subsidiaries and branches in the country. As mentioned, the Colombian agency that supervises financial institutions in the country, the Superintendencia Financiera de Colombia, regulates and oversees either a foreign bank's branch or subsidiary, i.e., both are subject to the same rules and procedures that govern domestic banks and financial institutions. For a foreign branch or subsidiary to operate in Colombia, the parent bank is required to constitute capital in Colombian Pesos and to be governed under the Colombian FX rules and regulations. Moreover, only in the case of a branch, given that it is legally not separable from its parent bank, the parent bank is fully responsible for the branch's financial commitments. Although financial law explicitly states that foreign banks are entirely responsible for all obligations and losses incurred of their branches operating in Colombia, that is not the case for foreign bank subsidiaries.

This legal option, among other considerations, has been an advantage for foreign institutions operating in Colombian, given that as of the latest information available, no foreign branch of a bank has ever operated in the country. Furthermore, 32% of the banks currently operating in Colombia are foreign subsidiaries: of 25 legally constituted banks in Colombia, eight have a foreign comptroller.

Regarding the Colombian financial system's performance, since 2000 it has expanded considerably amid a backdrop of increasing financial intermediation of credit institutions and expansion of financial services supply (e.g., working capital financing activities, leasing operations, among others.). Local monetary and financial authorities' regulations have been catalysers in the consolidation of financial conglomerates, the strengthening of capital adequacy in the financial system and increasing savers' confidence in banks and other credit institutions. Overall, this stronger regulatory framework has contributed to assets' growth complemented by higher levels of capital (Figure 4). Moreover, over the last decade, the credit institutions' equity-to-asset ratio has risen from 12% to 13.4%, which implies that assets' growth has sustained an increase in the leverage ratio (asset-to-equity ratio).



Source: SFC, authors' calculations.

In terms of the credit institutions' balance sheet items, loans represent the primary component (on average, a 64% participation). The credit-to-GDP ratio has shown an upward trend after the late-90's financial crisis. As of December 2017, the ratio stood at 46%, driven mainly by commercial (i.e., loans to non-financial corporations) and consumer loans, which historically have been the primary types of bank loans in the country (Figures 5 and 7). Moreover, significant spikes nor a rising trend in the non-performing loan ratio has not accompanied the credit expansion in recent years (Figure 6). This downward trend in the Colombian credit institutions' credit risk can be attributed by stronger macroprudential policies and oversight of the financial system's constituents, which ultimately have led them to tighten lending standards and to put in place the necessary controls to handle the different risks these institutions face. Moreover, since 2000, when Colombia adopted an inflation-targeting scheme, banks' credit expansion, with relatively low levels of credit risk for financial intermediaries, took place in a backdrop of a downward trend for the policy rate, which has also become less volatile (Figure 8).

Figure 5
Financial deepening in Colombia
(credit-to-GDP ratio)

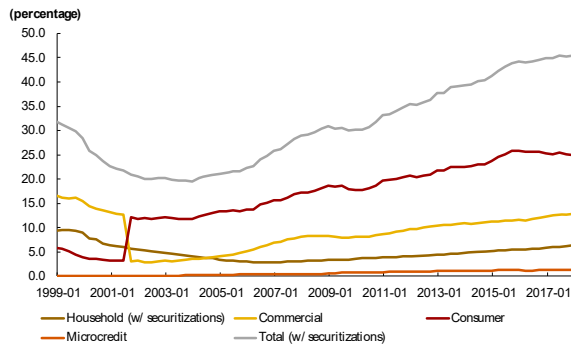


Figure 6
Non-performing loan ratio for Colombian
credit institutions

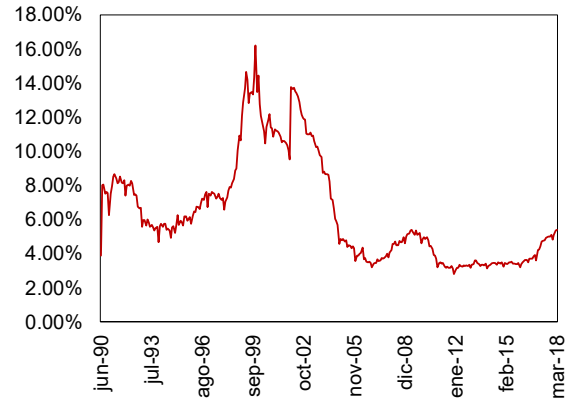


Figure 7
Total Colombian banks' loan portfolio by
economic sector

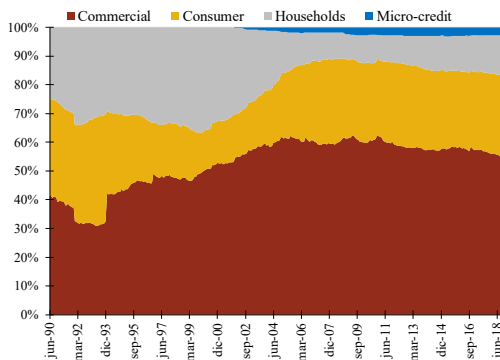
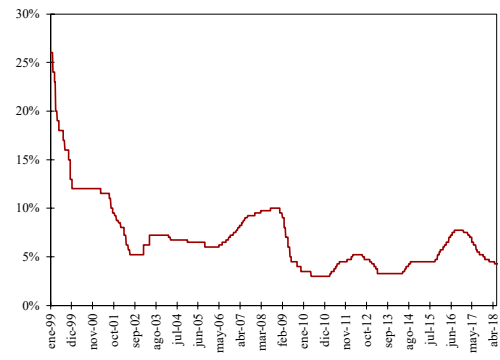


Figure 8
Central Bank of Colombia policy rate



Source: SFC and Central Bank of Colombia; authors' calculations.

3. Literature Review

The interaction between the business model of financial institutions and lending activity has been widely explored in the literature. In this section, we survey and highlight a sample of studies pertinent to our paper. Nier and Zicchino (2008) find for a sample of 600 listed banks operating in 32 different countries for the period 1992-2000 that banks' balance sheet characteristics (e.g., *Return on Equity [ROE]*, *Capital*, *Provisions* and the interaction of lagged capital with provisions) do influence lending activity. Specifically, banks with higher profits and lower loan-loss

provisions increase their credit supply and extend more credit relative to their weaker counterparts. Moreover, when comparing loan growth in a recession vis-à-vis normal times, the authors find that banks' credit growth depends positively on the growth of nominal GDP (a proxy for loan demand) and that banks with higher ROE and lower loan-loss provisions extend more credit. Therefore, reinforcing the idea that healthier intermediaries are prone to increase the supply of loans in good times. Lastly, when the authors attempt to answer if the impact of the bank's weak financial characteristics on the loan supply is sensible to the central bank policy, they find that weak balance sheets usually lead to a stronger reduction in loan supply when monetary policy is tight, compared to the scenario where it is loose⁴. Furthermore, they find that under a scenario of monetary tightening, an increase in capital leads to loan growth relative to tightening and neutral monetary policy stances.

At the same time, the literature has explored the effect of monetary policy on loan supply, mostly assuming that the former is somewhat independent of economic conditions (Ono et al. (2016)). Ioannidou et al. (2015) studied for the Bolivian case between 1999 and 2003 whether monetary policy affects banks' loan risk-taking, expected returns and pricing. Given that for the period cited the Bolivian financial system was almost dollarized, and there was almost absence of restrictions on the capital account, the authors assumed the Fed's federal fund rates was the best proxy for the monetary policy rates in the country⁵. Using monthly credit registry data of loans granted by banks to firms, the authors find that an expansionary cycle in the U.S. makes domestic banks prone to increase their supply loans to riskier borrowers. Furthermore, the authors find that large banks tend to grant loans to risky borrowers, grant riskier loans, and more capitalized banks and healthy balance sheets are more likely inclined to originate loans with higher levels of credit risk than their less healthy counterparts do. The latter stresses the idea that banks' characteristics do matter in the process of originating risky loans. In the same spirit, and with the main objective aimed at disentangling loan supply needs from its demand, Jimenez et al. (2012) find for the Spanish case that higher short-term interest rates or lower economic growth reduce loan supply.

Moreover, they find that the effect of monetary policy and economic conditions is stronger with banks with lower liquidity and capital in their balance sheets. Lastly, that credit crunches area feasible in a scenario where a reduction in capital takes place under a tighter monetary policy stance and stressed economic times. Interestingly, the paper focuses on loan applications, the

⁴ An increase in provisions, when monetary policy is loose, leads to a lower reduction in credit supply relative to the setting when monetary policy is tight.

⁵ At that time, the Bolivian peso was pegged to the U.S. dollar.

conditions for banks accepting these applications, and whether firms that face rejected loan applications from certain creditors can find alternative funds in other banks.

In a further step to Jiménez et al. (2012), Ono et al. (2016) examine the impact of long-term interest rates on banks loan supply via a firm-bank level panel dataset for the Japanese case covering the period 2002-2014. The authors model the change in loans a firm receives from a bank as a function of 1) macroeconomic shocks (changes in long-term interest rates), 2) bank-specific loan supply shocks derived from changes in the value of bond investments due to the sensitivity of changes in interest rates, and 3) firm-specific loan-demand shocks. Firstly, results show that unexpected reductions in long-term interest rates increase the bank's loan supply growth rate. Secondly, banks with larger capital gains on their bank holdings, due to decreases in long-term interest rates that consequently make the value of bond holdings higher, increase their loan supply. Moreover, the authors find that a bank will increase its loan supply to a debtor (non-financial firm) with sound financial conditions (e.g., high capital, liquidity ratios, ROA, sales growth rates). Thirdly, healthier balance sheets in banks lead them to increase their loan-supply to smaller, credit-constrained and risky firms. The paper extends the methodology Jiménez et al. (2012) and Hosono & Miyakawa (2014) employ, namely by using different proxies for bank net worth shocks. While the latter use the interaction term of the proxy for the monetary policy stance (short-term interest rates) and the banks' net worth before changes in the monetary policy, to explain the change in loans outstanding, Ono et al. (2016) employ the capital gains accruing to banks due to their interest rate risk exposure.

Similarly, to Jiménez et al. (2012), Hosono & Miyakawa (2012) examine the impact of business and monetary policy on bank loan supply by using a firm-bank match level dataset for Japanese listed firms in a period spanning three decades. The authors model the change in loans outstanding as a function of firm characteristics, bank characteristics and aggregate-level variables (e.g., the real growth rate of GDP and dummy variables accounting for changes in monetary policy). The authors find for the Japanese case that highly capitalized and liquid banks tend to increase their loan supply relative to their weak counterparts. Secondly, the effects of the degree of capitalization and liquidity in the bank's balance sheet on loan supply are stronger when the economy is growing at lower rates. Thirdly, a tight monetary policy stance has stronger effects on banks' liquidity and their loan supply, compared to periods when monetary policy is expansionary. The study extends the findings of Jiménez et al. (2012) for the Spanish case. The authors find for Japanese firms that banks' net worth affects their loan supply, and that the effect depends on monetary policy and economic growth, but that this balance sheet channel has an essential impact on non-financial firms financing and investment. Namely, firms with better investment opportunities are prone to have a higher investment when their lenders have high levels of liquidity. This connection strengthens during economic downturns.

As for the Colombian case, Vargas (2008) highlights that the economic turmoil covering the period 1998-1999 lead to an undermining of the balance sheet channel not only due to lower demand of households and firms. Additionally, because of the substantial reduction of the credit supply from the financial system, severely weakened by the high capital losses and risk exposures. In terms of the banks' asset side, there was a substitution effect between bonds and credit. Per the author, given the increased risk perception of the financial system and their capital deterioration, banks, and other financial institutions turned to domestic public debt as an alternative to credit. Consequently, that lead, in part, to the development of the domestic fixed income market.

Finally, a growing body of the literature has explored the changes in the strength of monetary policy transmission mechanisms brought about by both the 2008 global financial crisis and its associated changes in the business model of banks. Altunbas et al. (2007) showed how the increase in securitization before the financial crisis of 2008-2009 in Europe had the effect of isolating the supply of bank loans from monetary policy conditions. Gambacorta and Marques (2011) explored the effect of differences in business models on the response of bank loans to the financial crisis.

Our paper contributes to the literature by studying the effect of the internationalization of domestic banks on the loan supply and the funding structure of the banking sector in an emerging market. Given the recent internationalization of the banking business across the globe, to which Colombia has been a critical actor in Central American markets, together with the internationalization of financial markets, it is crucial to understand the effect of these trends on the power of monetary policy at a domestic level. To the best of our knowledge, this is the first paper that attempts to understand the effects of the internationalization banks on the power of domestic economic policymaking.

4. Data

This paper uses mainly three datasets. The first one is a credit registry that contains information about individual commercial loans reported by financial institutions to the *Superintendencia Financiera de Colombia* (SFC), as mentioned above, the supervisor of Colombia's financial system. This dataset provides a detailed look at all the loans granted by the financial system to firms quarterly. Characteristics such as loan maturity, collateral, interest rate and amount are included from 1998:12 to 2017:06. The dataset contains about 9.4 million loan observations made to 321,000 different firms by 33 different private banks.

The second dataset contains the banks' financial statements collected by the SFC. We also include an array of macroeconomic characteristics and information on bank-firm relationships. We employ lagged values on the entire firm, and the bank's financial statement indicators as monetary and economic conditions to determine their path. In addition, given the censoring nature of some variables used in the analysis, i.e., the relationship variables, the loan observations of the first seven years are excluded. The final sample contains 2,956,311 loan observations given to 35,055 firms by 78 banks.

The third dataset contains quarterly information on the international presence of Colombian banks. This information is collected by the SFC from 2014 to 2017, and complemented by us for the rest of the sample period, using public sources. The internationalization of Colombian banks will be defined using the degree of *individual* internationalization of banks, as measured by the number of subsidiaries overseas of each domestic bank.

Table 3 presents summary statistics of bank, firm and macroeconomic characteristics for the final sample. Among the bank variables, we include:

- Three standard bank-lending channel indicators: $\log_e(\text{Total Assets})$ which corresponds to the natural logarithm of total assets of the bank (in COP), *Bank Capital Ratio*, the ratio of equity to total assets (average 13.53%), and *Liquidity Ratio*, the ratio of current assets over total assets (average 1.01%);
- Two risk indicators: *Doubtful loan ratio*, the ratio of so-called doubtful loans over total loans⁶ (average 3.41%), and the *Loan-loss provision ratio*, measured as the ratio of loan-loss provisions over the total loan portfolio (average 2.95%);
- One indicator of the revenue mix: *Commissions ratio*, the ratio of commissions to total income (average 9.57%);
- Two funding indicators: *Short-term funding ratio*, the ratio of short term funding over total liabilities (average 38.6%), and *Foreign currency funding ratio*, the ratio of funding in foreign currency over total liabilities (average 4.07%);
- One profitability indicator: Return on Assets (ROA) as a profitability indicator (average 2.18%).
- Finally, we include the *Number of Foreign Subsidiaries*, which corresponds to the number of foreign bank subordinates of the conglomerate of the local bank, which on average is 4.67.

⁶ As per Colombian financial regulations, doubtful loans are loans rated different from A (less-than 30 days past due debts), on a scale from A to E where E is the lowest rating.

As the sample of borrowing firms change over time, we control for changes in the credit demand by including a set of firm characteristics in the specifications that do not include firm-time fixed effects. Among the firm characteristics, we include the log of their age as a borrower (average 3.34) and a dummy variable indicating past arrears (52.88% of firms in the sample have fallen in arrears at least once). We also include specific observables on the firm-bank relationship: length of relationship (on average 18.5 quarters, or 4.5 years) and a dummy variable indicating whether the firm has fallen in arrears with the bank (28.87%). Finally, as macroeconomic controls, we include the quarterly change in the log of real GDP ($\Delta \text{Log Real GDP}$), the quarterly change on the exchange rate ($\Delta \text{Exchange rate}$) the quarterly change on the current account ($\Delta \text{Current account}$) and the lagged, quarterly change in the domestic monetary policy rate ($\Delta \text{ir}(t-1)$).

5. Empirical Strategy

The empirical strategy of the paper consists on the estimation of several panel data specifications that relate changes in corporate loan terms and changes in banks' funding to specific bank characteristics, monetary policy, and the internationalization of domestic banks. In order to mitigate the common endogeneity problem of OLS regressions, the specifications presented here allow for the use (among others) of borrower, bank, and time fixed effects. To understand the effects of internationalization, we proceed gradually. The paper first estimates the following specification, which seeks to estimate the evolving influence of individual bank characteristics and their interaction with changes in monetary policy on the response of lending to firm f by bank b in quarter t :

$$\Delta Y_{fbt} = \varphi + \sum_k^K \sum_{j=0}^2 \delta_{kj} \Delta i_{t-j} * \mathbf{B}_{bkt-1} + \sum_k^K \alpha_k \mathbf{B}_{bkt-1} + relationship_{fbt-1} + \boldsymbol{\theta}_{ft} + \boldsymbol{\theta}_b + \varepsilon_{fbt} \quad (1)$$

In this specification, ΔY_{fbt} corresponds to the first difference of either the (log) stock of loans or the interest rate, \mathbf{B}_{bkt} to a specific bank characteristic (i.e., the number of subsidiaries abroad), Δi_{t-j} corresponds to the quarterly change in the monetary policy rate set by the Central Bank of Colombia and $relationship_{fbt-1}$ correspond to bank-firm relationship effects. $\boldsymbol{\theta}_{ft}$ and $\boldsymbol{\theta}_b$ correspond to firm-time and bank fixed effects respectively. They capture any observed or unobserved heterogeneity at a bank, firm, time or firm-time level. In this specification, $\sum_{j=0}^2 \delta_{kj} > 0$ will be taken as an indication that a period of monetary policy tightening combined with an

increase on the specific bank characteristic k , translates on the increase in $\Delta Y_{f_{bt}}$ ⁷. This specification allows studying the general effects of specific characteristics of the bank business model (including the degree of internationalization) on lending.

The main specifications combine the effects (triple-interaction) of monetary policy shocks and internationalization in the following fashion:

$$\Delta Y_{f_{bt}} = \varphi + \sum_k^K (\alpha_k + \omega_k NS_{bt-1}) \mathbf{B}_{bkt-1} + \sum_k^K \sum_{j=0}^2 (\delta_{kj} + \vartheta_{kj} NS_{bt-1}) \Delta i_{t-j} * \mathbf{B}_{bkt-1} + relationship_{f_{bt-1}} + \boldsymbol{\theta}_{ft} + \boldsymbol{\theta}_b + \varepsilon_{f_{bt}} \quad (2)$$

Where NS_{bt-1} corresponds to the *Number of Foreign Subsidiaries* and in this case, \mathbf{B}_{bkt} does not include this internationalization variable. When the estimated value of $\sum_{j=0}^2 \vartheta_{kj} > 0$ for some k in specification (2), it will be taken as an indication that during periods of domestic monetary policy tightening, as the number of foreign subsidiaries grows, an increase on the specific bank characteristic k , translates on an increase of $\Delta Y_{f_{bt}}$. This specification will, therefore, allows us to disentangle which bank characteristics play an essential role in defining the net effect that internationalization has on the transmission of monetary policy to the supply and cost of credit.

6. Results

The results of estimating specification (1) suggest that banks with better financial indicators tend to increase their loan supply and decrease the cost of credit, in particular during periods of monetary policy tightening. This is consistent with previous literature that finds that healthier intermediaries are more prone to increase the credit supply (Nier and Zicchino, 2008). The results also suggest that international banks decrease the loan supply and charge higher interest rates during periods of monetary policy tightening. The results are presented in **Table 4**⁸ for $\Delta \log \text{Credit}_{f_{bt}}$ (Panel A) and $\Delta \text{Rate}_{f_{bt}}$ (Panel B).

From Panel A, it is apparent that large and well-capitalized banks increase their supply of credit. Banks with more doubtful loans (as a percentage of total loans), on the other hand,

⁷ We perform the analysis with different combinations of lags of monetary policy changes and find the first two lags to be the more relevant ones.

⁸ Similar results are found when we exclude firm-time fixed effects and include firm, relationship and macroeconomic characteristics. Consistent results are found when we remove the period of the global financial crisis.

decrease their supply of credit. The interactions with monetary policy changes (the second part of the table) suggest that stronger banks (larger, better capitalized and with higher liquidity ratios) and banks with a higher number of foreign subsidiaries increase the credit supply during periods of monetary policy tightening; however, the coefficients are not statistically significant. In addition, banks with more doubtful loans, with a higher commission ratio or a higher number of subsidiaries decrease the loan supply during periods of monetary policy tightening. A decrease in the loan supply by banks with a higher number of subsidiaries is consistent with the idea that banks' expansion abroad tends to diversify the composition of their loan portfolio across jurisdictions. Nonetheless, the coefficient for the number of foreign subsidiaries is estimated imprecisely.

Panel B reveals that larger banks and those with higher short-term funding ratios tend to decrease the policy interest rate, while banks with higher liquidity ratios, a higher share of funding in foreign currency and with more subordinate banks abroad tend to increase the interest rate. Some of these coefficients, however, lose their statistical significance when all the bank characteristics are included. The interaction with changes in monetary policy suggests that stronger banks decrease the interest rate on their loans during periods of monetary policy tightening. However, only the interaction with the liquidity ratio is statistically significant. Banks with a higher share of funding in foreign currency also decrease the interest rate during contractionary periods. Furthermore, banks with higher loan-loss provisions ratios and with a higher number of foreign subordinates increase the interest rate during periods of monetary policy tightening.

In order to have a better understanding of how the internationalization of banks has affected the transmission of monetary policy, we proceed to estimate equation (2). The results indicate the tendency of certain bank characteristics to determine the specific internationalization business model. For instance, in periods of monetary policy tightening, those international banks with larger size and more loan-loss provisions increase the loan-supply, and at the same time increase the cost of credit. On the other hand, international banks with higher capital ratios, higher liquidity ratios or a higher share of short-term funding decrease the loan supply and at the same time decrease the cost of credit. The results of equation (2) are available in **Table 5**.

Panel A, reveals that as the number of subordinates abroad increase, banks with more doubtful loans, with higher loan-loss provision ratios, with higher shares of short-term funding and with a higher share of funding in foreign currency increase the domestic supply of credit. During periods of monetary policy tightening banks with both a higher number of foreign subordinates and a higher capital ratio, a higher liquidity ratio, a higher share of short-term funding or a higher ROA, decrease the loan supply. On the other hand, banks with both higher

number of foreign subordinates and that are either larger or have higher loan-loss provisions increase the loan supply. However, only the triple interactions with liquidity ratio and loan loss-provisions remain significant when all the bank characteristics are included.

The results for $\Delta \text{Rate}_{f_{bt}}$ are presented in Panel B and suggest that as the number of subordinates abroad increases, stronger banks decrease the interest rates; nonetheless, only the coefficient of $\ln(\text{Total assets})$ turns out to be statistically significant. On the other hand, banks with more doubtful loans, higher loan-loss provisions, a larger share of short term and or foreign funding and higher ROA increase the interest rate as the number of foreign subsidiaries increase. During periods of monetary policy tightening banks with both a higher number of foreign subordinates and a larger size or more loan-loss provisions increase the interest rate. On the other hand, banks with both higher number of foreign subordinates and that have higher capital or liquidity ratios, more doubtful loans or a higher share of short term or foreign funding decrease the interest rate.

Until now, we have analysed the effects over the commercial loan portfolio; however, it is essential to analyse the effects of the total loan portfolio (that comprises consumption, mortgage, and commercial loans). These analyses allow us to rule out the possibility that our results are driving due to a re-composition in the loan portfolio. **Table 6** presents the results of estimating specification (1) for $\Delta \log \text{Total Loan Porfolio}_{bt}$. The results suggest that well-capitalized banks increase their loan supply, while banks with higher liquidity ratios and a higher number of foreign subsidiaries decrease the loan supply. During periods of foreign monetary policy tightening, banks with a higher ROA increase the loan supply; internationalization, on the other hand, seems to decrease the loan supply and is not statistically significant. We then turn to analyse the sensibility of the total supply of credit to the interactions between internationalization, bank characteristics and changes in monetary policy by estimating specification (2). The first part of **Table 7** reveals that as the number of foreign subsidiaries increases, banks with higher short-term funding increase the loan supply, while banks with a higher ROA decrease the loan supply. The second part of the table suggests that during periods of domestic monetary policy tightening, international banks with higher loan loss-provision ratios are prone at increasing their loan supply, whereas international banks with higher short-term funding tend at decreasing their loan supply. These results are consistent with the results found in **Tables 5** and **6**, and ultimately suggest that a re-composition on the loan portfolio across different types of loans does not explain the findings for the commercial loan portfolio. .

We then proceed to analyse what is the effect of internationalization over the credit risk of banks. In order to do that we perform a similar analysis to that for the total loan portfolio. As a dependent variable, we now take the ratio of non-performing loans over total loans. The results

are reported in **Table 8** and **Table 9**, and suggest that as the number of foreign subsidiaries increases, banks with more liquid assets experience a decrease on their credit risk; while banks with higher commissions' ratios, higher shares of short-term or foreign funding experience an increase on their credit risk. During periods of foreign monetary policy tightening, banks with both a higher number of subsidiaries abroad and higher capital ratios, higher commission ratio, higher short-term funding ratio or higher ROA experience a decrease of credit risk; while banks with a higher share of foreign funding experience an increase in their credit risk. These could reflect the ability of individual banks to perform better monitoring activities over their borrowers.

Finally, we are interested in analysing how banks' internationalization affects their funding structure, as this represents one of the main drivers for lending decisions. Therefore, we proceed to measure the effect over the deposits and the foreign lending of the degree of internationalization. **Table 10** shows the results for domestic deposits. Banks with a higher number of foreign subsidiaries can attract more deposits. However, during periods of monetary policy, they experience a decrease in their deposits' holdings.

Focusing at the level of the financial conglomerate, we find that international conglomerates with a higher number of foreign bank subsidiaries have a larger amount of deposits. Unreported results also show that the amount of foreign lending received from banks that belong to the same conglomerate is higher, in particular for banks with a higher number of foreign subsidiaries. Following an increase in the domestic interest rate, the amount of deposits seems to experience a slight increase; however, the coefficient is estimated imprecisely (**Table 11**).

With respect to foreign lending, we find that banks with a higher number of foreign subsidiaries receive a larger amount of foreign lending. During periods of monetary policy tightening, all banks seem to receive a higher amount of foreign lending. However, banks with more subsidiaries receive an even larger amount, as evidenced by the interaction term's coefficient in **Table 12**.

Overall, these results suggest that during contractionary periods of monetary policy, banks with a higher number of foreign subsidiaries attract less domestic deposits and higher foreign funding. This goes in line with the literature that shows that complex banks are better at attracting foreign funds (external capital markets) and at reallocating liquidity across the different jurisdictions in which they operate (internal capital markets) (Cetorelli and Goldberg, 2011). Nonetheless, the increase in foreign funding does not compensate for the fall in domestic deposits, which represents on average seventy percent of total bank funding during the sample period. The results also suggest that at the conglomerate level, an increase in the number of subsidiaries translates on the growth in the total amount of deposits (which comprises both

domestic and foreign deposits). This amount experiences a slight increase during periods of monetary policy tightening but does not seem to impact the local credit market, as evidenced by a decrease in the supply of credit. However, the behaviour of individual institutions on the credit market depends strongly on their business model, as evidenced in **Tables 4** and **5**.

7. Concluding comments

In this paper, we study the effect of the internationalization of domestic banks on the loan supply and the funding structure of the banking sector in an emerging market like Colombia. Given the recent internationalization of the banking business across the globe, in which Colombia has been a critical actor in Central American markets, we have aimed at understanding the effect of these trends on the power of monetary policy at a domestic level. To the best of our knowledge, this is the first paper that attempts to understand the effects of the internationalization banks on the power of domestic economic policymaking.

By covering and implementing different specifications, we find that, through time, Colombian banks with better financial indicators tend to increase their loan supply, in particular during periods of monetary policy tightening. This result is consistent with previous literature, which finds that healthier intermediaries are more prone to increase the supply of credit. Furthermore, results also suggest that international banks (i.e., those banks that actively operate abroad) reduce their loan supply and charge larger interest rates during periods of monetary policy tightening. The changes, however, are small in magnitude or not statistically significant.

Our attempt to show how the internationalization of domestic banks has affected the domestic transmission of monetary policy indicates the tendency of certain bank characteristics to determine the specific internationalization business model. For example, in periods of monetary policy tightening, larger international banks with greater loan-loss provisions increase their loan supply, and simultaneously the cost of credit. Moreover, international banks with higher capital ratios, higher liquidity ratios or a higher share of short-term funding reduce their loan supply and at the same time lower the cost of credit.

Finally, we also explore the effect of internationalization in the materialization of intermediaries' credit risk and their funding structure (both domestic and foreign). As for the former, in times of foreign monetary policy tightening, banks with both a higher number of subsidiaries abroad and higher capital ratios, higher commission ratio, higher short-term funding ratio or higher ROA experience a reduction in credit risk; whereas banks with a higher share of

foreign funding experience an increase in their credit risk. Concerning the latter, in contractionary periods of monetary policy, banks with a higher number of foreign subsidiaries attract a smaller volume of domestic deposits and a larger amount of foreign funding. However, the increase in foreign funding does not seem to compensate for the fall in the domestic deposits, which ultimately is the main source of core funding for Colombian banks. Overall, the behaviour of individual institutions in the credit market depends strongly on their business model, especially the one preferred for operations abroad.

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TABLE 3

Descriptive Statistics of variables used in the regression

The table provides the definitions of bank, firm, relationship and macroeconomic characteristics. Results for the mean, median, standard deviation, min, and max are presented for each variable. The number of loan observations equals 2,956,311.

Variables	Units	Definition	N	Mean	St. Dev	25th percentile	Median	75th percentile	Min	Max
Dependent Variable										
Δ Log credit	%	Quarterly change on the loan amount	2,956,311	-5.94%	82.82%	-26.14%	-8.02%	3.78%	-363.97%	371.52%
Bank-specific characteristics										
<i>Bank lending channel standard indicators</i>										
ln (Total assets)	-	Log of total assets	2,956,311	23.98	0.98	23.40	24.12	24.70	17.90	25.51
Bank capital ratio	%	Ratio of equity over total assets	2,956,311	13.53%	3.56%	11.29%	13.46%	16.04%	5.15%	96.47%
Bank liquidity ratio	%	Ratio of current assets over total assets	2,956,311	1.01%	0.99%	0.37%	0.75%	1.30%	0.01%	13.74%
<i>Risk profile</i>										
Doubtful loan ratio	%	Ratio of doubtful loans over total loans portfolio	2,956,311	3.41%	2.27%	1.60%	3.12%	4.41%	0.00%	29.33%
Loan-loss provision ratio	%	Ratio of loan-loss provisions over total loans portfolio	2,956,311	2.95%	1.68%	1.74%	2.66%	3.63%	0.00%	17.19%
<i>Revenue mix</i>										
Diversification ratio	%	Ratio of non-interest income over total income	2,956,311	2.31%	3.77%	0.60%	1.02%	1.68%	-4.88%	32.46%
Commissions ratio	%	Ratio of commissions over total income	2,956,311	9.57%	3.07%	7.35%	9.06%	11.62%	0.09%	45.29%
Bonds	%	Ratio of bonds over total assets	2,956,311	6.38%	4.53%	2.69%	5.41%	10.42%	0.00%	41.24%
<i>Funding</i>										
Short-term funding ratio	%	Ratio of short-term funding over total liabilities	2,956,311	38.60%	7.27%	33.12%	38.37%	42.92%	0.00%	80.66%
Foreign currency funding ratio	%	Ratio of funding in foreign currency over total liabilities	2,956,311	4.07%	2.81%	2.04%	3.88%	5.50%	0.00%	37.38%
<i>Profitability</i>										
ROA	%	Ratio of net income over total assets	2,956,311	2.18%	0.83%	1.78%	2.17%	2.64%	-24.50%	5.52%
<i>Foreign Presence</i>										
Number of subordinate banks	N°	Foreign subsidiaries of the bank	2,956,311	4.67	5.04	0.00	2.00	7.00	0.00	16.00
Firm-specific characteristics										
Ln (Age as borrower)	-	The log of one plus the age as borrower	2,956,311	3.34	0.61	3.00	3.47	3.81	1.10	4.29
Previous default	0/1 %	= 1 if the firm delinquent on a loan in the past, = 0 otherwise.	2,956,311	52.88%	49.92%	0.00%	100.00%	100.00%	0.00%	100.00%
Relationship characteristics										
Previous default with the bank	0/1 %	= 1 if firm has have an arrear before with the bank, = 0 otherwise.	2,956,311	28.87%	45.32%	0.00%	0.00%	100.00%	0.00%	100.00%
Length of relationship	quarters	Length of the bank-firm relationship.	2,956,311	18.52	13.64	8.00	15.00	27.00	2.00	72.00
Macroeconomic controls										
Δ Log Real GDP	%	Quarterly change on the log of real GDP	2,956,311	3.99%	1.89%	2.61%	3.53%	5.75%	0.35%	7.95%
Δ Exchange rate	%	Quarterly change of the exchange rate	2,956,311	5.84%	16.81%	-5.60%	1.76%	10.49%	-23.41%	50.12%
Δ Current account	%	Quarterly change in the current account	2,956,311	9.02%	41.60%	-20.46%	-1.65%	28.43%	-59.04%	148.55%
Δ ir (t-1)	%	Quarterly change in the domestic monetary policy rate	2,956,311	1.91%	69.25%	-10.00%	9.00%	39.00%	-249.00%	122.00%

Source: SFC, authors' calculations.

TABLE 4 - Panel A (Δ Log credit)
Bank's Characteristics and the Transmission of Monetary Policy Shocks

The table reports OLS regressions for a sample of 2,956,311 loans observations of firms with multiple relationships. The dependent variable is Δ Log credit in Panel A and Δ Interest Rate in Panel B. Columns 1-8 present different specifications that include the various groups of bank variables as well as a double interaction between each bank variable and the change in the domestic monetary policy rate. All the specifications include **Firm X Time FE and Bank FE**. Definition of the variables can be found in Table 2. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the bank level are reported in the second row and p-values are in the third row. Note that in the second part of the table (right side) the stars that typically signal the significance level of a variable are not included; instead we highlight statistical significant variables.

Model	Interactions with $\sum_{j=1-2} \Delta i(t-j)$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bank lending channel standard indicators								
In (Total assets)	0.0426** (0.0176)					0.0611** (0.0266)		0.0066 0.0041
Bank capital ratio	0.0231 0.2232* (0.1104)					0.0305 0.4458*** (0.1513)		0.1210 -0.0048 0.1099
Bank liquidity ratio	0.0540 -0.3912 (0.2834)					0.0071 -0.1598 (0.2676)		0.9650 -0.0619 0.2526
	0.1798					0.5561		0.8080
Risk profile								
Doubtful loans		-0.2073* (0.1109)				-0.1449 (0.0893)		-0.4809 0.1816
Loan-loss provision ratio		0.0735 -0.2372 (0.3206)				0.1182 -0.4086 (0.3064)		0.0138 0.5229 0.2957
		0.4663				0.1950		0.0892
Revenue mix (Commercial Business Model)								
Commissions ratio			0.1410 (0.2366)			0.2840 (0.2090)		0.0264 0.0998
			0.5567			0.1870		0.7940
Stable sources of funding								
Share of short-term funding			-0.0260 (0.0470)			0.0381 (0.0608)		-0.0949 0.0766
			0.5856			0.5365		0.2270
Volatile sources of funding								
Share of funding in foreign currency				0.0250 (0.0704)		0.0623 (0.1112)		0.2337 0.1846
				0.7256		0.5806		0.2170
Profitability								
ROA				0.0087 (0.5005)		-0.1913 (0.4543)		-0.1462 0.3313
				0.9863		0.6774		0.6630
Foreign Presence								
Number of Subsidiaries					0.0007 (0.0006)	-0.0006 (0.001)		0.0006 0.0016
					0.2933	0.5320		0.6903 0.3831
R-squared								0.4287 0.4286 0.4286 0.4286 0.4286 0.4306 0.4286 0.4308
Adjusted R-squared								0.0842 0.0842 0.0841 0.0841 0.0841 0.0842 0.0841 0.0846

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

Source: authors' calculations.

TABLE 4 - Panel B (Δ Interest Rate)

Model									Interactions with $\sum_{j=1-2} \Delta_i(t-j)$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Bank lending channel standard indicators</i>																
ln (Total assets)	-0.0070** (0.0032)							-0.0129* (0.0075)	0.0031 0.0026							-0.0006 0.0021
Bank capital ratio	0.0375 0.0350 (0.0368)							0.0975 -0.0275 (0.0482)	0.2469 0.0924 0.0303							0.7761 -0.1029 0.0706
Bank liquidity ratio	0.3510 0.2805 (0.1800)							0.5742 0.2507* (0.1221)	0.0054 -0.4680 0.2718							0.1581 -0.6260 0.3293
	0.1317							0.0510	0.0975							0.0694
<i>Risk profile</i>																
Doubtful loans		0.0434 (0.0498)						0.0638 (0.0626)	-0.1305 0.1074							-0.1618 0.1176
Loan-loss provision ratio		0.3922 0.1385 (0.0897)						0.3182 0.1672* (0.0836)	0.2357 0.5149 0.3338							0.1816 0.4517 0.2638
		0.1354						0.0570	0.1355							0.0997
<i>Revenue mix (Commercial Business Model)</i>																
Commissions ratio			-0.0023 (0.0197)					-0.0345 (0.0244)		-0.0742 0.0514						-0.0373 0.0356
			0.9067					0.1699		0.1616						0.3064
<i>Stable sources of funding</i>																
Share of short-term funding				-0.0366** (0.0164)				-0.0439* (0.0240)			-0.0174 0.0218					0.0052 0.0301
				0.0346				0.0792			0.4324					0.8643
<i>Volatile sources of funding</i>																
Share of funding in foreign currency					0.1279*** (0.0391)			0.0753 (0.0666)					-0.1641 0.0683			-0.1988 0.0675
					0.0032			0.2693					0.0240			0.0071
<i>Profitability</i>																
ROA					-0.0922 (0.0758)			-0.0992 (0.1220)						0.1401 0.1089		-0.0300 0.1242
					0.2359			0.4241						0.2104		0.8113
<i>Foreign Presence</i>																
Number of Subsidiaries								-0.0003*** (0.0001)	0.0009 (0.0006)							0.0012 0.0004
								0.0044	0.1422							0.0027 0.0009
R-squared										0.4192	0.4133	0.4120	0.4133	0.4135	0.4135	0.4177
Adjusted R-squared										0.0690	0.0595	0.0575	0.0597	0.0599	0.0567	0.0667
Robust standard errors in parentheses																
*** p<0.01, ** p<0.05, * p<0.1																

Source: authors' calculations.

TABLE 5 - Panel A (Δ Log credit)
Changes on the Transmission of Domestic Monetary Policy when Banks Expand their Business Abroad

The table reports OLS regressions for a sample of 2,956,311 loans observations of firms with multiple relationships. The dependent variable is Δ Log credit in Panel A and Δ Interest Rate in Panel B. Columns 1-7 present different specifications that include double interactions between: i) each bank variable and the number of subsidiaries (of that specific bank) and each bank variable and the change in the domestic monetary policy rate. Each specification also includes the triple interaction between the bank variable, the number of subsidiaries and the change in the monetary policy rate. All the specifications include Firm X Time FE and Bank FE. Definition of the variables can be found in Table 3. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the bank level are reported in the second row and p-values are in the third row. Note that in the second part of the table (right side) the stars that typically signal the significance level of a variable are not included; instead we highlight significant variables.

Model	Interactions with $\sum_{j=1-2} \Delta i(t-j)$														
	(1)	(2)	(3)	(4)	(5)	(6)	(7)								
Number of Subsidiaries	-0.0337 (0.0327)	-0.0011 (0.0012)	-0.0057* (0.0029)	0.0007 (0.0008)	-0.0041 (0.0029)	-0.0007 (0.0009)	0.0006 (0.0022)	-0.0406 (0.0526)	-0.1167 -0.0036	0.0025	-0.0008	0.0163	0.0009	0.0071	-0.0217
	0.3137	0.3596	0.0629	0.4279	0.1864	0.4427	0.7822	0.4484	0.0002	0.0430	0.1860	0.5873	0.0000	0.4207	0.0023
<i>Bank lending channel standard indicators</i>															
ln (Total assets)	0.0442*** (0.0148)							0.0446** (0.0178)	-0.0022 (0.0032)						-0.0040 (0.0088)
ln (Total assets) * Number of Subsidiaries	0.0062 (0.0015)							0.0196 (0.0020)	0.5088 0.0010						0.6527 0.0009
Bank capital ratio	0.2963 (0.1553)							0.5999 (0.1362)	0.0000 -0.0204						0.8757 -0.0794
Bank capital ratio * Number of Subsidiaries	0.3324** (0.1553)							0.4888*** (0.1362)	-0.0204 0.0522						0.1057 0.4601
Bank liquidity ratio	0.0423 (0.0260)							0.0015 (0.0218)	0.6992 0.0196						0.0002 0.0372
Bank liquidity ratio * Number of Subsidiaries	-0.0321 (0.0260)							-0.0327 (0.0218)	-0.0807 0.0196						0.0002 0.0372
Bank liquidity ratio * Number of Subsidiaries	0.2292 (0.3473)							0.1476 (0.4210)	0.0004 0.2461						0.9962 0.3435
Bank liquidity ratio * Number of Subsidiaries	0.3559 (0.3473)							0.4415 (0.4210)	0.5958 0.2461						0.7164 0.3435
Bank liquidity ratio * Number of Subsidiaries	0.3153 (0.0328)							0.3048 (0.0622)	0.0231 0.0461						0.0478 0.0953
Bank liquidity ratio * Number of Subsidiaries	-0.0308 (0.0328)							0.0088 (0.0622)	-0.1057 0.0461						-0.1798 0.0953
Bank liquidity ratio * Number of Subsidiaries	0.3577 (0.0328)							0.8882 (0.0622)	0.0306 0.0461						0.0712 0.0953
<i>Risk profile</i>															
Doubtful loans		-0.1722 (0.1085)								-0.1143 (0.0914)					-0.2595 0.1229
Doubtful loans * Number of Subsidiaries		-0.1015 (0.0382)								0.2234 (0.1155**)					0.0453 0.0117
Loan-loss provision ratio		0.6523 (0.4001)								0.0392 (0.3277)					0.8777 0.3001
Loan-loss provision ratio * Number of Subsidiaries		0.6933 (0.0381)								0.4538 (0.0504)					0.1803 0.3026
Loan-loss provision ratio * Number of Subsidiaries		0.1087*** (0.0381)								0.1943*** (0.0504)					0.1327 0.1327
Loan-loss provision ratio * Number of Subsidiaries		0.0086 (0.0086)								0.0008 (0.0008)					0.0317 0.0317
<i>Revenue mix (Comercial Business Model)</i>															
Commissions ratio		-0.0962 (0.1743)								0.0638 (0.1425)			0.0028 (0.1232)		-0.2216 0.2257
Commissions ratio * Number of Subsidiaries		0.5860 (0.0534**)								0.6582 (-0.0196)			0.9821 (-0.0167)		0.3361 0.1025
Commissions ratio * Number of Subsidiaries		0.0463 (0.0254)								0.4902 (0.0279)			0.0165 (0.0165)		0.0605 0.1031
Commissions ratio * Number of Subsidiaries		0.0463 (0.0254)								0.4902 (0.0279)			0.0165 (0.0165)		0.0605 0.1031
<i>Stable sources of funding</i>															
Share of short-term funding					-0.0238 (0.0528)					0.0057 (0.0619)			0.0112 (0.0539)		0.1272 0.0645
Share of short-term funding * Number of Subsidiaries					0.6560 (0.0118*					0.9269 (0.0285)			0.8374 (-0.0376)		0.0600 -0.0306
Share of short-term funding * Number of Subsidiaries					0.0118* (0.0060)					0.0285 (0.0201)			0.0376 0.0086		0.0399 0.4514
Share of short-term funding * Number of Subsidiaries					0.0603 (0.0060)					0.1702 (0.0201)			0.0002 0.0002		0.4514 0.4514
<i>Volatile sources of funding</i>															
Share of funding in foreign currency					-0.2299* (0.1341)					0.0517 (0.1284)			0.3109 (0.2764)		-0.3609 0.2035
Share of funding in foreign currency * Number of Subsidiaries					0.0988 (0.0392***)					0.6910 (0.0301)			0.2714 (-0.0266)		0.0888 -0.0137
Share of funding in foreign currency * Number of Subsidiaries					0.0392*** (0.0128)					0.0301 (0.0251)			-0.0266 (0.0352)		0.0623 0.8279
Share of funding in foreign currency * Number of Subsidiaries					0.0054 (0.0054)					0.2429 (0.0054)			0.4571 (0.0054)		0.8279 0.8279
<i>Profitability</i>															
ROA										1.0055 (0.6987)			0.5397 (0.5270)		0.2806 0.6654
ROA * Number of Subsidiaries										0.1630 (-0.0094)			0.3161 (-0.0719)		0.3228 0.2767
ROA * Number of Subsidiaries										0.1630 (0.0770)			0.3161 (0.1568)		0.3933 0.0243
ROA * Number of Subsidiaries										-0.0094 (0.0770)			-0.0719 (0.1568)		-0.2314 -0.0935
ROA * Number of Subsidiaries										0.9036 (0.0770)			0.6505 (0.1568)		0.0521 0.1825
ROA * Number of Subsidiaries										0.9036 (0.0770)			0.6505 (0.1568)		0.0002 0.6129
R-squared															0.4289
Adjusted R-squared															0.4306
Robust standard errors in parentheses															0.4286
*** p<0.01, ** p<0.05, * p<0.1															0.4287
															0.4286
															0.4307
															0.4312

Source: authors' calculations.

TABLE 5 - Panel B (Δ Interest Rate)

Model								Interactions with $\sum_{j=1-2} \Delta i(t-j)$								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Number of Subsidiaries	0.0102 (0.0084)	-0.0005*** (0.0002)	-0.0004 (0.0005)	0.0024* (0.0014)	-0.0014** (0.0005)	-0.0005 (0.0005)	0.0198 (0.0179)	-0.0087	-0.0007	0.0017	-0.0023	0.0028	0.0010	-0.1872		
	0.2329	0.0085	0.4139	0.0993	0.0113	0.2859	0.2794	0.6668	0.4142	0.1804	0.2643	0.0000	0.0886	0.0331		
<i>Bank lending channel standard indicators</i>																
ln (Total assets)	-0.0076* (0.0040)						-0.0152* (0.0084)	-0.0088						0.0031		
	0.0666						0.0820	0.0257						0.0037		
ln (Total assets) * Number of Subsidiaries	-0.0004 (0.0004)						-0.0016** (0.0007)	0.001						0.4146		
	0.3408						0.0294	0.1795						0.0102		
Bank capital ratio	0.0116 (0.0638)						0.0055 (0.0911)	-0.0729						0.0036		
	0.8575						0.9520	0.1164						0.0096		
Bank capital ratio * Number of Subsidiaries	-0.0053 (0.0089)						-0.0181 (0.0129)	-0.0641						0.1287		
	0.5521						0.1737	0.005						-0.0546		
Bank liquidity ratio	-0.0591 (0.1197)						-0.1085 (0.1352)	-0.4655						-0.6716		
	0.6259						0.4301	0.3177						0.1809		
Bank liquidity ratio * Number of Subsidiaries	0.0449 (0.0284)						-0.0141 (0.0169)	-0.0465						-0.0431		
	0.1262						0.4142	0.2013						0.0314		
														0.1825		
<i>Risk profile</i>																
Doubtful loans		0.0678 (0.0506)						-0.0256 (0.0509)		-0.0742				0.0819		
		0.1926						0.6200		0.0581				0.0728		
Doubtful loans * Number of Subsidiaries		-0.0131** (0.0056)						0.0799*** (0.0206)		0.3332				0.2714		
		0.0289						0.0007		0.0143				0.405		
Loan-loss provision ratio		0.1555 (0.0946)						0.2965*** (0.1038)		0.4005				0.365		
		0.1127						0.0087		0.448				0.448		
Loan-loss provision ratio * Number of Subsidiaries		0.0477*** (0.0099)						0.0663*** (0.0098)		0.0661				0.0138		
		0.0001						0.0000		0.355				0.0338		
										0.0744				0.0736		
<i>Revenue mix (Commercial Business Model)</i>																
Commissions ratio			0.0031 (0.0372)					0.0700 (0.0582)		-0.1158				-0.1355		
			0.9349					0.2406		0.0895				0.0933		
Commissions ratio * Number of Subsidiaries			0.0038 (0.0035)					-0.0213 (0.0168)		0.2078				0.1593		
			0.2892					0.2160		-0.0039				0.0141		
										0.0107				0.0192		
										0.7185				0.4711		
<i>Stable sources of funding</i>																
Share of short-term funding				-0.0050 (0.0205)				-0.0264 (0.0223)			-0.0308			0.0093		
				0.8111				0.2482		0.0383				0.018		
Share of short-term funding * Number of Subsidiaries				-0.0061* (0.0033)				0.0266*** (0.0066)		0.4291				0.6107		
				0.0749				0.0005		0.0077				-0.0634		
										0.006				0.0153		
										0.2088				0.0004		
<i>Volatile sources of funding</i>																
Share of funding in foreign currency					-0.1380 (0.0843)			-0.2460** (0.1018)			0.0252			0.2668		
					0.1142			0.0236		0.0471				0.1157		
Share of funding in foreign currency * Number of Subsidiaries					0.0376*** (0.0100)			0.0931*** (0.0197)		0.5968				0.301		
					0.0009			0.0001		-0.0595				-0.2248		
										0.0073				0.302		
										0.0000				0.0000		
<i>Profitability</i>																
ROA						-0.2811 (0.1738)		-0.4430* (0.2303)					-0.2165	-0.1269		
						0.1189		0.0664					0.1269	0.0968		
ROA * Number of Subsidiaries						0.0097 (0.0198)		0.2530*** (0.0838)					0.1008	0.2021		
						0.6289		0.0059					0.0145	-0.1897		
													0.0099	0.1231		
													0.1565	0.1366		
R-squared										0.4255	0.4382	0.4198	0.4195	0.4278	0.4207	0.4673
Adjusted R-squared										0.0792	0.0995	0.0700	0.0696	0.0828	0.0683	0.1432

Robust standard errors in parentheses

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

Source: authors' calculations.

Table 6
Bank's Characteristics and the Transmission of Monetary Policy Shocks - Total Loan Portfolio

The table reports OLS regressions for a sample of 805 bank-quarter observations. The dependent variable is $\Delta \text{Log Total Loan Portfolio}$. Columns 1-7 present different specifications that include the various groups of bank variables as well as a double interaction between each bank variable and the change in the domestic monetary policy rate. All the specifications include **Time FE** and **Bank FE**. Definition of the variables can be found in Table 1. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the bank level are reported in the second row and p-values are in the third row. Note that in the second part of the table (right side) the stars that typically signal the significance level of a variable are not included, instead variables are highlighted.

Model	Interactions with $\sum_{j=1-2} \Delta i(t-j)$															
	(1)	(2)	(3)	(5)	(6)	(7)	(8)	(9)	(1)	(2)	(3)	(5)	(6)	(7)	(8)	(9)
Bank lending channel standard indicators																
ln (Total assets)	-0.0289 (0.0232)							0.0101 (0.0207)	0.0479 0.0055							-0.0020 0.0046
	0.2238							0.6304	0.9047							0.6678
Bank capital ratio	0.5780** (0.2729)							1.1066** (0.4165)	-0.0479 0.1025							-0.0726 0.2271
	0.0432							0.0129	0.6439							0.7515
Bank liquidity ratio	-0.2745 (0.6508)							-1.1376*** (0.2747)	0.2015 0.3034							-0.4544 0.3382
	0.6764							0.0003	0.5121							0.1899
Risk profile																
Doubtful loans		-0.0296 (0.2125)						-0.1117 (0.1164)	0.2458 0.2377							0.1687 0.1923
		0.8903						0.3454	0.3099							0.3878
Loan-loss provision ratio		-0.6088 (0.4017)						-0.5011 (0.4622)	-0.0771 0.3996							0.0640 0.2479
		0.1409						0.2875	0.8484							0.7982
Revenue mix(Comercial Business Model)																
Commissions ratio			0.2278 (0.1919)					0.0778 (0.1240)		0.0973 0.0800						0.1536 0.1652
			0.2451					0.5357		0.2344						0.3604
Stable sources of funding																
Share of short-term funding				-0.1412 (0.0830)				-0.0150 (0.0800)			0.0305 0.0194					0.0687 0.0467
				0.1002				0.8524			0.1280					0.1525
Volatile sources of funding																
Share of funding in foreign currency					-0.4511 (0.4410)			0.1365 (0.1612)				0.0264 0.1810				-0.3962 0.3598
					0.3151			0.4042				0.8852				0.2803
Profitability																
ROA						0.0899 (0.4138)		1.0225 (1.1258)						0.4895 0.2239		0.5747 0.3451
						0.8297		0.3715						0.0373		0.1071
Foreign Presence																
Number of Subsidiaries							0.0012 (0.0000)	-0.0029* (0.0014)							0.0013 0.0000	-0.0011 0.0019
							0.4546	0.0546							0.6845	0.5446
R-squared									0.2346	0.1626	0.1625	0.1679	0.1696	0.1336	0.1586	0.2107
Adjusted R-squared									0.1559	0.0802	0.0838	0.0898	0.0916	0.0479	0.0796	0.0894

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

Source: authors' calculations.

TABLE 7
Changes on the Transmission of Domestic Monetary Policy when Banks Expand their Business Abroad - Total Loan Portfolio

The table reports OLS regressions for a sample of 805 bank-quarter observations. The dependent variable is Δ Log Total Loan Portfolio. Columns 1-7 present different specifications that include double interactions between: i) each bank variable and the number of subsidiaries (of that specific bank) and each bank variable and the change in the domestic monetary policy rate. Each specification also includes the triple interaction between the bank variable, the number of subsidiaries and the change in the monetary policy rate. All the specifications include Time FE and Bank FE. Definition of the variables are available in Table 3. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the bank level are reported in the second row and p-values are in the third row. Note that in the second part of the table (right side) the stars that typically signal the significance level of a variable are not included; instead we highlight significant variables.

Model	Interactions with $\sum_{j=1}^2 \Delta i(t-i)$																
	(1)	(2)	(3)	(4)	(5)	(6)	(7)										
Number of Subsidiaries	0.0145 (0.0818)	0.0003 (0.0020)	0.0052 (0.0041)	0.0005 (0.0014)	-0.0156 (0.0093)	-0.0014 (0.0025)	0.0015 (0.0046)	0.0399 (0.3116)	-0.0058 (0.0677)	-0.0021 (0.0035)	0.0064 (0.0045)	0.0015 (0.0019)	0.0116 (0.0071)	0.0020 (0.0025)	0.0005 (0.0049)	0.1625 (0.2255)	
<i>Bank lending channel standard indicators</i>	0.8604	0.8879	0.2196	0.6975	0.1031	0.5820	0.7421	0.8987	0.9319	0.5466	0.1619	0.4447	0.1121	0.4444	0.9119	0.4754	
<i>ln (Total assets)</i>	-0.0271 (0.0328)							-0.0007 (0.0347)	-0.0023 (0.0067)							-0.0002 (0.0077)	
<i>ln (Total assets) * Number of Subsidiaries</i>	-0.0005 (0.0037)							-0.0022 (0.0145)	0.0005 (0.0029)							-0.0039 (0.0094)	
<i>Bank capital ratio</i>	0.9004 (0.2816)							0.8820 (1.3101)	0.8664 (0.1300)							0.6846 (0.1619)	
<i>Bank capital ratio * Number of Subsidiaries</i>	0.0429 (0.0594)							0.3838 (0.2241)	0.6105 (0.0338)							0.4462 (0.1400)	
<i>Bank liquidity ratio</i>	0.7364 (0.6016)							0.9095 (0.3878)	0.3734 (0.4181)							0.9368 (0.5407)	
<i>Bank liquidity ratio * Number of Subsidiaries</i>	-0.2576 (0.6709)							-1.1953*** (0.0038)	0.2017 (0.6322)							0.6471 (0.2388)	
<i>Risk profile</i>																	
<i>Doubtful loans</i>		-0.0120 (0.1435)							-0.1314 (0.2497)							0.1572 (0.2587)	
<i>Doubtful loans * Number of Subsidiaries</i>		0.9335 (0.0350)							0.6017 (0.0128)							0.5469 (-0.2856)	
<i>Loan-loss provision ratio</i>		0.5829 (0.4525)							0.9392 (0.5001)							0.2148 (0.0533)	
<i>Loan-loss provision ratio * Number of Subsidiaries</i>		-0.5933 (0.1977)							-0.5310 (0.2950)							0.1916 (0.4744)	
<i>Revenue mix(Comercial Business Model)</i>																	
<i>Commissions ratio</i>			0.2604 (0.3600)						0.0153 (0.3926)			0.1171 (0.0697)				0.2622 (0.2118)	
<i>Commissions ratio * Number of Subsidiaries</i>			0.4739 (0.0291)						0.9690 (0.0645)			0.1008 (0.0409)				0.2234 (0.0861)	
<i>Stable sources of funding</i>			0.3621						0.7302			0.2241				0.1324	
<i>Share of short-term funding</i>					-0.1470 (0.1097)				-0.0158 (0.1154)				0.0337 (0.0151)			0.0996 (0.0449)	
<i>Share of short-term funding * Number of Subsidiaries</i>					0.1882 (0.0213)				0.8920 (0.0423)				0.0319 (0.0164)			0.0327 (0.0711)	
<i>Volatile sources of funding</i>					0.0795				0.1287				0.1558			0.0656	
<i>Share of funding in foreign currency</i>								-0.4971 (0.3325)	0.1747 (0.3430)					0.0303 (0.2823)		-0.4805 (0.4050)	
<i>Share of funding in foreign currency * Number of Subsidiaries</i>					0.1432 (0.0410)				0.6135 (0.0698)					0.9151 (0.0607)		0.2429 (0.1355)	
<i>Profitability</i>					0.1590				0.5302					0.5678		0.6623	
<i>ROA</i>								0.1182 (0.7320)	1.2268 (1.1477)						0.5036 (0.2558)	0.6311 (0.3589)	
<i>ROA * Number of Subsidiaries</i>								-0.8726 (-0.0376)	0.2918 (-0.5743*)						0.0563 (-0.0322)	0.0868 (0.4938)	
R-squared								0.8111	0.0659						0.8421	0.1988	
Adjusted R-squared										0.2367	0.1645	0.1646	0.1625	0.1700	0.1726	0.1345	0.2245
Robust standard errors in parentheses										0.1441	0.0709	0.0787	0.0686	0.0847	0.0875	0.0405	0.0585

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

Source: authors' calculations.

TABLE 8
Bank's Characteristics and the Transmission of Monetary Policy Shocks - Non-Performing Loans ratio

The table reports OLS regressions for a sample of 805 bank-quarter observations. The dependent variable is the Non-Performing Loans Ratio. Columns 1-7 present different specifications that include the various groups of bank variables as well as a double interaction between each bank variable and the change in the domestic monetary policy rate. All the specifications include **Time FE and Bank FE**. Definition of the variables can be found in Table 1. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the bank level are reported in the second row and p-values are in the third row. Note that in the second part of the table (right side) the stars that typically signal the significance level of a variable are not included, instead variables are highlighted.

Model	Interactions with $\sum_{j=1-2} \Delta i(t-j)$								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Bank lending channel standard indicators									
ln (Total assets)	-0.0098 (0.0271)							0.0042 (0.0138)	-0.0028 (0.0027)
	0.7212							0.7651 (0.0807)	0.2928 (0.0382)
Bank capital ratio	-0.1066** (0.0456)							0.0097 (0.0807)	-0.0132 (0.0382)
	0.0268							0.9048 (0.0382)	0.7322 (0.0382)
Bank liquidity ratio	0.6753* (0.3961)							0.6194 (0.3717)	0.2964 (0.3638)
	0.0993							0.1068 (0.0382)	0.4220 (0.0382)
Risk profile									
Doubtful loans		0.2588* (0.1518)						0.2131** (0.0957)	-0.0544 (0.0427)
		0.0993						0.0342 (0.0382)	0.2123 (0.0382)
Loan-loss provision ratio		0.7158** (0.2673)						0.6521*** (0.1728)	0.1465 (0.1252)
		0.0123						0.0008 (0.0382)	0.2519 (0.0382)
Revenue mix(Comercial Business Model)									
Commissions ratio			-0.1323** (0.0542)					-0.0436 (0.0479)	-0.0335 (0.0632)
			0.0212					0.3697 (0.0382)	0.5999 (0.0382)
Stable sources of funding									
Share of short-term funding				0.0484 (0.0478)				-0.0129 (0.0294)	0.0044 (0.0258)
				0.3201				0.6645 (0.0382)	0.8643 (0.0382)
Volatile sources of funding									
Share of funding in foreign currency					0.0198 (0.0681)			0.0284 (0.0774)	-0.0428 (0.0878)
					0.7732			0.7163 (0.0382)	0.6293 (0.0382)
Profitability									
ROA						-0.0568 (0.2476)		0.0268 (0.1411)	-0.2013 (0.0926)
						0.8203		0.8506 (0.0382)	0.1071 (0.0382)
Foreign Presence									
Number of Subsidiaries							-0.0000 (0.0000)	-0.0004 (0.0009)	-0.0003 (0.0000)
								0.6804 (0.0382)	0.6605 (0.0382)
R-squared									0.6953 0.7132 0.6376 0.6392 0.6359 0.6281 0.6647 0.6185 0.7727
Adjusted R-squared									0.6642 0.6852 0.6038 0.6040 0.6019 0.5934 0.6318 0.5835 0.7383

Source: authors' calculations.

TABLE 9
Changes on the Transmission of Domestic Monetary Policy when Banks Expand their Business Abroad - Non-Performing Loans ratio

The table reports OLS regressions for a sample of 805 bank-quarter observations. The dependent variable is the Non-Performing Loans Ratio. Columns 1-7 present different specifications that include double interactions between: i) each bank variable and the number of subsidiaries (of that specific bank) and each bank variable and the change in the domestic monetary policy rate. Each specification also includes the triple interaction between the bank variable, the number of subsidiaries and the change in the monetary policy rate. All the specifications include Time FE and Bank FE. Definition of the variables can be found in Table 1. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the bank level are reported in the second row and p-values are in the third row. Note that in the second part of the table (right side) the stars that typically signal the significance level of a variable are not included, instead variables are highlighted.

Model	Model							Interactions with $\sum_{j=1-2} \Delta i(t-j)$								
	(1)	(2)	(3)	(4)	(4)	(5)	(6)	(7)	(1)	(2)	(3)	(4)	(4)	(5)	(6)	(7)
Number of Subsidiaries	-0.0005 (0.0113)	-0.0005 (0.0007)	-0.0037*** (0.0010)	0.0011*** (0.0004)	0.0007 (0.0017)	-0.0000 (0.0006)	-0.0008 (0.0010)	-0.0481** (0.0231)	-0.0168 0.0156	-0.0011 0.0009	0.0014 0.0008	-0.0009 0.0004	0.0034 0.0011	-0.0011 0.0006	0.0015 0.0009	0.0860 0.0309
<i>Bank lending channel standard indicators</i>									0.2904	0.2635	0.1002	0.0274	0.0042	0.0595	0.1087	0.0082
ln (Total assets)	-0.103 (0.0065)						0.0065 (0.0063)	-0.0059 0.0024								-0.0023 0.0023
ln (Total assets) * Number of Subsidiaries	0.1226 (0.0005)						0.3081 (0.0010)	0.0202 -0.0037								0.3160 -0.0014
Bank capital ratio	0.9414 (0.0254)						0.0015 (0.0010)	0.0100 -0.0472								0.103 -0.0572
Bank capital ratio* Number of Subsidiaries	0.0001 (0.0113)						0.4941 (0.0051)	0.0635 -0.0288								0.0312 0.0745
Bank liquidity ratio	0.0113 (0.0078)						-0.0051 (0.0122)	0.0433 0.0138								0.0331 0.0223
Bank liquidity ratio* Number of Subsidiaries	0.1533 (0.1418)						0.6774 (0.1574)	0.0433 0.0433	0.2088 0.2006							0.1468 0.4010
Risk profile	0.7457*** (0.0000)						0.7248*** (0.0000)	0.0433 0.0433	0.2088 0.3045							0.1986 0.0504
Doubtful loans	-0.0993*** (0.0189)						-0.0896*** (0.0249)	0.0433 0.0433	-0.0084 0.0279							-0.0059 0.0207
Doubtful loans * Number of Subsidiaries	0.0000 (0.0000)						0.0009 (0.0000)	0.0433 0.0433	0.7646 0.0000							0.7771 0.0224
Loan-loss provision ratio	0.2656*** (0.0453)						0.2212*** (0.0442)	0.0433 0.0433	-0.0569 0.0616							0.0497 0.6545
Loan-loss provision ratio * Number of Subsidiaries	0.0091 (0.0098)						0.0105 (0.0172)	0.0433 0.0433	0.3616 0.0002							0.0562 0.0371
Revenue mix(Comercial Business Model)	0.0091 (0.0098)						0.0105 (0.0172)	0.0433 0.0433	0.9924 0.1429							0.1386 0.0245
Commissions ratio	0.7196*** (0.1307)						0.6304*** (0.0876)	0.0433 0.0433	0.1429 0.1386							0.1451 0.8667
Commissions ratio * Number of Subsidiaries	0.0165 (0.0160)						0.0043 (0.0163)	0.0433 0.0433	0.0602 0.0228							0.0251 0.0299
Stable sources of funding	0.3110 (0.0000)						0.7919 (0.0000)	0.0433 0.0433	0.0602 0.0228							0.4068 0.0039
Share of short-term funding	-0.1519*** (0.0468)						-0.0476 (0.0430)	0.0433 0.0433	-0.0325 0.0337							0.0322 0.9046
Share of short-term funding * Number of Subsidiaries	0.0024 (0.0098)						0.2748 (0.0115)	0.0433 0.0433	0.3408 0.0074							0.9046 -0.0303
Volatile sources of funding	0.0289*** (0.0061)						0.0242** (0.0115)	0.0433 0.0433	-0.0162 0.0074							0.0125 0.0206
Share of funding in foreign currency	0.0000 (0.0000)						0.0417 (0.0000)	0.0433 0.0433	0.0348 0.0348							0.0206 0.0039
Share of funding in foreign currency * Number of Subsidiaries	0.0489** (0.0186)						-0.0174 (0.0192)	0.0433 0.0433	-0.0174 0.0122							-0.0112 0.0134
Profitability	0.0121 (0.0036)						0.3708 (0.0065)	0.0433 0.0433	0.6438 0.0055							0.4113 0.0031
ROA	-0.0012 (0.0036)						0.0190*** (0.0065)	0.0433 0.0433	-0.0089 0.0028							0.0097 0.7549
ROA * Number of Subsidiaries	0.7480 (0.0069)						0.0055 (0.0065)	0.0433 0.0433	0.0034 0.0034							0.0097 0.7549
Adjusted Resquared	0.0199 (0.0393)						0.0179 (0.0437)	0.0433 0.0433	-0.0503 0.0527							-0.0568 0.0614
R-squared	0.6148 (0.0069)						0.6850 (0.0065)	0.0433 0.0433	0.3463 0.0205							0.3607 0.0444
Robust standard errors in parentheses	0.0014 (0.0069)						0.0150** (0.0065)	0.0433 0.0433	0.0205 0.0205							0.0221 0.0511
Adjusted Resquared	0.8353 (0.0069)						0.0256 (0.0065)	0.0433 0.0433	0.0997 0.0997							0.0511 0.0511
ROA	-0.0735 (0.2172)						0.0279 (0.1554)	0.0433 0.0433	-0.2091 0.0929							-0.1301 0.0750
ROA * Number of Subsidiaries	0.7370 (0.0474)						0.8582 (0.0353)	0.0433 0.0433	0.0302 0.0302							0.0906 -0.1112
Adjusted Resquared	0.0317 (0.0317)						0.0470 (0.0470)	0.0433 0.0433	0.0294 0.1514							0.0597 0.0702
R-squared	0.1435 (0.0317)						0.4576 (0.0470)	0.0433 0.0433	0.7040 0.6684	0.7151 0.6835	0.6407 0.6041	0.6416 0.6018	0.6365 0.5994	0.6287 0.5909	0.6654 0.6294	0.7861 0.7411

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

Source: authors' calculations.

Table 10
Changes on the Deposits of Individual Banks

The table reports OLS regressions for a sample of 2,521 bank - month observations. The dependent variable is the Ln Deposits. Columns 1-3 present different specifications that include double interactions between the number of subsidiaries (of that specific bank) and the domestic monetary policy rate. Definition of the variables can be found in Table 1. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the bank level are reported in the second row and p-values are in the third row.

Model	(1)	(2)	(3)
Number of Subsidiaries	0.2774*** (0.0101)	0.2794*** (0.0101)	0.0725*** (0.0049)
$\sum_{j=1-2} \Delta i(t-j)$	0.0000 (0.0639)	0.0000	0.1530*** (0.0230)
Number of Subsidiaries * $\sum_{j=1-2} \Delta i(t-j)$	0.6557 -0.0215 (0.0163)	-0.0197 (0.0162)	0.0000 -0.0105** (0.0043)
R-squared	0.1867	0.2234	0.0151
Adjusted R-squared	0.183	0.197	0.8758
Time FE	0.1820	0.1565	0.8743
Bank FE	NO	YES	NO
	NO	NO	YES

Source: authors' calculations.

Table 11
Changes on the Deposits of the Financial Conglomerate

The table reports OLS regressions for a sample of 93 financial conglomerate -quarter observations. The dependent variable is the Ln Deposits. Columns 1-3 present different specifications that include double interactions between the number of subsidiaries (of that specific bank) and the domestic monetary policy rate. Definition of the variables can be found in Table 1. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the bank level are reported in the second row and p-values are in the third row.

Model	(1)	(2)	(3)
Number of Subsidiaries	0.1282*** (0.0279)	0.1216*** (0.0272)	0.0124 (0.0148)
$\sum_{j=1-2} \Delta i(t-j)$	0.0000 (0.3010)	0.0000	0.4042 (0.0152)
Number of Subsidiaries * $\sum_{j=1-2} \Delta i(t-j)$	0.8354 0.0120 (0.0478)	0.0195 (0.0484)	0.7252 0.0034 (0.0025)
R-squared	0.8022	0.6883	0.1771
Adjusted R-squared	.2545	.2612	.9978
Time FE	0.2294	0.1811	0.9973
Bank FE	NO	YES	NO
	NO	NO	YES

Source: authors' calculations.

Table 12

Changes in Foreign Lending by internationalized and non-internationalized banks

The table reports OLS regressions for a sample of 1,259 bank-month observations. The dependent variable is the Ln Foreign Lending. Columns 1-3 present different specifications that include double interactions between the number of subsidiaries (of that specific bank) and the domestic monetary policy rate. Definition of the variables can be found in Table 1. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the bank level are reported in the second row and p-values are in the third row.

Model	(1)	(2)	(3)
Number of Subsidiaries	0.1741*** (0.0092)	0.1709*** (0.0094)	0.0192*** (0.0067)
$\sum_{j=1-2} \Delta i(t-j)$	0.0000	0.0000	0.0041
	0.3844*** (0.0502)		0.3499*** (0.0354)
	0.0000		0.0000
Number of Subsidiaries * $\sum_{j=1-2} \Delta i(t-j)$	-0.0076 (0.0145)	-0.0099 (0.0154)	0.0223** (0.0087)
	0.5996	0.5184	0.0105
R-squared	0.2722	0.32	0.768
Adjusted R-squared	0.2704	0.2483	0.7648
Time FE	NO	YES	NO
Bank FE	NO	NO	YES

Source: authors' calculations.

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