

Banks' Business Model and Supply of Credit in Chile[§]

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Abstract

During the global financial crisis of 2008 banks suffered losses on a scale not witnessed since the Great Depression, with the regulatory response concentrated on the Basel III recommendations, raising core capital requirements for banking institutions, and thus affecting their business model. Consequently, these changes have had implications on how banks grant loans, how they react to monetary policy and global external shocks. In this paper, we find evidence of interactions between some Chilean banks' characteristics (named, provisions, retail loans, and short-term funding) and the credit growth supply. Next, we find that more capitalized banks are more likely to buffer monetary policy shocks. Finally, when excluding the publicly owned bank we find slightly larger effects, compared to the baseline model, and confirm the counter-cyclical role of Banco Estado in periods of a credit crunch.

Keywords: Credit supply, monetary policy, global factors, Banco Estado

JEL Codes: E44, E51, E52, F30, G21

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1 Introduction

During the Global Financial Crisis (hereafter financial crisis) banks suffered losses on a scale not witnessed since the Great Depression (Altunbas et al., 2012), partially due to two major structural developments in the banking industry, namely deregulation and financial innovation. In the aftermath of the financial crisis, the regulatory response concentrated on the Basel III recommendations raising core capital levels of banking institutions, affecting banks' business models and funding patterns (Altunbas et al., 2012; Gambacorta and Marques-Ibanez, 2011; Roengpitya et al., 2014). In view of these events, it is natural to expect that these changes have had implications on how banks grant credit, react to monetary policy and to major global shocks. Hence, this paper has four objectives; first, explore how changes in the Chilean banks' specific characteristics affect the supply of credit. Second, investigate whether these changes may affect the bank lending channel of monetary policy. Third, assess how sensitive these results are to changes in global factors/external conditions. And last how relevant has been the large publicly owned bank (Banco Estado), affecting the Chilean banking sector loans supply, and its counter-cyclical role in periods of credit contraction and economic downturn.

Our results suggest that the Chilean banks' characteristics affecting the credit growth supply are the past loan-loss provisions (as a share of total loans), retail loans (as a share of total loans) and the past share of short-term funding. While provisions have a negative relationship with the credit growth supply, retail loans, and short-term funding are positively related to the growth in loans supply. Regarding the bank lending channel, we find that more capitalized banks are more likely to buffer changes in the monetary policy interest rate and less likely to affect the supply of credit.

Last, regarding the study of Chile's publicly owned bank, we find that the coefficients representing the interaction between commodity prices and banks' specific characteristics might be explained by the inclusion of Banco Estado in the sample, evidencing this bank's counter-cyclical behavior during economic crises and commodity prices crunches. In other words, we do not find evidence of a differentiated response among commercial banks to shocks in the global business cycle, except for the case of Banco Estado. Moreover, when we omit this bank from the baseline specification, we find larger and more significant effects.

Since most of the existent literature that has studied the change in banks' business models has focused on advanced economies (Altunbas et al., 2012; Gambacorta and Marques-Ibanez, 2011; Roengpitya et al., 2014), there is lack of evidence for emerging economies, especially in Latin America. This paper focuses on the case of Chile studying the occurrence of changes in the banks' business models as a consequence of external shocks (global factors), whether these changes have affected the bank lending channel of the Chilean monetary policy previously documented in the literature (Alfaro et al., 2005; Fernández, 2005; Catão and Pagan, 2010), and the role of Banco Estado, which had a relevant role during the financial crisis (Salas et al., 2011; Ffrench-Davis and Heresi, 2014; Mullins and Toro, 2018).

As previously mentioned, most of the literature studying the changes in banks' business model due to the financial crisis has focused on advanced economies (Gambacorta and Marques-Ibanez, 2011; Roengpitya et al., 2014), finding that banks' business model and market funding patterns have changed, thus affecting the monetary policy transmission (bank lending channel). For instance, Gambacorta and Marques-Ibanez (2011), focusing on Europe and the United States for the period between the first quarter of 1999 and the fourth quarter of 2009 finds significant changes in the functioning of the bank lending channel of monetary policy transmission as a result of financial innovation and changes in banks' business model. On its hand, most of the literature on emerging markets, in spite of having well documented evidence of the existence of a bank lending channel in different countries – Aban (2013) in the Philippines, Xiong (2013) in China, Ananchotikul and Seneviratne (2015) for a group of selected Asian countries, and Lerskullawat (2017) for a group of ASEAN countries, etc.) – has not studied changes in the banks' business model as a consequence of the financial crisis.

In Chile, meanwhile, the paper by Alegría et al. (2017) studies the effects of changes in the Chilean banks' business model due to the financial crisis, results supporting the existence of the bank lending channel have been documented by Alfaro et al. (2005), Fernández (2005) and Catão and Pagan (2010). Regarding the contribution by Alegría et al. (2017), these authors assess the existence of spillovers from the financial crisis on the cost and structure of cross-border funding of Chilean banks, using data on individual debt transactions between Chilean banks and their foreign counterparties for the period 2008-2016, finding: (i) that during the financial crisis

Chilean banks saw a significant deterioration in their access to funds from foreign banks; and (ii) that in the aftermath of the financial crisis Chilean banks modified their sources of funding, turning toward higher levels of bond funding and to new lending counterparties. On the other hand, Alfaro et al. (2005), Fernández (2005) and Catão and Pagan (2010), all find evidence of the existence of the bank lending channel in Chile, using different periods of study and alternative methodologies. Among these studies, the contribution by Fernández (2005) is the closest to this paper. Using data for nineteen banks operating in Chile, between January 1999 and December 2002, Fernández (2005) finds evidence supporting the existence of a bank lending channel, though presenting asymmetric responses to monetary shocks depending on banks' characteristics, such as size, liquidity and efficiency.

The rest of this paper includes four sections, besides this introduction. Section 2 presents an overview of the Chilean banking sector, a characterization of the Chilean banks' business model and a description of Banco Estado. A more formal analysis of the relationship between banks' specific characteristics and lending over time, based on banks' specific characteristics, macroeconomic data, and econometric models is included in Section 3. In Section 4 results are summarized and discussed. Finally, Section 5 concludes.

2 Chilean Banking System

This section includes an overview of the Chilean banking sector, characterizes the country banks' business model, and discusses the role and characteristics of Banco Estado, the publicly owned bank.

As 2018 the Chilean banking sector comprises twenty-one institutions, mostly oriented towards the firm and household credit, mainly owned by private actors with the exception of Banco Estado, and having a high level of concentration.¹ Most of the banks in the Chilean banking sector fit into the retail-funded category in the classification proposed by Roengpitya et al. (2014). Among the private banks owned, domestic owned banks represent about sixty percent of the

¹ The list of banks regulated by the Superintendency of Banks and Financial Institutions is detailed in the appendix.

total market (total credit), and foreign-owned banks represent the remaining forty percent (Superintendence of Banks and Financial Institutions, 2017). Concerning the assets in the system, three out of the twenty-one banks hold about half (Figure 1).

Regarding the banks' business model, lending is the main source of revenue, with corporate loans comprising more than half of the joint portfolio, followed by mortgages and consumers' credit, respectively (Figure 2). As of 2017, and without major changes since 2008, over forty percent of total liabilities were concentrated in deposits of firms and households (Figure 3). Beyond this deposit share, Chilean banks have historically maintained a diversified set of funding sources, including local (e.g. other local banks, pension and mutual funds) and external agents (e.g. bonds and loans) (Figure 4). Since the financial crisis, banks have modified their sources of funding, in particular, after 2008 they have relied more heavily on external bond issuance and less on loans from banks abroad (Figure 5), driven in part by access to lower interest rates abroad. Regarding the former, in 2009 external bonds were a negligible fraction of total cross-border funding, by 2015 this component had risen to more than fifty percent of total external borrowing. About credit risk, after a sharp increase around the onset of the financial crisis, followed by a protracted decline, default rates have stabilized in low levels for all types of loans (Figure 6).

Regarding Banco Estado, it is the only publicly owned commercial bank in Chile. It was created by government decree in 1953. Banco Estado provides financial services to households and firms, with a focus on national coverage in terms of geography and social sectors and a particular emphasis on the unbanked and small and medium firms, although it serves all types of businesses. It is the country's largest mortgage originator and largest issuer of debit cards. In addition, Banco Estado performs all of the Chilean government's financial activities through a single account managed by the General Treasury of the Republic of Chile.

Historically, it has played a central role in the implementation of public policies such as providing loans and collateral to small firms, and in promoting homeownership by granting mortgage loans subsidized by the government. During the financial crisis, as argued in Lagos and Tapia (2014), Banco Estado was capitalized by the government, which permitted it to act counter-cyclically by increasing its growth rate of loans granted, while the rest of the banks were either reducing or

maintaining the pace at which they originated loans.² This credit expansion was mostly directed towards firms. In particular, as pointed out in Lagos and Tapia (2014), Banco Estado's response was fast and affected aggregate credit, though its scope was limited by the bank's scale. Banco Estado's credit expanded more rapidly in segments with larger loans, suggesting that a significant share of the new credit ended up in large firms. These policies ultimately contributed towards reducing the overall credit contraction and ended up increasing Banco Estado's market share while keeping it profitable.

3 Empirical Strategy

In this section, we discuss the data, variables and econometric models used to study the evolution of the Chilean banks' business model and its impact on lending. We are also interested in assessing the relevance of these changes and their interaction with local monetary shocks, and in evaluating whether the impact of global factors/external conditions change the way bank-specific characteristics affect the supply of credit. In order to do so, we use data on banks' specific characteristics, macroeconomic data and global external indicators for the period spanned between 1990 and 2016. The models we estimated build on the econometric specification used in Gambacorta and Marques-Ibanez (2011) and Jiménez et al. (2012).

3.1 Data and Variables

We use both balance sheets and credit registry data in quarterly frequency for the period spanned between 1990:Q1 and 2016:Q4. Table 1 presents descriptive statistics for the variables we used in the estimated specifications.

The variables presented in Table 1 include the supply of credit growth as dependent variable, and banks' specific characteristics that can be classified on the following five categories: (i) bank

² In December 2008 two policies were implemented in order to maintain credit readily available. First, it increased the level of public guarantees on private credit to small firms as well as making larger firms temporarily eligible, the effects of this policy are studied by Mullins and Toro (2018). Second, Banco Estado was instructed to make a special effort to provide credit to firms and households. To keep the bank financially sound and its capital-to-loans ratio in line with the supervisor's requirement, Banco Estado was capitalized with USD 500 million (increasing the bank's capital by 50%).

lending channel standard indicators (ln(total assets), bank capital ratio, bank liquidity ratio); (ii) risk profile (loan-loss provisions as a share of total loans); (iii) revenue mix (share of net fees and commission income, share of trading income, retail loans as a share of total loans); (iv) funding (share of short-term funding, share of funding in foreign currency); (v) and profitability (return on assets).

For our dependent variable, we use credit registry data at the loan level for each bank-firm pair and time period. Both administrative and banks' balance sheet data are used to set our regressors.

3.2 Baseline Model

Our empirical strategy for analyzing the evolution of the banks' business model borrows from Gambacorta and Marques-Ibanez (2011) and Jiménez et al. (2012), and our baseline model can be written as:

$$\Delta \log L_{fbt} = \beta X_{b,t-1} + b + f * t + \varepsilon_{fbt} \quad (1)$$

where L_{fbt} denotes the amount lent by bank b to firm f at time t , $X_{b,t-1}$ is a vector of bank b characteristics at time $t-1$, b is a vector of time-invariant bank b fixed-effects, $f * t$ is a vector of firm-time fixed effects, and ε_{fbt} is an error term.³ For this specification, we are mostly interested in the estimated β coefficients which tell about the interaction between a particular bank set of characteristics and their loan granting process.

3.3 Bank Lending Channel

For the question on how monetary policy shocks may have affected the supply of credit, and to determine the role that bank-specific features have had in strengthening or weakening the bank lending channel, we extend the baseline model as follows:

$$\Delta \log L_{fbt} = \beta X_{b,t-1} + \delta(\Delta i_{t-1} * X_{b,t-1}) + b + f * t + \varepsilon_{fbt} \quad (2)$$

³ All specifications use bank and time (two-way) cluster-robust standard errors.

In this specification, Δi_{t-1} represents the quarterly change in the monetary policy rate at time $t-1$. In general, we are mainly interested in the sign and size of the δ estimated coefficients, which correspond to the interaction between monetary policy and banks' specific characteristics.

3.4 Impact of Global Factors

In order to assess the impact that external conditions (global factors) could have had on banks' specific characteristics, we estimate the following specification that once again builds upon our baseline specification:

$$\Delta \log L_{fbt} = \beta X_{b,t-1} + \gamma(C_t * X_{b,t-1}) + b + f * t + \varepsilon_{fbt} \quad (3)$$

Where C_t corresponds to a global factor. For the purpose of this exercise we have considered five alternative sources of global shocks and their corresponding alternative definitions for C_t : (i) global financial uncertainty proxied with the Chicago Board Options Exchange volatility index, VIX; (ii) global liquidity measured by the Wu-Xia shadow rate for the US monetary policy, as in Wu and Xia (2016); (iii) economic political uncertainty approximated with the Baker, Bloom and Davis index, as in Baker et al. (2016); (iv) global commodity prices measured by the IMF primary commodity price index; and the (v) global financial crisis, represented by a dummy variable that takes the value of 1 during the 2008:Q3-2009:Q4 period and zero otherwise.

In this particular case, we are mostly interested in the significance, sign, and magnitude of the estimated γ coefficients.

4. Results

As previously discussed, we are interested in how changes in banks' specific characteristics may have affected bank lending. And, in turn, how these banks' specific characteristics and hence the supply of credit, are affected by monetary policy shocks and global economic conditions,

particularly commodity prices, as Chile is a commodity export-oriented economy. In addition, and due to its importance in the Chilean banking system as discussed above, we investigate the role of Banco Estado regarding the previous question and its counter-cyclical behavior. The results pertaining to these issues are summarized in this section.

4.1 Baseline Specification

To answer the question about the interaction between banks' specific characteristics and change in the credit supply, we estimated the baseline model represented by equation (1) which results are shown in Table 2. Our estimates indicate that there is a negative relationship between the past loan-loss provisions, as a share of total loans, and the credit growth supply. This finding, documented in the literature (e.g. Bouvatier and Lepetit, 2012) relates to the backward-looking adjustment process carried out by banks in order to comply with loan-loss provision requirements. Whenever a loan is granted, provisions are constituted, therefore, a negative sign of this term is a signal of portfolio adjustments made by the banks to maintain credit risk under control.

Also, we find a positive relationship between past retail loans, as a share of total loans, and the credit growth supply. This is consistent with the findings in Blundell-Wignall and Roulet (2013), and with the fact that a business model more based on retail loans would provide a more stable funding base, which in turn will foster lending.

With respect to the banks' funding strategy, we find evidence of a positive relationship between the past share of short-term funding and the credit growth supply. Since the 2000s there has been a global trend of increasing short-term leverage in banks' balance sheets, mostly due to abundant liquidity. This trend constituted a change, as prior to this banks used to rely more on long-term sources of funding, such as bonds and deposits. This finding is documented in the literature, in particular, Perotti and Suárez (2009) suggest that short-term funding reduces the fraction of actively monitoring intermediaries, enabling lax credit choices, and therefore increasing loans growth.

4.2 Bank Lending Channel and Monetary Policy

Regarding the bank lending channel and monetary policy transmission, our results obtained from estimating equation (2) are summarized in Table 3. Incorporating the monetary policy stance in our baseline specification does not translate into major changes in the results summarized in Table 2. Consequently, we still find a significant inter-temporal effect between the provisions ratio and the credit growth supply. We also find a significant positive effect between loans expansion and the lagged retail loans and short-term funding ratios. This reinforces the findings reported in our baseline model.

Regarding the interactions between monetary policy and the banks' specific characteristics we find a positive coefficient for the interaction between the bank's capital ratio and monetary policy, suggesting that when an interest rate tightening (an increase in Δi_{t-1}) is observed, those banks better capitalized (with a bigger capital ratio) are more likely to buffer monetary policy shocks, and then less likely to affect the loans supply.

4.3 Impact of Global Factors

This subsection investigates the existence of possibly heterogeneous responses to external shocks in bank lending. In other words, we evaluate if there are certain bank characteristics that make banks react differently to shocks in global risk factors. To this end, we build upon our baseline model to investigate the influence of five alternative global economic conditions (namely, global financial uncertainty, global liquidity, economic political uncertainty, global commodity prices, and the financial crisis). Among these global economic conditions, we found that the most relevant factor corresponds to commodity prices. This finding is not surprising as Chile is a net exporter of several commodities (most notably, copper).

As mentioned above, we estimated the specification in equation (3), and Table 4 contains the results due to changes in commodity prices. The results from the interactions between the banks' specific characteristics and the global financial uncertainty, global liquidity, economic political uncertainty, and financial crisis, are reported in Appendices B, C, D, and E, respectively.

Besides the fact that, once again, our results for the baseline model are robust to the inclusion of the global factor variable C_t , there are three additional results arising from our estimation of the relationship between changes in commodity prices and banks' specific characteristics. Consequently, every time there is a decrease in commodity prices, those banks with high shares of retail loans will slightly increase lending with respect to the other banks with lower shares.

Second, if a commodity prices decrease occurs, those banks with more funding in foreign currency are more likely affected, and then more likely to transmit this type of shocks to the supply of credit, supporting the hypothesis that the overall credit response to commodity prices works also through the credit supply channel (Agarwal et al., 2018).

Finally, in our results, we also encounter evidence indicating that those banks with larger returns over assets are more willing to decrease lending when facing a negative commodity prices shock, which also coincides with the findings in Agarwal et al. (2018).

4.4 Banco Estado

Considering the well documented economic dependence that Chile has on commodity prices (copper in particular), we investigate the hypothesis suggesting that Banco Estado has a counter-cyclical role in periods of an economic downturn and credit contraction. To do so we compare the results presented in Table 4, described in the previous subsection, with those that exclude Banco Estado from our sample and estimate the specification represented by equation (3). Thus the results obtained when excluding the publicly owned bank and take into account the interaction between commodity prices and banks' specific characteristics are displayed in Table 5. From comparing Tables 4 and 5 we observe that significant coefficients in Table 4, representing the interaction between commodity prices and banks' specific characteristics, become non-significant in Table 5.

In Table 4 the interaction between the lagged retail loans ratio and commodity prices is negative, meaning that during a bust in commodity prices, those banks with high shares of retail loans will increase lending with respect to the other banks. Indeed among the banks in our sample Banco Estado has about a 15 percent more share of retail loans than the average of the remaining banks

(all private) in our sample. Similarly, the interaction between commodity price shocks and the share of funding in foreign currency is positive in Table 4, meaning that banks less funded in foreign currency are less affected by negative commodity price shocks. Notably, Banco Estado holds about 7 percent less of funding in foreign currency than the average of the remaining banks in our sample. Last, the results presented in subsection 4.3 indicate that those banks with larger returns over assets are willing to lend less when facing a negative commodity prices shock, exactly the case of Banco Estado which has about 0.23 percent less of return over assets than the remaining average of the banks in our sample.

In short, when commodity prices decrease, i.e. $C_t < 0$, *ceteris paribus* we observe that: (i) banks with more exposure to retail loans tend to lend more ($\gamma_{retail} < 0 \rightarrow C_t * \gamma_{retail} > 0$), (ii) banks with less funding in foreign currency are more likely to lend more ($\gamma_{fx} > 0 \rightarrow C_t * \gamma_{fx} < 0$), and (iii) banks reporting smaller return over assets also use to lend more ($\gamma_{ROA} > 0 \rightarrow C_t * \gamma_{ROA} < 0$). Among all banks in our sample, Banco Estado has all these three characteristics. Thus, we suspect that results found in subsection 4.3 are driven by the inclusion of Banco Estado. In other terms, the coefficients representing the interaction between commodity prices and banks' specific characteristics in Table 4 might be explained by the inclusion of Banco Estado, and its counter-cyclical behavior during economic crises and bust of commodity prices. On its hand, our results suggest that commercial banks' business model seems not contingent on the business cycle.

In order to assess the relevance Banco Estado has in the local financial market, and how it might have shaped the bank lending channel. We exclude Banco Estado from our sample and compare our estimates to the ones previously obtained with our baseline model using the full sample (which includes Banco Estado). The results obtained when excluding the publicly owned bank are summarized in Table 5.

The comparison between the results in Tables 1 and 6 yields several interesting results. First, all variables found to be statistically significant under the full-sample baseline estimation are still significant with the sub-sample excluding Banco Estado. This points towards the robustness of our results and is reassuring our findings.

Second, significant coefficients estimated when excluding Banco Estado are larger (in absolute value) than those obtained with the full sample. This finding is sensible, considering the fact that Banco Estado does not necessarily operate as a private bank. Therefore, it does not come as a surprise that once Banco Estado is removed from the sample, all the interactions between private banks' characteristics and the bank lending are increased and reinforced since all the banks in the pool are more alike.

Third, the term corresponding to the past share of net fees and commission income becomes significant with a negative estimated coefficient. There is substantial evidence indicating that during bust periods, banks must adapt and resort to alternative sources of income. As pointed out in European Central Bank (2016), one way for banks to compensate for compressed net interest margins could be to adapt their business models, moving towards more fee and commission-generating activities. As banks are forced to substitute their usual sources of income for alternatives such as fees and commissions, it is sensible to find a negative sign on this coefficient. It is also sensible that this effect arises only after removing Banco Estado from the sample, provided it was capitalized during the financial crisis and therefore it did not need to resort to alternative sources of income as commercial banks.

5 Final Remarks

There are four objectives underlying this document. First, to study the interaction between changes in banks' characteristics and the supply of credit. Second, to analyze how these interactions may be shaped by monetary policy. Third, to assess how sensitive these results are to changes in global conditions, commodity prices in particular. And fourth assess the relevance Banco Estado in the local financial market, in particular, its role in banking sector lending.

We find that there is a negative relationship between the level of loan-loss provisions and credit growth. We also find a positive relationship between both retail loans and short-term funding and credit growth. All of these results are consistent with the related literature and consistent across different specifications.

Regarding the interaction with monetary policy, more capitalized banks are less sensitive to changes in the monetary policy interest rate, and therefore less likely to affect the loans supply.

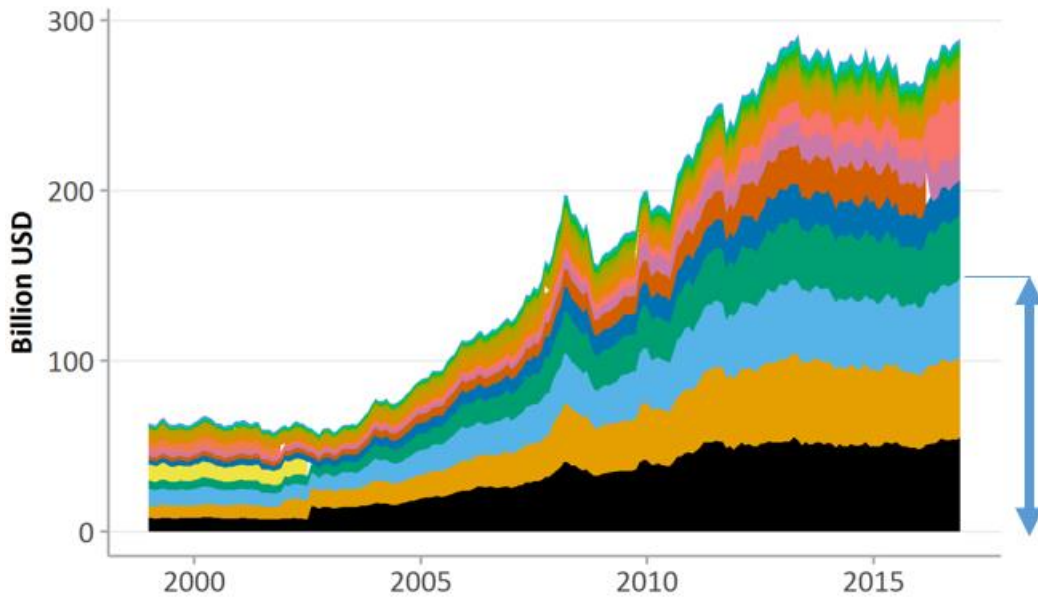
Finally, with respect to the role that Banco Estado has played in terms of bank lending, we find that all of our results are robust to the exclusion of the government-owned bank. However, when removing Banco Estado from the sample all the interactions between private banks' characteristics and bank lending are increased and reinforced since all the banks in the pool are more alike. The comparison of results coming out of the model representing the interaction between commodity prices and banks' specific characteristics finds that by excluding Banco Estado from the sample, evidence of counter-cyclical behavior during commodity prices crunches is found.

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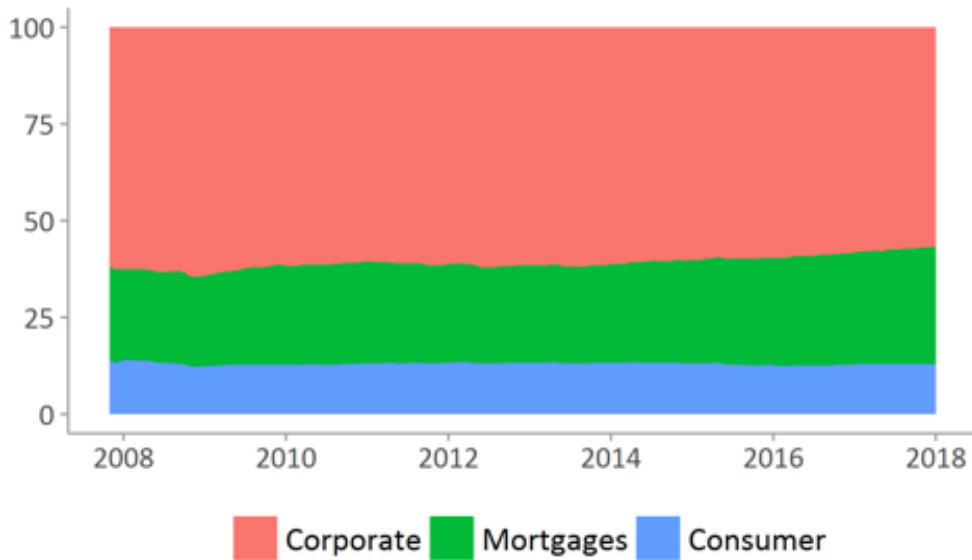
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Figure 1. Assets by institution, billions of USD
 (Total assets, separated by institutions)



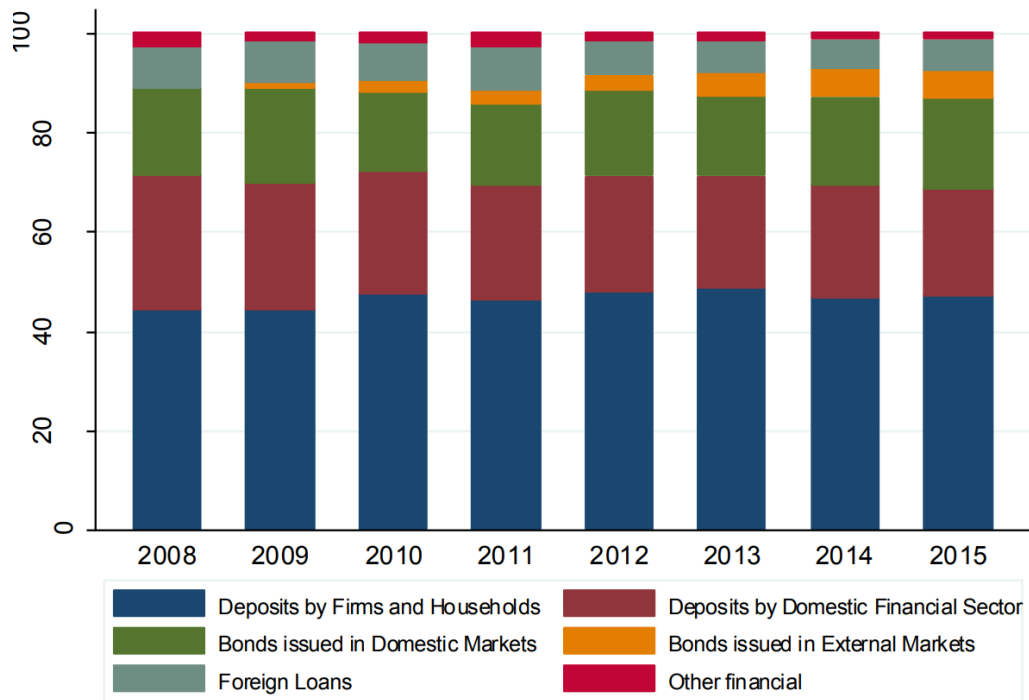
Source: Own elaboration based on SBIF data.

Figure 2. Debt stock composition, percentage



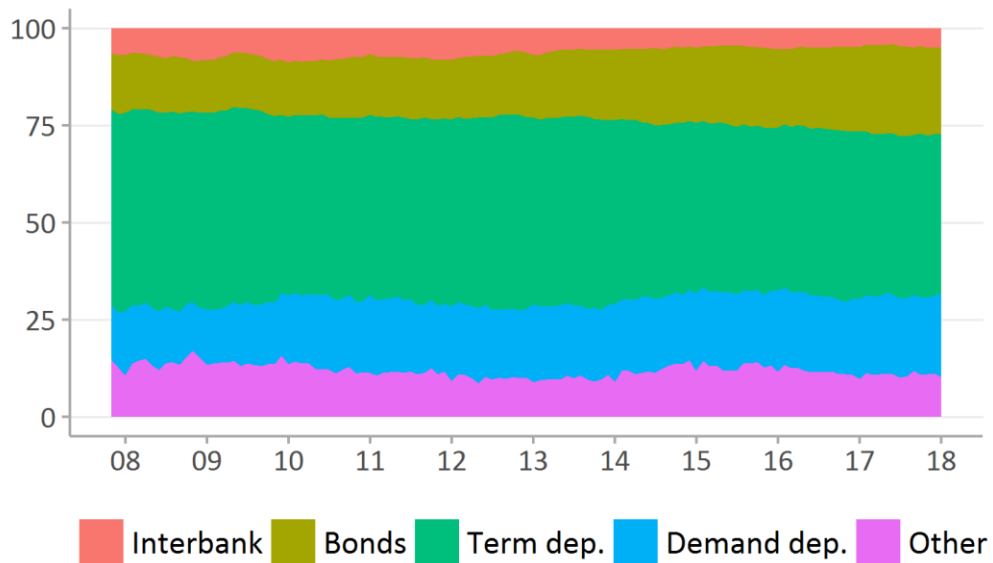
Source: Own elaboration based on SBIF data.

Figure 3. The composition of liabilities in the Chilean banking system, percentage



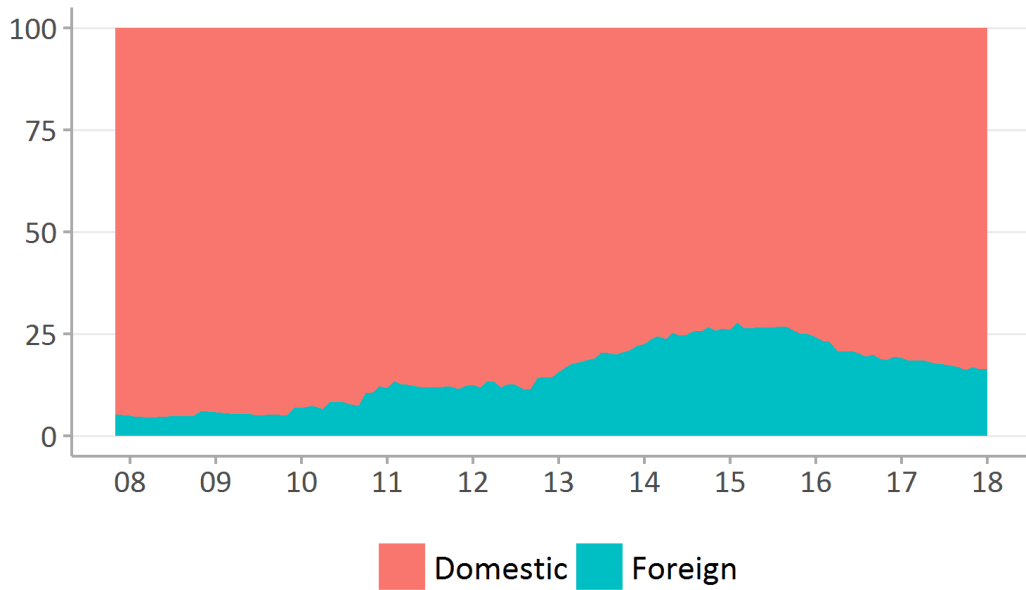
Source: Alegría et al. (2017).

Figure 4. Funding sources, percentage



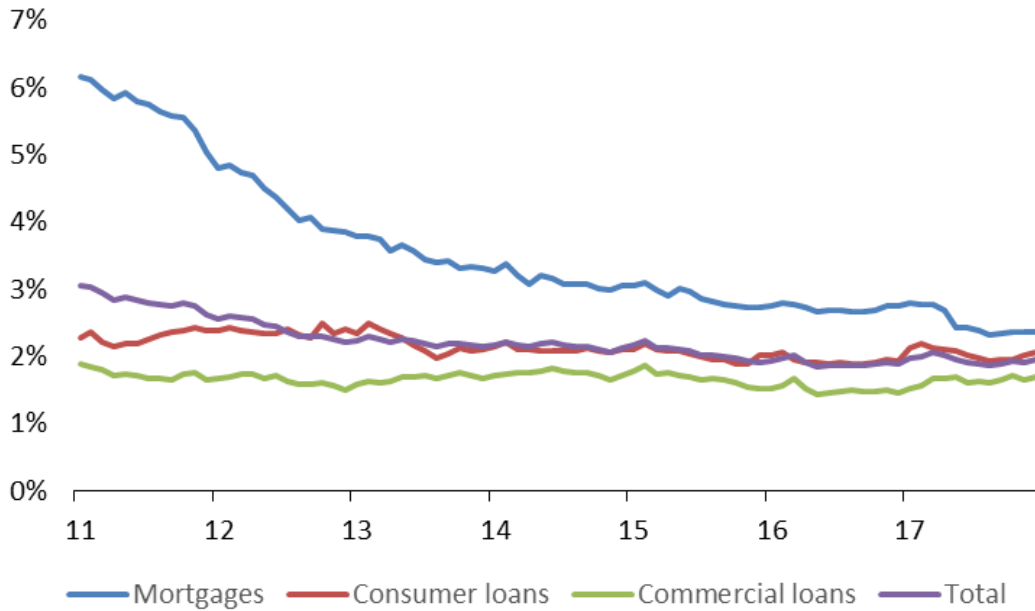
Source: Own elaboration based on SBIF data.

Figure 5. The composition of bonds by currency, percentage



Source: Own elaboration based on SBIF data.

Figure 6. Default rate by type of loan, percentage



Source: Own elaboration based on SBIF data.

Table 1. Descriptive Statistics

Variables	Units	Observations	Min	25th percentile	Median	Average	75th percentile	Max
Dependent variable								
Δ Log credit	log (CLP)	7,794,210	-4.5336	-0.1448	-0.0180	-0.0097	0.0532	4.7116
Independent variables								
Bank lending channel standard indicators								
ln (total assets)	log (CLP)	1,453	17.0530	17.0530	17.8465	18.1782	19.0672	21.0371
Bank capital ratio	Ratio	1,453	0.0501	0.0798	0.0983	0.1067	0.1444	0.1444
Bank liquidity ratio	Ratio	1,453	0.0625	0.1308	0.2227	0.2408	0.4010	0.4010
Risk profile								
Loan-loss provisions as a share of total loans	Ratio	1,453	0.0111	0.0138	0.0193	0.0213	0.0261	0.0421
Revenue mix								
Share of net fees and comission income	Ratio	1,453	0.0375	0.0491	0.0794	0.0889	0.1183	0.2086
Share of trading income	Ratio	1,453	0.0000	0.0169	0.0750	0.1306	0.1968	0.4146
Retail loans as a share of total loans	Ratio	1,453	0.0214	0.0214	0.1805	0.2109	0.3785	0.5411
Funding								
Share of short-term funding	Ratio	1,453	0.7426	0.9099	0.9701	0.9451	1.0000	1.0000
Share of funding in foriegn currency	Ratio	1,453	0.0359	0.1225	0.1754	0.1725	0.2419	0.2704
Profitability								
Other bank-specific characteristics used (ROA)	Ratio	1,453	-0.0019	0.0010	0.0027	0.0025	0.0043	0.0069
Other controls								
Firm specific characteristics (dummy variable indicating NPLs)	Ratio	5,191,931	0.0000	0.0000	0.0000	0.0711	0.0000	1.0000

Table 2. Baseline Model

Δ Log credit	(1)	(2)	(3)	(4)	(5)	(6)
ln (Total assets) (t-1)	-0.032 (0.077)*	-	-	-	-	-0.014 (0.433)
Bank capital ratio (t-1)	0.140 (0.407)	-	-	-	-	-
Bank liquidity ratio (t-1)	0.005 (0.959)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1)	-	-1.300 (0.022)*	-	-	-	-1.648 (0.002)*
Share of net fees and comission income (t-1)	-	-	-0.197 (0.291)	-	-	-
Share of trading income (t-1)	-	-	0.036 (0.357)	-	-	-
Retail loans as a share of total loans (t-1)	-	-	0.188 (0.007)*	-	-	0.201 (0.002)*
Share of short-term funding (t-1)	-	-	-	0.266 (0.004)*	-	0.300 (0.001)*
Share of funding in foriegn currency (t-1)	-	-	-	-0.160 (0.086)*	-	-0.079 (0.442)
Return on assets (t-1)	-	-	-	-	3.888 (0.075)*	2.869 (0.194)
Number of debtors	104 109	104 109	104 109	104 109	104 109	104 109
Number of banks	36	36	36	36	36	36
Observations	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902
R-squared	0.414	0.414	0.414	0.414	0.414	0.414
Adjusted R-squared	0.062	0.062	0.062	0.062	0.062	0.062

Note: (1) Main indicators, (2) Risk profile, (3) Revenue mix, (4) Funding, (5) Profitability, (6) All, p < 0.1

Table 3. Credit Supply and Monetary Policy

Δ Log credit	(1)	(2)	(3)	(4)	(5)	(6)
Bank-specific characteristics						
ln (Total assets) (t-1)	-0.032 (0.085)*	-	-	-	-	-0.014 (0.465)
Bank capital ratio (t-1)	0.153 (0.370)	-	-	-	-	0.079 (0.637)
Bank liquidity ratio (t-1)	0.013 (0.895)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1)	-	-1.281 (0.023)*	-	-	-	-1.660 (0.001)*
Share of net fees and comission income (t-1)	-	-	-0.216 (0.229)	-	-	-
Share of trading income (t-1)	-	-	0.032 (0.368)	-	-	-
Retail loans as a share of total loans (t-1)	-	-	0.187 (0.007)*	-	-	0.211 (0.000)*
Share of short-term funding (t-1)	-	-	-	0.253 (0.007)*	-	0.302 (0.002)*
Share of funding in foriegn currency (t-1)	-	-	-	-0.154 (0.101)	-	-
Return on assets (t-1)	-	-	-	-	3.896 (0.075)*	2.563 (0.231)
Interaction between MP stance and BSC						
ln (Total assets) (t-1) * Δ i(t-1)	-0.001 (0.706)	-	-	-	-	0.005 (0.402)
Bank capital ratio (t-1) * Δ i(t-1)	0.153 (0.015)*	-	-	-	-	0.296 (0.002)*
Bank liquidity ratio (t-1) * Δ i(t-1)	-0.037 (0.511)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1) * Δ i(t-1)	-	0.118 (0.736)	-	-	-	0.432 (0.220)
Share of net fees and comission income (t-1) * Δ i(t-1)	-	-	-0.076 (0.361)	-	-	-
Share of trading income (t-1) * Δ i(t-1)	-	-	-0.041 (0.318)	-	-	-
Retail loans as a share of total loans (t-1) * Δ i(t-1)	-	-	-0.025 (0.353)	-	-	-0.046 (0.250)
Share of short-term funding (t-1) * Δ i(t-1)	-	-	-	0.101 (0.267)	-	0.044 (0.620)
Share of funding in foriegn currency (t-1) * Δ i(t-1)	-	-	-	0.055 (0.440)	-	-
Return on assets (t-1) * Δ i(t-1)	-	-	-	-	0.335 (0.874)	-0.176 (0.908)
Number of debtors	104 109	104 109	104 109	104 109	104 109	104 109
Number of banks	36	36	36	36	36	36
Observations	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902
R-squared	0.414	0.414	0.414	0.414	0.414	0.414
Adjusted R-squared	0.062	0.062	0.062	0.062	0.062	0.062

Note: (1) Main indicators, (2) Risk profile, (3) Revenue mix, (4) Funding, (5) Profitability, (6) All, $p < 0.1$

Table 4. Credit Supply and Commodity Prices

Δ Log credit	(1)	(2)	(3)	(4)	(5)	(6)
Bank-specific characteristics						
ln (Total assets) (t-1)	-0.031 (0.111)	-	-	-	-	-
Bank capital ratio (t-1)	0.089 (0.604)	-	-	-	-	-
Bank liquidity ratio (t-1)	0.008 (0.929)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1)	-	-1.301 (0.021)*	-	-	-	-1.632 (0.001)*
Share of net fees and comission income (t-1)	-	-	-0.231 (0.207)	-	-	-
Share of trading income (t-1)	-	-	0.030 (0.412)	-	-	-
Retail loans as a share of total loans (t-1)	-	-	0.208 (0.002)*	-	-	0.236 (0.000)*
Share of short-term funding (t-1)	-	-	-	0.272 (0.001)*	-	0.339 (0.000)*
Share of funding in foriegn currency (t-1)	-	-	-	-0.184 (0.032)*	-	-0.088 (0.342)
Return on assets (t-1)	-	-	-	-	2.722 (0.205)	1.695 (0.401)
Interaction between global factor and BSC						
ln (Total assets) (t-1) *C	0.000 (0.620)	-	-	-	-	-
Bank capital ratio (t-1) *C	0.009 (0.108)	-	-	-	-	-
Bank liquidity ratio (t-1) *C	-0.001 (0.651)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1) *C	-	-0.005 (0.735)	-	-	-	0.018 (0.182)
Share of net fees and comission income (t-1) *C	-	-	0.003 (0.435)	-	-	-
Share of trading income (t-1) *C	-	-	-0.001 (0.634)	-	-	-
Retail loans as a share of total loans (t-1) *C	-	-	-0.002 (0.072)*	-	-	-0.002 (0.015)*
Share of short-term funding (t-1) *C	-	-	-	0.002 (0.365)	-	0.001 (0.779)
Share of funding in foriegn currency (t-1) *C	-	-	-	0.005 (0.081)*	-	0.003 (0.069)*
Return on assets (t-1) *C	-	-	-	-	0.112 (0.036)*	0.106 (0.011)*
Number of debtors	104 109	104 109	104 109	104 109	104 109	104 109
Number of banks	36	36	36	36	36	36
Observations	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902
R-squared	0.414	0.414	0.414	0.414	0.414	0.415
Adjusted R-squared	0.062	0.062	0.062	0.062	0.062	0.062

Note: (1) Main indicators, (2) Risk profile, (3) Revenue mix, (4) Funding, (5) Profitability, (6) All, $p < 0.1$

Table 5. Credit Supply, Commodity Prices, and Banco Estado

Δ Log credit	(1)	(2)	(3)	(4)	(5)	(6)
Bank-specific characteristics						
ln (Total assets) (t-1)	-0.032 (0.107)	-	-	-	-	-
Bank capital ratio (t-1)	0.099 (0.587)	-	-	-	-	-
Bank liquidity ratio (t-1)	-0.001 (0.994)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1)	-	-1.405 (0.027)*	-	-	-	-1.852 (0.001)*
Share of net fees and comission income (t-1)	-	-	-0.311 (0.072)*	-	-	-0.274 (0.081)*
Share of trading income (t-1)	-	-	0.019 (0.635)	-	-	-
Retail loans as a share of total loans (t-1)	-	-	0.219 (0.001)*	-	-	0.244 (0.000)*
Share of short-term funding (t-1)	-	-	-	0.259 (0.003)*	-	0.337 (0.000)*
Share of funding in foriegn currency (t-1)	-	-	-	-0.187 (0.042)*	-	-0.097 (0.310)
Return on assets (t-1)	-	-	-	-	2.265 (0.320)	-
Interaction between global factor and BSC						
ln (Total assets) (t-1) *C	0.000 (0.547)	-	-	-	-	-
Bank capital ratio (t-1) *C	0.007 (0.240)	-	-	-	-	-
Bank liquidity ratio (t-1) *C	0.000 (0.736)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1) *C	-	0.003 (0.850)	-	-	-	0.013 (0.330)
Share of net fees and comission income (t-1) *C	-	-	0.002 (0.664)	-	-	0.001 (0.801)
Share of trading income (t-1) *C	-	-	-0.001 (0.599)	-	-	-
Retail loans as a share of total loans (t-1) *C	-	-	-0.001 (0.254)	-	-	-0.001 (0.189)
Share of short-term funding (t-1) *C	-	-	-	0.002 (0.392)	-	0.000 (0.876)
Share of funding in foriegn currency (t-1) *C	-	-	-	0.004 (0.231)	-	0.002 (0.158)
Return on assets (t-1) *C	-	-	-	-	0.087 (0.143)	-
Number of debtors	104 109	104 109	104 109	104 109	104 109	104 109
Number of banks	35	35	35	35	35	35
Observations	4 342 815	4 342 815	4 342 815	4 342 815	4 342 815	4 342 815
R-squared	0.438	0.438	0.438	0.438	0.438	0.438
Adjusted R-squared	0.062	0.062	0.062	0.062	0.062	0.062

Note: (1) Main indicators, (2) Risk profile, (3) Revenue mix, (4) Funding, (5) Profitability, (6) All, $p < 0.1$

Table 6. Credit Supply and Banco Estado

Δ Log credit	(1)	(2)	(3)	(4)	(5)	(6)
Bank-specific characteristics						
ln (Total assets) (t-1)	-0.031 (0.100)	-	-	-	-	-
Bank capital ratio (t-1)	0.141 (0.427)	-	-	-	-	-
Bank liquidity ratio (t-1)	0.009 (0.927)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1)	-	-1.405 (0.027)*	-	-	-	-1.870 (0.000)*
Share of net fees and comission income (t-1)	-	-	-0.302 (0.075)*	-	-	-0.289 (0.067)*
Share of trading income (t-1)	-	-	0.020 (0.631)	-	-	-
Retail loans as a share of total loans (t-1)	-	-	0.208 (0.001)*	-	-	0.242 (0.000)*
Share of short-term funding (t-1)	-	-	-	0.256 (0.006)*	-	0.316 (0.000)*
Share of funding in foriegn currency (t-1)	-	-	-	-0.172 (0.075)*	-	-0.094 (0.334)
Return on assets (t-1)	-	-	-	-	3.095 (0.165)	-
Number of debtors	104 109	104 109	104 109	104 109	104 109	104 109
Number of banks	35	35	35	35	35	35
Observations	4 342 815	4 342 815	4 342 815	4 342 815	4 342 815	4 342 815
R-squared	0.438	0.438	0.438	0.438	0.438	0.438
Adjusted R-squared	0.062	0.062	0.062	0.062	0.062	0.062

Note: (1) Main indicators, (2) Risk profile, (3) Revenue mix, (4) Funding, (5) Profitability, (6) All, $p < 0.1$

Appendix

A. Banks Regulated by the SBIF (2018)

Banks Established in Chile

Banco de Chile
Banco Internacional
Scotiabank, Chile
Banco de Crédito e Inversiones
Banco BICE
HSBC Bank
Banco Santander, Chile
Itaú Corpbanca
Banco Security
Banco Falabella
Banco Ripley
Banco Consorcio
Banco Bilbao Vizcaya Argentaria, Chile
Banco BTG Pactual, Chile

Foreign Banks Branches

Banco do Brasil S.A.
JP Morgan Chase Bank
Banco de la Nación Argentina
MUFG Ltd.
China Construction Bank, Chile
Bank of China, Chile

State Bank

Banco del Estado de Chile (Banco Estado)

Source: SBIF

B. Credit Supply and Global Financial Uncertainty

Δ Log credit	(1)	(2)	(3)	(4)	(5)	(6)
Bank-specific characteristics						
ln (Total assets) (t-1)	-0.041 (0.055)*	-	-	-	-	-0.027 (0.268)
Bank capital ratio (t-1)	0.258 (0.418)	-	-	-	-	-
Bank liquidity ratio (t-1)	0.076 (0.460)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1)	-	0.438 (0.556)	-	-	-	0.407 (0.709)
Share of net fees and comission income (t-1)	-	-	-0.567 (0.020)*	-	-	-0.767 (0.053)*
Share of trading income (t-1)	-	-	0.021 (0.869)	-	-	-
Retail loans as a share of total loans (t-1)	-	-	0.232 (0.021)*	-	-	0.183 (0.007)*
Share of short-term funding (t-1)	-	-	-	-0.001 (0.995)	-	-
Share of funding in foriegn currency (t-1)	-	-	-	-0.174 (0.255)	-	-
Return on assets (t-1)	-	-	-	-	1.448 (0.742)	-
Interaction between global factor and BSC						
ln (Total assets) (t-1) *C	0.000 (0.411)	-	-	-	-	-0.000 (0.610)
Bank capital ratio (t-1) *C	-0.005 (0.742)	-	-	-	-	-
Bank liquidity ratio (t-1) *C	-0.004 (0.372)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1) *C	-	-0.080 (0.001)*	-	-	-	-0.088 (0.015)*
Share of net fees and comission income (t-1) *C	-	-	0.018 (0.122)	-	-	0.025 (0.193)
Share of trading income (t-1) *C	-	-	0.001 (0.899)	-	-	-
Retail loans as a share of total loans (t-1) *C	-	-	-0.002 (0.432)	-	-	-0.000 (0.931)
Share of short-term funding (t-1)*C	-	-	-	0.014 (0.161)	-	-
Share of funding in foriegn currency (t-1) *C	-	-	-	0.000 (0.968)	-	-
Return on assets (t-1) *C	-	-	-	-	0.108 (0.523)	-
Number of debtors	104 109	104 109	104 109	104 109	104 109	104 109
Number of banks	36	36	36	36	36	36
Observations	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902
R-squared	0.414	0.414	0.414	0.414	0.414	0.414
Adjusted R-squared	0.062	0.062	0.062	0.062	0.062	0.062

Note: (1) Main indicators, (2) Risk profile, (3) Revenue mix, (4) Funding, (5) Profitability, (6) All, p < 0.1

C. Credit Supply and Global Liquidity

Δ Log credit	(1)	(2)	(3)	(4)	(5)	(6)
Bank-specific characteristics						
ln (Total assets) (t-1)	-0.033 (0.064)*	-	-	-	-	-0.023 (0.271)
Bank capital ratio (t-1)	0.013 (0.943)	-	-	-	-	0.109 (0.458)
Bank liquidity ratio (t-1)	-0.049 (0.618)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1)	-	-1.434 (0.023)*	-	-	-	-1.839 (0.001)*
Share of net fees and comission income (t-1)	-	-	-0.163 (0.422)	-	-	-
Share of trading income (t-1)	-	-	0.043 (0.363)	-	-	-
Retail loans as a share of total loans (t-1)	-	-	0.168 (0.024)*	-	-	0.191 (0.027)*
Share of short-term funding (t-1)	-	-	-	0.257 (0.004)*	-	0.301 (0.002)*
Share of funding in foriegn currency (t-1)	-	-	-	-0.199 (0.029)*	-	-0.102 (0.353)
Return on assets (t-1)	-	-	-	-	3.861 (0.093)*	3.009 (0.256)
Interaction between global factor and BSC						
ln (Total assets) (t-1) *C	0.001 (0.170)	-	-	-	-	0.000 (0.872)
Bank capital ratio (t-1) *C	0.101 (0.048)*	-	-	-	-	0.027 (0.667)
Loan-loss provisions as a share of total loans (t-1) *C	-	0.163 (0.181)	-	-	-	0.230 (0.095)*
Share of net fees and comission income (t-1) *C	-	-	-0.033 (0.452)	-	-	-
Share of trading income (t-1) *C	-	-	-0.003 (0.871)	-	-	-
Retail loans as a share of total loans (t-1) *C	-	-	0.010 (0.246)	-	-	-0.007 (0.645)
Share of short-term funding (t-1) *C	-	-	-	0.026 (0.349)	-	-0.002 (0.937)
Share of funding in foriegn currency (t-1) *C	-	-	-	0.039 (0.034)*	-	0.029 (0.090)*
Return on assets (t-1) *C	-	-	-	-	0.021 (0.964)	-0.375 (0.602)
Number of debtors	104 109	104 109	104 109	104 109	104 109	104 109
Number of banks	36	36	36	36	36	36
Observations	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902
R-squared	0.414	0.414	0.414	0.414	0.414	0.414
Adjusted R-squared	0.062	0.062	0.062	0.062	0.062	0.062

Note: (1) Main indicators, (2) Risk profile, (3) Revenue mix, (4) Funding, (5) Profitability, (6) All, p < 0.1

D. Credit Supply and Economic Policy Uncertainty

Δ Log credit	(1)	(2)	(3)	(4)	(5)	(6)
Bank-specific characteristics						
ln (Total assets) (t-1)	-0.018 (0.309)	-	-	-	-	-
Bank capital ratio (t-1)	0.965 (0.008)*	-	-	-	-	0.455 (0.123)
Bank liquidity ratio (t-1)	0.253 (0.069)*	-	-	-	-	0.165 (0.194)
Loan-loss provisions as a share of total loans (t-1)	-	-0.555 (0.618)	-	-	-	-
Share of net fees and comission income (t-1)	-	-	-0.539 (0.052)*	-	-	-0.476 (0.057)*
Share of trading income (t-1)	-	-	-0.142 (0.240)	-	-	-0.133 (0.200)
Retail loans as a share of total loans (t-1)	-	-	0.208 (0.011)*	-	-	0.193 (0.022)*
Share of short-term funding (t-1)	-	-	-	0.215 (0.393)	-	-
Share of funding in foriegn currency (t-1)	-	-	-	0.143 (0.466)	-	0.204 (0.356)
Return on assets (t-1)	-	-	-	-	0.491 (0.928)	-
Interaction between global factor and BSC						
ln (Total assets) (t-1) *C	-0.000 (0.414)	-	-	-	-	-
Bank capital ratio (t-1) *C	-0.007 (0.003)*	-	-	-	-	-0.003 (0.235)
Bank liquidity ratio (t-1) *C	-0.002 (0.012)*	-	-	-	-	-0.001 (0.097)*
Loan-loss provisions as a share of total loans (t-1) *C	-	-0.006 (0.478)	-	-	-	-
Share of net fees and comission income (t-1) *C	-	-	0.003 (0.109)	-	-	0.003 (0.027)*
Share of trading income (t-1) *C	-	-	0.002 (0.095)*	-	-	0.002 (0.077)*
Retail loans as a share of total loans (t-1) *C	-	-	-0.000 (0.635)	-	-	-0.000 (0.426)
Share of short-term funding (t-1) *C	-	-	-	0.000 (0.857)	-	-
Share of funding in foriegn currency (t-1) *C	-	-	-	-0.003 (0.062)*	-	-0.003 (0.096)*
Return on assets (t-1) *C	-	-	-	-	0.032 (0.438)	-
Number of debtors	104 109	104 109	104 109	104 109	104 109	104 109
Number of banks	36	36	36	36	36	36
Observations	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902
R-squared	0.414	0.414	0.414	0.414	0.414	0.414
Adjusted R-squared	0.062	0.062	0.062	0.062	0.062	0.062

Note: (1) Main indicators, (2) Risk profile, (3) Revenue mix, (4) Funding, (5) Profitability, (6) All, p < 0.1

E. Credit Supply and Global Financial Crisis

Δ Log credit	(1)	(2)	(3)	(4)	(5)	(6)
Bank-specific characteristics						
ln (Total assets) (t-1)	-0.040 (0.035)*	-	-	-	-	-0.026 (0.298)
Bank capital ratio (t-1)	0.212 (0.225)	-	-	-	-	-
Bank liquidity ratio (t-1)	0.020 (0.819)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1)	-	-1.211 (0.029)*	-	-	-	-1.638 (0.001)*
Share of net fees and comission income (t-1)	-	-	-0.243 (0.185)	-	-	-0.273 (0.145)
Share of trading income (t-1)	-	-	0.028 (0.499)	-	-	-
Retail loans as a share of total loans (t-1)	-	-	0.172 (0.019)*	-	-	0.185 (0.009)*
Share of short-term funding (t-1)	-	-	-	0.270 (0.004)*	-	0.280 (0.004)*
Share of funding in foriegn currency (t-1)	-	-	-	-0.162 (0.091)*	-	-0.056 (0.609)
Return on assets (t-1)	-	-	-	-	3.524 (0.145)	-
Interaction between global factor and BSC						
ln (Total assets) (t-1) *C	0.019 (0.000)*	-	-	-	-	0.004 (0.670)
Bank capital ratio (t-1) *C	-0.199 (0.575)	-	-	-	-	-
Bank liquidity ratio (t-1) *C	-0.014 (0.886)	-	-	-	-	-
Loan-loss provisions as a share of total loans (t-1) *C	-	-0.944 (0.364)	-	-	-	-0.953 (0.378)
Share of net fees and comission income (t-1) *C	-	-	0.358 (0.008)*	-	-	0.218 (0.106)
Share of trading income (t-1) *C	-	-	0.081 (0.410)	-	-	-
Retail loans as a share of total loans (t-1) *C	-	-	0.048 (0.346)	-	-	-0.006 (0.907)
Share of short-term funding (t-1) *C	-	-	-	-0.050 (0.819)	-	-0.175 (0.377)
Share of funding in foriegn currency (t-1) *C	-	-	-	0.062 (0.751)	-	-0.136 (0.337)
Return on assets (t-1) *C	-	-	-	-	2.536 (0.439)	-
Number of debtors	104 109	104 109	104 109	104 109	104 109	104 109
Number of banks	36	36	36	36	36	36
Observations	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902	4 629 902
R-squared	0.414	0.414	0.414	0.414	0.414	0.414
Adjusted R-squared	0.062	0.062	0.062	0.062	0.062	0.062

Note: (1) Main indicators, (2) Risk profile, (3) Revenue mix, (4) Funding, (5) Profitability, (6) All, p < 0.1