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The Effect of US Monetary Policy on the Activities of Russian Banks in the Low Interest Rate Environment*

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Abstract

This paper studies the cross-border transmission of US monetary policy to Russia in 2000-2019 via its effect on activities of Russian banks in the low interest rate environment in comparison with normal times. Specifically, we investigate dynamic responses of lending, funding, and risk taking. The main finding is that, in normal times, the dynamic responses of dependent variables of interest are consistent with the prevalence of the international lending channel whereas in the low rate environment the patterns are different for different indicators: in some instances the dynamic effect of interest is attenuated compared with normal times, in others, it is reinforced.

Keywords: monetary policy; international spillovers; cross-border transmission; low interest rates

JEL Codes: E52, F34, G21

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1 Introduction

This paper studies the inward transmission of the US monetary policy to the Russian banking sector in normal times and in times of low interest rates in the US. Specifically, we investigate if the transmission is the same or not if the US economy experiences a period of low interest rates by historical standards in comparison with normal times: according to the applied criterion, a low interest rate environment mostly occurs over the period 2011Q2 -2015Q3. We approach this task using regulatory quarterly bank-level data for top 30 Russian banks. We focus on the US monetary policy, given that the major fraction of international transactions by Russian banks was denominated in US dollars over the sample period 2000Q1-2019Q4. Given the unprecedented shocks caused by COVID-19 pandemic and the intensification of geopolitical tensions faced by the Russian and global economies in recent years, we deliberately do not consider the period 2020-2022. To estimate the dynamic effect of changes in the US monetary policy on lending and funding activities of Russian banks, we apply the method of local projections (Jordà, 2005) to bank level fixed effects panel regressions. We study the effect of US monetary policy on bank lending, funding, and risk taking. We measure the changes in US monetary policy stance by the US money market rate and the term spread in first differences.

The literature identifies two channels of cross-border transmission of foreign monetary policy, the international bank lending channel and portfolio rebalancing channel (Buch et al., 2019). The international bank lending channel arises because of changes in the cost of funding. A loosening of monetary policy in a country reduces the cost of funds obtained in this country and incentivises domestic banks to expand their operations including cross-border lending and investment. It also makes more attractive for foreign banks to raise funding in this country. The portfolio rebalancing channel works through balance sheets of borrowers. When monetary policy loosens the net worth of domestic borrowers rises, which raises their creditworthiness and therefore makes them more attractive for banks. It follows that the two channels work in the opposite direction. On the one hand, monetary loosening gives rise to outflows of credit and investment across borders via the international lending channel. On the other hand, it makes it more attractive for banks

to extend credit to domestic borrowers. The net effect depends on the relative strength of the two channels.

We find that the effects of US monetary policy in Russia works mainly through subsidiaries of foreign banks whereas the effect on the activities of Russian domestically owned banks is muted at best. Among top 30 banks that constitute our sample, there are four institutions that are subsidiaries of global systemically important institutions. Although their parent organizations are of different jurisdictions (the euro zone, the US), all these banks have been raising funding globally. To the extent that the US dollar is a dominant currency in international financial transactions (Gopinath and Stein, 2021), the US monetary policy affects the availability of funding for these institutions. We show that, in response to monetary easing in the US, foreign bank affiliates switch from ruble funding to dollar funding, change the composition of their loan portfolios toward dollar-denominated loans, and show a greater attitude to risk taking. This behavior in normal times is consistent with the dominance of the international lending channel of cross-border monetary transmission. The effect of low interest rate environment is not uniform: the effects of the US monetary policy are attenuated for some dependent variables and reinforced for others. Sometimes, the sign of estimated dynamic effects is not in line with conventional wisdom.

This paper is related to several strands of literature. First, it is the literature on international transmission of monetary shocks and the Global Financial Cycle (Rey, 2015; Miranda-Agrippino and Rey, 2021; Buch et al., 2019). Second, it is the literature on the effect of low interest rates on the activities of banks (Brei et al., 2020; Borio and Gambacorta, 2017; Claessens et al., 2018). The first literature normally does not address peculiarities of cross-border transmission when systemic economies experience low interest rates whereas the second literature focuses mostly on the effect of low interest rates on domestic banks. Our paper studies differences in cross-border monetary transmission under low rates in comparison with normal times. Third, there is a literature that studies the management of liquidity and credit portfolio by global banks (Cetorelli and Goldberg, 2012; Ivashina et al., 2015; Bräuning and Ivashina, 2020).

Styrin and Ushakova (2020) study how U.S. monetary policy shocks affect domestic lending by internationally active Russian banks in the period 2000-2017. The dataset of Styrin and Ushakova (2020) includes 22 Russian internationally active banks, according to the Bank's of Russia methodology. The authors show that the effect of U.S. monetary shocks is heterogeneous across banks depending on a bank's exposure to foreign monetary policy: the larger the share of external funding in total liabilities, the more banks expand their lending in response to an unexpected cut of the U.S. interest rate. Although the influence of U.S. monetary policy appears to be more pronounced for loans denominated in foreign currency than for loans in roubles, the estimated effects are statistically and economically significant for both types of credit.

In addition, Styrin and Ushakova (2020) find that domestic macroprudential policy offsets to some extent the pass through of the U.S. policy into domestic lending. As proxies for macroprudential policy stance in Russia, Styrin and Ushakova (2020) use individual and aggregate indices from the quarterly IMF database compiled by Cerutti et al. (2017) that covers 64 countries over the period since 2000.

The paper most related to our work is Cao et al. (2023). It studies the inward transmission of foreign monetary policy to four small open economies - Chile, Czech Republic, Canada, and Norway. The main conclusion of this paper is that the portfolio rebalancing channel is prevalent in normal times while the international lending channel dominates in the low rate environment. The design of our regressions is similar to Cao et al. (2023) in order to facilitate comparability of the two studies. One distinction of our paper from theirs is that we look at dynamic effects of foreign monetary policy changes whereas they study only contemporaneous effects. Another difference is that, unlike them, we explicitly analyze the dynamic response of funding to changes in foreign monetary policy.

To account for the dynamics of domestic macroeconomic factors affecting demand and supply of credit in the Russian economy we include macro controls in the list of regressors. These macro controls are the Russian quarterly CPI and growth rate of GDP, 3-month money market rate, 10-year – 3-month term spread and quarterly changes of the rouble's

real effective exchange rate. Furthermore, we add year fixed effects to the right-hand side of our regressions to control for other time-specific factors such as changes in the regime of monetary and prudential policies of the Bank of Russia, the introduction of sanctions against Russian banks and companies in 2014.

In the robustness analysis, we seek to explore whether changes in U.S. monetary policy affected lending activity in Russia, including foreign bank subsidiaries' activity, differently in three sub-periods of our sample – 2000-2008, 2009-2013 and 2014-2019. For that purpose, in the right-hand side of our regressions, we include double interaction terms that involve dummies for the three sub-periods and the in U.S. monetary policy variables as well as triple interaction terms variables that involve the sub-period dummies, the U.S. monetary policy variables, and the foreign bank dummy. The estimates of the robustness analysis may indicate that effects of U.S. monetary policy on the lending activity in Russia, including foreign bank subsidiaries' activity, substantially decrease in our last sub-period (2014-2019) compared to the previous sub-period and become even statistically insignificant.

The results of the robustness analysis can be associated with major structural changes in Russia after 2014 – the shift to inflation targeting and floating exchange rate regime and the consistent application of macroprudential policy instruments by the Bank of Russia aimed at the de-dollarization of banks' balance sheets as well as capital market restrictions imposed on major Russian banks by the U.S. and EU in mid-2014.

The rest of the paper is structured as follows. Section 2 discusses the trends and institutional background in bank lending, the Central Bank's monetary and banking regulation policy in Russia over our sample period 2000-2019. Section 3 explains the methodology of our study. Section 4 describes data. Section 5 presents findings. Section 6 concludes.

2 Trends and the institutional background of bank lending in Russia in 2000-2019

Our sample includes 20 years of quarterly data from 2000 to 2019. Given the unprecedented shocks caused by COVID-19 pandemic and the intensification of geopolitical tensions faced by the Russian and global economies in recent years, we deliberately do not consider the period 2020-2022.

On the one hand, the long time dimension of our sample allows us to include the dummy for quarters of low interest rate environment (LIRE) in the U.S. and statistically compare the estimates of elasticities of Russian banks' indicators (lending, funding, and risk-taking) with respect to the U.S. interest rates in normal times and in the LIRE.

On the other hand, the domestic banks' sensitivity to U.S. monetary policy may have changed over such a long period of time not only due to variation in U.S. monetary policy itself (normal periods versus LIRE), but also due to many other external and internal factors affecting the Russian economy.

2.1 Dynamics of bank lending in Russia in 2000-2019

The time period of our sample covers several business cycles in the Russian economy, with recessions in 2009 and 2015. During the first sub-period, until the outbreak of the Global Financial Crisis of 2007–2009, the economy experienced an expansion and a surge in bank lending (see Figure 5). Bank loans to the non-financial private sector (without adjustment for loan loss provisions) increased from 10.5 to 40.8 percent of GDP in the period of 2000-2008. While at the beginning of 2000 the corporate loans amounted to 95 percent of total bank lending to the private sector in Russia, the share of loans to individuals reached 25 percent in 2008.

The crisis year of 2009 saw business and household deleveraging, but already in mid-2010 the growth in lending to the private sectors resumed. In 2011–2013, due to the boom in unsecured consumer loans, the high growth rates (on average about 34 percent annually, see Figure 9) were registered in the entire segment of loans to individuals, while

corporate credits increased more moderately (on average by 17.3 percent annually, see Figure 8).

In response to macroprudential policy tightening in Russia (see details below) and a reduction of banks' risk appetite, caused by intensification of geopolitical tensions and excess financial market volatility, the growth rate of household loans slowed down in 2014 and turned negative in 2015. The market of household loans recovered in 2016-2017, supported by accelerated economic activity, and already in 2018-2019 expanded approximately at the annual rate of 20 percent.

Corporate borrowing continued to grow in 2014-2015, in particular, due to increased demand for foreign currency loans caused by the imposition of sanctions restricting access to global capital markets for Russian companies (see details below). Corporate loans experienced a decline in 2016 (-9.4 percent) and slight rebound (+0.2 percent) in 2017, against the backdrop of depressed demand for credit and an increase in the share of bad and non-performing loans on banks' balance sheets. Moderate growth rates of lending to business (on average 6.1 percent annually) were observed in 2018-2019.

As of the end of 2019, credit to the non-financial private sector amounted to 47 percent of GDP, of which corporate credit – to 30.9 percent of GDP.

2.2 Banks with foreign participation

Banks with foreign capital have been a part of the Russian banking system since the early years of its development. Branches of foreign banks are prohibited in Russia *de jure* since 2013 (before 2013 they were banned *de facto*), so banks with foreign capital have been registered as subsidiaries of parent companies and increased their participation in the Russian financial system through the mergers and acquisition of domestic banks. From 1993 to 2002 foreign investments in domestic banks were limited by law at the level of 12 percent of the total authorized capital of the Russian banking system. From 2002 to 2011 the Bank of Russian pursued the policy of an unofficial quota on foreign capital of 25 percent. Following the accession to the WTO, Russia reset this quota at 50 percent.

The actual share of non-residents in the total authorized capital of the Russian banking

system peaked at 28.49 percent at the beginning of 2009. Since 2014, against the backdrop of intensified geopolitical tensions, the participation of foreign banks in the domestic market persistently declined and reached 13.9 percent of the total authorized capital of active Russian banks in early 2020. The share of credit institutions with a majority of non-resident ownership in the total capital base (assets) of domestic banks varied from 10.3 percent (10.6 percent) in early 2000 to 19.3 percent (17.8 percent) in 2012 and to 13.6 percent (9.5 percent) in early 2020.

Banks with foreign participation were active mostly in household lending: the share of banks with a majority of non-resident ownership in this segment reached its maximum of 22.6 percent during the boom in the market of unsecured consumer loans in early 2013. The share of banks with a majority of non-resident ownership in corporate lending peaked at 16.6 percent in early 2009. Although the activity of foreign banks in Russia was quite visible in 2000-2019, their shares in various bank indicators (authorized capital, assets, etc.) appeared to be substantially lower than in most other emerging market economies (EME's).

Among top 30 domestic banks in our sample, there are four subsidiaries of global systematically important financial institutions (G-SIFI's) with 100 percent foreign ownership – Reiffeisenbank (Austria), Citibank (U.S.), UniCredit (Italy), and Rosbank (Société Générale, France). The total share of these four banks in end-2019 in the markets of household and business loans amounted to 5.1 percent and 3.9 percent respectively.

2.3 Shifts in monetary policy in Russia

The time period covered by our sample (2000–2019) features important changes in the regime of monetary policy of the Bank of Russia. In 2000-2008, the Bank of Russia conducted monetary policy attempting to achieve simultaneously both price and exchange rate stability. During that period, the regulator implemented the exchange rate policy under a quasi-fixed exchange rate regime. In 2005, the Bank of Russia switched its exchange rate policy from the a single currency (the U.S. dollar) targeting to a bi-currency targeting, setting a corridor (band) for the rouble value of the dual-currency basket,

consisting of the U.S. dollar and the euro (with a gradual increase in the weight of the euro from 10 to 45 percent).

Soon after the Global Financial Crisis, the Bank of Russia declared a gradual transition to the inflation targeting regime and the width of the bi-currency band was gradually increased to ensure the transition to a more flexible exchange rate regime and the use of the interest rate as a main monetary policy instrument. In November 2014, the Bank of Russia officially adopted a full-fledged inflation targeting and flexible exchange rate regime.

Economic agents started to pay more attention to currency risk after the switch to the flexible exchange rate regime in Russia. Higher volatility of the rouble's exchange rate stimulates domestic banks to manage their foreign currency risk exposure more responsibly.

2.4 Development of banking regulation and supervision

During the period covered by our sample, especially after 2008, many central banks around the world developed and adopted the international standards of banking regulation and supervision. Since 2009, following the recommendations of the Basel Committee on Banking Supervision (BCBS), the Bank of Russia has been actively participating in the development of the international standards and their implementation in the Russian banking system. In March 2016, the BCBS found conformity of the Bank of Russia regulations with Basel II, Basel 2.5 and Basel III standards in all aspects.

In implementing the Basel approaches, the Bank of Russia introduced the standardized procedure for credit risk calculation, established requirements for banks' internal systems of risk and capital management, elaborated requirements for banks to develop the internal capital adequacy assessment procedures (ICAAP), established the unified forms for disclosing information on assumed risks and the procedures for their assessment and for risk and capital management.

In addition, after 2008, the Bank of Russia was focusing on problems of credit risk concentration, large banks' exposure to related borrowers. In 2013, the Bank of Russia

was legally authorized to make decisions based on informed judgement to recognize entities as affiliated with the credit institutions. Starting from 1 January 2017, banks are to calculate the maximum risk per entity (group of entities) affiliated with the bank (N25 ratio). The maximum numerical value of the N25 ratio is set at 20%.

In terms of banking supervision, in 2016–2017, the Bank of Russia moved to a proactive and risk-oriented approach under which the resilience of a bank is assessed taking into account its business model and exposure to risks.

2.5 Bank of Russia’s macroprudential policy and foreign currency lending

After the Global Financial Crisis, the Bank of Russia, as well as regulators in other countries, started to pay greater attention to financial stability issues and to test actively various macroprudential policy tools. Given the lessons of the 2007–2009 crisis, in the years that followed, the Bank of Russia has made special efforts to discourage the growth of foreign currency-denominated liabilities of economic agents and foreign currency loans granted by domestic banks, caused among other factors by an excessive inflow of capital to the Russian economy.

During the period of 2000–2019, the Bank of Russia occasionally raised reserve requirements for domestic banks on liabilities in foreign currency and on foreign liabilities to curb the unwanted effects of excessive capital inflows. Figure 1 presents the difference between the average reserve requirements for domestic banks on foreign currency liabilities and on liabilities in roubles over the period covered by our sample.

[FIGURE 1 ABOUT HERE]

In addition, to reduce dollarization in the financial system, since 2015 higher risk weight add-ons for the purposes of banks’ capital adequacy ratio calculation have been introduced for loans to households, corporate loans (depending on the availability of companies’ foreign currency revenues) and the transaction with securities denominated in foreign currency. In particular, in March 2015 the Bank of Russia raised the risk

weight add-ons for mortgage loans in foreign currency from 150 percent to prohibitively high 300 percent that made this type of lending unprofitable for domestic banks. The downward trend in foreign-currency-denominated loans to households accelerated following the undertaken macroprudential measures, and by the end of 2019 the claims of banks to households denominated in foreign currency declined by more than six times compared to their peak of early 2009. The share of loans denominated in foreign currency in total household lending decreased from almost 43 percent in early 2000 to less than 15 percent at the end of 2007 and to less than 0.5 percent at the end of 2019 (see Figure 2).

[FIGURE 2 ABOUT HERE]

Dollarization of corporate lending (see Figure 2) was declining from early 2000 (slightly less than 50 percent) to early 2013 (about 22 percent). However, from mid-2014, against the backdrop of sanctions restricting the access to global capital markets for the largest Russian companies and the rouble's depreciation, the share of foreign currency loans in total corporate lending started to rise sharply, reaching 40 percent in early 2015 and exceeding 30 percent by early 2017. In the end of the period covered by our sample, dollarization of corporate lending amounted to about 25 percent.

For banks with substantial foreign ownership the share of foreign currency lending was consistently higher than for banks owned by residents over 2000–2019. By early 2000, more than 80 percent of loans granted by the four above-mentioned subsidiaries of foreign banks in our sample were loans denominated in foreign currency, but in the period after 2008, the average share of foreign currency lending in total lending by these banks varied within the range of 20 percent to 40 percent with a downward trend (see Figure 10).

In addition, since 2013 the Bank of Russia has been seeking to prevent the emergence of credit bubbles in unsecured consumer lending. The annual growth rate in unsecured consumer lending reached 60 percent in 2012. Since 2013 the Bank of Russia several times raised loan loss provisions and risk weight add-ons for unsecured consumer loans (depending on the currency of a loan and the amount of the down payment on a loan).

It is widely accepted that the transformation of regulation and supervision as well as the consistent work of the Bank of Russia on the withdrawal of weak and unscrupulous

banks from the market, actively undertaken since the end of 2013, yielded significant enhancements in the Russian banking sector: risk management practices have been expanded markedly, the overall quality of assets and corporate governance has improved, banks have become more resilient. A detailed analysis of changes in the Russian banking sector over the period of 2008–2017 is presented in Simanovskiy et al. (2018).

2.6 Cross-border financing of Russian banks and financial sanctions

The transmission of foreign monetary policy to the economies of other countries is based to the large extent on the cross-border financing, under which domestic banks can borrow on international capital markets, and predominantly from global banks, in foreign currency. During the period covered by our sample, external borrowing by the Russian banks were mainly denominated in the U.S. dollars. The share of foreign liabilities in U.S. dollars in total foreign liabilities of domestic banks peaked at 85 percent in early 2006 and declined to 54.7 percent at the end of 2019.

There were two sub-periods of external debt accumulation by the Russian banks in the sample period of 2000–2019. Over the first sub-period of 2000–2008, foreign liabilities of domestic banks grew sharply from USD 7.2 bn to USD 197.9 bn. The second sub-period, which lasted from mid-2010 to early 2014, saw an increase in Russian banks' external debt from USD 140 bn to USD 214.4 bn. Starting from 2014Q2, the domestic banking sector experienced a persistent decline in foreign liabilities, which reached about USD 77 bn by the end of the sample period.

In July-September 2014, on the back of the escalation of geopolitical tensions related to the situation in Ukraine, the European Union and the U.S. imposed capital market sanctions against the largest state-owned banks in Russia – VTB, Gazprombank, Rosselkhozbank, and Sberbank – as well as the state development bank Vnesheconombank. These restrictions forbid the EU and US market participants to buy and sell securities and money market instruments (initially, with a maturity of more than 90 days and later with a maturity of more than 30 days) issued by these banks. In addition,

in summer 2014 the U.S. and later the EU made their capital markets inaccessible for largest Russian exporters – Rosneft, Gazprom Neft, Transneft, and Novatek.

The importance of cross-border financing for the activity of the Russian banks was on the rise till the crisis of 2008-2009, when the respective share in total liabilities reached about 12 percent on average for the banks in our sample (see Figure 11). However, the subsequent periods saw a downward trend: by early 2014 the share of cross-border financing in total liabilities of 30 banks in our sample declined to less than 5 percent and further dropped to about 1 percent by the end of 2019.

For banks with substantial foreign ownership, cross-border financing, especially, from their parent organization, has been always a more important source of funding than for banks owned by residents. For example, for the four subsidiaries of foreign banks in our sample, the average share of cross-border financing in total liabilities during the first analyzed sub-period preceding the crisis of 2008 varied in the range from 12 to 25 percent (see Figure 11). In the subsequent years though this share substantially decreased — to less than 10 percent at the end of 2014 and to less than 5 percent at the end of 2019.

3 Methodology

In this study, we estimate the effect of US monetary policy on lending, funding, and risk-taking of Russian banks. Ideally, we would like to employ only exogenous components of changes in monetary policy, i.e. what is commonly referred as monetary policy shocks. However, in terms of its relative economic size Russia can be viewed as a conventional small open economy, which takes international prices including interest rates as given. For this reason, the use of US interest rates as regressors should not produce a severe endogeneity bias. One problem with this approach is that the US money market rate in levels is rather persistent, and this is a reason why many authors prefer to use the first difference of interest rates as regressors (e.g., Claessens et al. (2018)).

In order to estimate the dynamic response of dependent variables of interest, we employ the method of Local Projections (Jordà (2005)) applied to panel data (Baron

et al. (2021); Greenwood et al. (2022)). According to this method, an OLS regression of the dependent variable of interest on the h th lag of the identified structural shock of interest and controls would yield a consistent estimate of the dynamic effect of this shock on the dependent variable h periods ahead equal to the estimated coefficient on the lagged shock (see, e.g., Ramey (2016) for details). To estimate the dynamic response of the dependent variable of interest at the horizon of up to 3 quarters ahead, we run four separate regressions:

$$\begin{aligned}
y_{b,t+h}^h &= \beta_1 \Delta r_t^{US} + \beta_2 Foreign_b \times \Delta r_t^{US} + \beta_3 \Delta r_t^{US} \times Low_t^{US} & (1) \\
&+ \beta_4 Foreign_b \times \Delta r_t^{US} \times Low_t^{US} + \beta_5 \Delta s_t^{US} + \beta_6 Foreign_b \times \Delta s_t^{US} \\
&+ \beta_7 \Delta s_t^{US} \times Low_t^{US} + \beta_8 Foreign_b \times \Delta s_t^{US} \times Low_t^{US} \\
&+ macro\ controls_{t-1} + bank\ controls_{b,t-1} + \alpha_b \\
&+ year\ fixed\ effects + quarter\ fixed\ effects + \epsilon_{b,t+h}^h
\end{aligned}$$

where $y_{b,t+h}^h$ is the annualized h -quarter cumulative effect for a flow variable (e.g., annualized lending growth over h quarters) and $y_{b,t+h}^h \equiv y_{b,t+h}$ for ratios (e.g., the ratio of interbank funding to assets); $h \in \{0, 1, 2, 3\}$; r_t^{US} is the US 3-month money market rate; s_t^{US} the 10Y-3M term spread defined as the difference between the yield of 10-year Treasury bonds and the 3-month money market rate; Low_t^{US} is a dummy variable that equals 1 if r_t^{US} is in the lowest quantile of its historical (2000Q1 to 2019Q4) distribution and 0 otherwise, $Foreign_b$ is a dummy variables that is equals 1 if bank b is a subsidiary of a foreign bank and 0 otherwise, α_b bank fixed effects, and $\epsilon_{b,t+h}^h$ the regression error.

One important advantage of using Local Projections (1) is to allow for an arbitrary shape of the impulse response function. This is in contrast with the dynamic panel specification popular in the literature (e.g., Brei et al. (2020); Claessens et al. (2018)), which implicitly assumes that a one-time shock dies out exponentially at the rate equal to the coefficient on the lagged dependent variable and that this rate of exponential decay (and hence, the shape of impulse response function) is common for all shocks, which is not warranted on theoretical grounds. It is conceivable (and confirmed by numerous

studies based on Structural Vector Autoregressions, SVAR) that the dynamic effect of some structural shocks is hump-shaped, and this cannot be readily accommodated by the dynamic panel specification. The method of Local Projections is widely used in empirical macroeconomics with time series (see, e.g., Ramey (2016) for a recent survey) and panel data (e.g., Baron et al. (2021); Greenwood et al. (2022)).

The dependent variable in equation (1) is one of three categories: (i) lending; (ii) funding; (iii) risk taking. The lending variables are the quarter-on-quarter (QoQ) growth rate of total lending to non-financial private borrowers with or without adjustments for foreign exchange (FX) valuation effects; foreign currency denominated lending; ruble-denominated lending; lending to non-financial private firms; lending to individuals; and the share of foreign currency denominated loans in total loans.

Growth rate variables in (1) are defined as annualized cumulative growth rates of the respective stock of credit on the bank's balance sheet between dates $t - 1$ and $t + h$, $h = 0, 1, 2, 3$. It follows that $h = 0$ corresponds to the contemporaneous effect whereas $h = 3$ to the cumulative effect over one year.

Given that bank loans can be denominated in roubles or in foreign currency, we consider the lending variable adjusted for foreign exchange valuation effects. The data in Form 0409101 does not disclose the detailed currency decomposition of loan portfolios. There is only the distinction between loans denominated in roubles and loans denominated in all foreign currencies. Our working assumption is that the majority of foreign-currency-denominated loans are denominated in US dollars. We therefore use the USD/RUB bilateral exchange rate to eliminate FX valuation effects.

The funding variables are the share of cross-border lending approximated as the ratio of interbank loans received from non-resident banks to liabilities; the share of received interbank loans in liabilities; the share of issued interbank loans in assets. We agree that cross-border funding can take forms other than interbank loans from non-resident banks. That said, we consider the ratio of cross-border interbank loans to liabilities as a proxy for cross-border funding rather than its direct measure.

The risk taking variables are the ratio of non-performing loans (NPL) to loans and

the ratio of loan loss provisions (LLP) to loans. The NPL can be viewed as an *ex post* proxy for risk taking as it reflects materialized credit risk. The LLP captures both the *ex ante* and *ex post* aspects of risk taking. From the *ex ante* perspective, higher LLP is likely to be linked with a bank's appetite for risk. From the *ex post* perspective, higher LLP is likely to reflect the recognized deterioration in the quality of loans granted in the past.

There are two principal regressors of interest in equation (1): (i) the 3-month money market rate in the US and (ii) the term spread defined as the difference between the yield of 10-year US Treasury bonds and the 3-month rate. The 3-month rate is associated with current monetary conditions whereas the term spread, in theory, at least, reflects the expectations of market participants with regard to how monetary conditions will change in the future. For example, a higher value of the term spread signals that the stance of monetary policy will be tighter than it is today. Specification (1) allows the reaction of banks to be different for two different disturbances: one related to the contemporaneous value of policy rate vs. the other related to shifts in the expected path of the policy rate.

The presence of the interactions of the money market rate with the *Foreign* and *Low* dummies is supposed to accommodate potentially different effects of the two disturbances (i) on foreign bank subsidiaries compared as opposite to domestically owned banks; and (ii) during periods of low interest rates in the US as opposite to normal times. Namely, the effect of the change in the 3-month rate on domestically owned banks during normal times is captured by the coefficient β_1 . The same effect on foreign bank subsidiaries is $\beta_1 + \beta_2$. The same effect on domestically owned banks in the low interest rate environment is $\beta_1 + \beta_3$. The same effect on foreign bank subsidiaries in the low interest rate environment is $\beta_1 + \beta_2 + \beta_3 + \beta_4$. Similarly, for disturbances in the expected path of the short rate, i.e. the term spread.

The inclusion of macro controls to the right-hand side of (1) aims to control for the demand for credit in Russia. The macro controls are (i) the Russian CPI inflation, seasonally adjusted; (ii) quarterly growth rate of GDP in Russia, seasonally adjusted; (iii) the 3-month money market rate in Russia; (iv) the 10 year – 3 month term spread

in Russia; and (v) quarterly changes of the rouble's real effective exchange rate.

The set of bank controls is standard and includes the capital-to-asset ratio, the liquid asset ratio, the core deposit ratio, and the security-to-asset ratio.

The right-hand side of (1) also includes bank fixed effects to account for time-invariant bank-specific factors, year fixed effects to account for secular time-specific factors, and quarter dummies to handle seasonality that might remain in the data. The inclusion of time fixed effects rather than year fixed effects is not feasible since our regressors of interest $Rate_t^{US}$, $Rate_t^{US} \times Low_t^{US}$, $Spread_t^{US}$, and $Spread_t^{US} \times Low_t^{US}$ are time-specific and do not vary across banks and would therefore be absorbed by the time fixed effects.

Along with (1) we consider an additional specification. We construct two dummy variables, $post2008$ and $post2014$, and employ them to replace the Low dummy in (1). These two variables aim to capture two structural changes that are likely to have affected the regime of monetary policy in Russia. In 2009 Russia's economy was hit by the Global Financial Crisis. At the end of 2014 the Bank of Russia completed the adoption of inflation targeting. Furthermore, after 2014, the Bank of Russia put a serious effort to the dedollarization of the liabilities of the banking sector. That was implemented by introducing macroprudential policies that discouraged banks to borrow in foreign currency, and the objective was to improve the resilience of the banking sector with respect to external shocks. Effectively, $post2008$ and $post2014$ split the sample into three subsamples, 2000Q1-2008Q4, 2009Q1-2013Q4, and 2014Q1-2019Q4. The 2009Q1-2013Q4 subsample, has a considerable, although not perfect, overlap with the period of low interest rates in the US as shown on Figures 3 and 4. It is conceivable therefore that the Low dummy in (1) captures the effect of the two structural changes of 2008 and 2014 so that the change in transmission caused by them could be mistakenly attributed to the US low interest rate environment. To check for this possibility, we estimate a regression where the regressors of interest are the US rate and terms spread, both in quarterly

changes, are interacted with *post2008* and *post2014*, namely:

$$\begin{aligned}
y_{b,t+h}^h = & \beta_1 \Delta r_t^{US} + \beta_2 Foreign_b \Delta r_t^{US} + \beta_3 \Delta r_t^{US} post2008_t \\
& + \beta_4 Foreign_b \Delta r_t^{US} post2008_t + \beta_5 \Delta r_t^{US} post2014_t + \beta_6 Foreign_b \Delta r_t^{US} post2014_t \\
& \beta_7 \Delta s_t^{US} + \beta_8 Foreign_b \Delta s_t^{US} + \beta_9 Foreign_b \Delta s_t^{US} post2008_t + \beta_{10} Foreign_b \Delta s_t^{US} post2008_t \\
& + \beta_{11} \Delta s_t^{US} post2008_t + \beta_{12} Foreign_b \Delta s_t^{US} post2008_t + \beta_{13} \Delta s_t^{US} post2014_t \\
& \beta_{14} Foreign_b \Delta s_t^{US} post2014_t + macro\ controls_{t-1} + bank\ controls_{b,t-1} + \alpha_b \\
& + year\ fixed\ effects + quarter\ fixed\ effects + \epsilon_{b,t+h}^h
\end{aligned} \tag{2}$$

The finding that the coefficients on terms interacted with *post2008* and *post2014* are statistically significant could be viewed as evidence in favor of the hypothesis that the effects of US monetary policy differs across the three policy regimes in Russia.

[FIGURES 3 AND 4 ABOUT HERE]

4 Data

We employ data set that covers top 30, as of 1 January 2020, Russian banks and 20 years of quarterly observations, 2000 through 2019. The top 30 banks control about 80 percent of assets of the entire banking sector in Russia.

The definition of variables involved in the regressions is given in Table 1. The bank-level variables – total assets, capital, liquid assets, etc. – are computed based on proprietary data from quarterly balance sheet statements (Form 0409101) that are submitted by Russian banks to the Bank of Russia. The Russia’s CPI inflation and GDP are taken from the Rosstat – National Statistical Agency of Russia; the 3-month and 10-year rates and the USD/RUS exchange rates from the Bank of Russia and the Moscow Exchange; the real effective real exchange rate from the Bank of Russia. The U.S. 3-month and 10-year rates are taken from FRED – the Federal Reserve Economic Data database. The measurement units are annual percentage points for flows (e.g., the growth rate of lending) or percentages for ratios (e.g., the capital-to-asset ratio). The Low_t^{US} dummy is

defined as equal to one if the US 3-month interest rate on date t is in the lowest quartile of the sample distribution and zero otherwise. The descriptive statistics of variables are reported in Table 2.

[TABLE 1 ABOUT HERE]

[TABLE 2 ABOUT HERE]

To account for mergers and acquisitions we construct a fictitious/synthetic bank as of the beginning of the sample by combining balance sheets of the acquiring bank and the merger target (De Haas et al. (2015); Gambacorta and Mistrulli (2004)). For example, if bank A acquires bank B in 2012Q3, then both bank A and bank B will be part of the respective fictitious/synthetic bank starting from the beginning of the sample period, 2000Q1.

Following common practices, the variables are adjusted for outliers: the flow dependent variables (the growth rate of credit) are winsorized at 10% level whereas the ratios at 1% level.

5 Findings

5.1 The effect of US monetary policy on lending

Tables 3 to 8 summarize our findings on the effect of US monetary policy on lending by Russian banks.

Table 3 reports regressions for the growth rate in total lending to private non-financial borrowers adjusted for FX valuation effects. Specification (1) with the *Low* dummy does not reveal any clear pattern as all coefficients of interests but one being statistically insignificant. Once we turn to specification (2) though some interesting regularity emerges. The coefficients on $\Delta r_t^{US} post2008$ are statistically significant and negative for all horizons $h = 0, 1, 2, 3$ quarters ahead whereas those on $\Delta r_t^{US} post2014$ are statistically significant, positive and of the same magnitude in statistical sense. This pattern has the following interpretation. After 2008, the negative effect of US monetary shocks became negative,

being insignificant before 2008. After 2014, the negative effect of transmission evaporated and the effect was back to zero as it was before 2008. Figure 5 shows the average growth rate in loans across banks in our sample.

[TABLES 3 AND FIGURE 5 ABOUT HERE]

A similar pattern is documented for ruble-denominated lending as shown in Table 4 and Figure 6 although being less pronounced. The inspection of Figures 5 and 6 however suggests that this regularity could well be spurious and driven by a substantial drop in lending in the first half of 2009, which was preceded, perhaps by chance, by a tiny upward move of the US policy rate.

[TABLES 4 AND FIGURE 6 ABOUT HERE]

Table 5 and Figure 7 show the results for lending in foreign currency. The *Low* dummy specification (1) suggests that changes in the US rate affected only foreign-owned banks both in normal times and in the low interest rate regime in the US. The term spread also influenced lending of this group of banks but only in the low rate regime in the US. Both regularities are consistent with the international bank lending channel of international monetary transmission as the sign of the estimated above-mentioned coefficients is negative. This pattern breaks down once in specification (2). The effect of changes in the US rate disappears whereas it survives on the side of the term spread. Now the picture is more nuanced. Before 2008, there is no effect of changes in the US term spread on lending. It turns positive for domestically owned banks but negative for foreign-owned banks after 2008. The effect is close to disappear after 2014. The entire pattern does not seem robust however. For some horizons h , the effect is significant but not for others, and the point estimate of the effect is quite unstable across different h .

[TABLE 5 AND FIGURE 7 ABOUT HERE]

We now look at lending to two different sectors separately, non-financial firms and individuals. Table 6 reports estimation results. Specification (1) does not document much action except just a couple of coefficients being significant. Specification (2) features

somewhat more significant coefficients but all of them seem unstable across different horizons h . Once again, this regularity could be spurious and driven by swings in lending during 2009Q1-2014Q2 as seen on Figure 8.

[TABLE 6 FIGURE 8 ABOUT HERE]

As shown in Table 7, lending to individuals appears sensitive mainly to term spreads when US rates are low, with growing spreads leading to the contraction of lending, according to the *low* dummy specification (1). The effect is uniform for domestically-owned banks and foreign bank subsidiaries. The sign of the effect switches in specification (2) where growing spreads now positively affect lending to individuals after 2014. Furthermore, the terms associated with the short rate gain significance. Interestingly, the negative effect of short rates on lending comes in after 2008 and turns to insignificant after 2014, according specification (2). Figure 9 shows the time path of lending to individuals.

[TABLE 7 AND FIGURE 9 ABOUT HERE]

Finally, Table 8 reports estimation results for the currency composition of lending. Remarkably, according to the *Low* dummy specification (1), portfolio re-balancing occurs predominantly on the side of foreign bank subsidiaries. The share of foreign currency denominated loans in their loan portfolios negatively responds to increases both in the US short rate and the term spread. The negative effect of the term spread gets even stronger in the period of low rates in the US. On Figure 10, it is worth noting a downward trend in the share of dollar denominated loans, which is especially pronounced for foreign bank subsidiaries.

[TABLE 8 AND FIGURE 10 ABOUT HERE]

5.2 The effect of US monetary policy on funding

The results described in the previous subsection are consistent with the view that monetary policy in the US has spillovers on lending in Russia. In this subsection we try to uncover the mechanism of this cross-border transmission. Specifically, we explore if

the mechanism of transmission is similar to one documented in Cetorelli and Goldberg (2012): in response to monetary policy shocks, global banks transfer liquidity internationally via internal capital markets. In Russia, only it is subsidiaries of foreign banks that are permitted to operate by law but not branches. From the legal perspective, foreign bank subsidiaries doing business in Russia are legal entities under Russian law. One could expect that global liquidity management in this case is likely to take the form of cross-border interbank loans from parent organizations. There are four institutions in our sample that are subsidiaries of global banks: Reiffeisen, Citibank, Unicredit, and Rosbank (a subsidiary of Société Générale). In what follows we explore (i) if their cross-border funding responds to the US monetary policy, and if so what is the sign of the response; (ii) if the interbank borrowing by a typical bank in the sample responds in any systematic way to changes in US monetary conditions; (iii) if there are spillovers of cross-border flows of liquidity on domestic money market.

Table 9 shows regression results for cross-border funding proxied by the ratio of interbank loans from non-resident banks to liabilities. Remarkably, it is foreign-owned banks (essentially, the subsidiaries of the four above-mentioned global banks) that respond to changes in the US money market rate with no reaction on the part of domestically owned banks, and the low rate environment in the US makes this reaction even more intense. The documented effect is negative and statistically significant implying that when the cost of funds in the US declines foreign bank subsidiaries increase their interbank borrowing from abroad. Data limitations do not allow us to see if these inflows of funds come from respective parent organizations or from international capital markets more generally. Nevertheless, the documented pattern is consistent with the Cetorelli and Goldberg (2012) result. Somewhat surprisingly, the contemporaneous response of foreign bank subsidiaries to the term spread is found to be positive in normal times but negative during the low rate regime in the US. Figure 11 reveals a downward trend in cross-border borrowing that emerged after 2008 and continued after 2014. The continuation of this tendency in the more recent period is supposedly caused by the efforts of the Bank of Russia on the de-dollarization of the banking sector.

[TABLE 9 AND FIGURE 11 ABOUT HERE]

Table 10 shows regressions for interbank loans received as fraction of liabilities. One possible channel of cross-border transmission of foreign monetary policy is borrowing by foreign bank affiliates from their parent organizations with subsequent re-distribution of funds via local interbank market. This would imply more intensive interbank borrowing by domestically owned banks when interest rate abroad decline. The results shown in Table 10 do not give support to this hypothesis. It is exclusively the interbank borrowing activity of foreign bank subsidiaries is affected by the US short rate and even more so under the low rate regime in the US. The negative sign of the effect is consistent with the international bank lending channel. There is no response on the part of domestically owned institutions. The effect of the term spread is negative and statistically significant in the low rate environment but its short-lived. Specification (2) confirms this finding pointing out that this effect was especially operational after 2008. Figure 12 exhibits the joint dynamics of interbank borrowing and the US short rate.

[TABLE 10 AND FIGURE 12 ABOUT HERE]

Table 11 reports the estimation results for interbank loans issued as fraction of assets. Unlike in the previous case of interbank borrowing activity, these findings suggest a more active reaction of domestically owned banks to changes in monetary conditions in the US. The estimated response to the short rate is negative and statistically significant although it is a few times smaller quantitatively than the response of foreign bank subsidiaries – according to the *Low* dummy specification (1) but not the *post* dummies specification (2). Specification (2) provides some evidence in favor of the emergence of portfolio re-balancing channel after 2008 but the estimated effects are only marginally significant. The time path of inter-bank lending is shown on Figure 13.

[TABLE 11 AND FIGURE 13 ABOUT HERE]

5.3 The effect of US monetary policy on risk taking

Our final exercise is to estimate the effect of US monetary policy on risk taking. We use two proxies for risk taking, the loan loss provisions (LLP) as a fraction of loans and the ratio of non-performing loans (NPL) to total loans to private non-financial borrowers. Table 12 shows regressions for NPL. One pattern is reminiscent of some results reported above, namely, the opposite sign of the effect of the short rate for domestically owned institutions and foreign bank subsidiaries. The response of the latter is negative and is in line with economic intuition: lower rates are likely to promote search-for-yield and excessive risk taking. The response of domestically owned banks is positive and counterintuitive although it is twice as small as the size of the negative effect for foreign bank affiliates. The effect of the spread is positive and statistically significant only in the low rate environment appearing uniform for the two groups of banks, which is not straightforward to rationalize. Results obtained from regressions based on the *post* dummies specification (2) are broadly consistent with these findings. Figure 14 documents a divergence between the NPL time path of domestically owned banks and foreign bank subsidiaries, which perhaps reflects the opposite sign of the effect for the two groups of banks mentioned above.

[TABLE 12 AND FIGURE 14 ABOUT HERE]

Results for LLP, as shown in Table 13, essentially replicate those for NPL in Table 13, including the divergence pattern as shown on Figure 15. The effect of the short rate on LLP is positive for domestically owned banks and negative for foreign bank affiliates. The difference in the effect between normal times and the low rate environment is only marginally significant in two occasions. The effect of the term spread is positive under low rates and uniform between the two groups of banks.

[TABLE 13 AND FIGURE 15 ABOUT HERE]

5.4 Robustness

As already mentioned above, the time interval covered by our data can be split in three sub-periods, 2000Q1-2008Q4, 2009Q1-2013Q4, and 2014Q1-2019Q4. These three sub-periods featured different regimes of monetary policy. During 2000Q1-2008Q4, the Bank of Russia maintained exchange rate targeting regime, and the credit market experienced a steady growth on the back of low interest rates worldwide and the resulting massive capital inflows to emerging markets. In most of 2009Q1-2013Q4, the stance of monetary policy in Russia was accommodating, and there was quite a lot of turbulence brought in by the Global Financial Crises and the euro zone debt crisis. During third sub-period 2014Q1-2019Q1, the monetary policy in the U.S. was gradually back to normal. At the same time, at least, three remarkable developments occurred in Russia. First, the Bank of Russia finalized the transition to the inflation targeting regime from the exchange rate targeting regime at the end of 2014. Second, Western countries imposed sanctions on some major Russian financial institutions. Third, the Bank of Russia implemented a number of macroprudential policy interventions aiming to disincentivise Russian banks to hold foreign-currency-denominated liabilities.

The above discussion implies that the period of low interest rates in the U.S. roughly coincided with the 2009Q1-2013Q4. One potential consequence is that the change in the pass through of foreign shocks during the LIRE period in the U.S. that we find with our regressions can well be caused by domestic reasons rather than by LIRE itself.

In order to account for such a possibility, we run a separate set of regressions (2) featuring *post2008* and *post2014* dummies along with the main specification (1) featuring the *Low* dummy. Like *Low* in (1), the two *post* dummies enter the right-hand side not only as standing alone regressors but also as interactions with the two regressors of interest, the U.S. money market rate and the term spread as well as the foreign bank dummy. Such a rich set of interactions is capable of accommodating different policy regimes across the three sub-periods.

Specification (2) can be viewed as a more flexible version of (1). While (1) implicitly assumes that transmission of foreign monetary policy shocks to domestic lending was

exactly the same before the start of LIRE period and after the normalization of U.S. monetary policy, specification (2) allows the pass through be different across all three sub-periods, in particular, before and after the LIRE period. Regression based on specification (2) are reported in columns 5 to 9 of Tables 3 to 13 for respective dependent variables whereas columns 1 to 4 of the same tables are reserved for regressions based on the baseline specification (1).

Our reading of findings in comparison between the two specifications is two-fold. First, we do document that the transmission of foreign monetary shocks was different not only in between “normal times” and the LIRE period but also between before-LIRE and after-LIRE periods. We interpret the latter pattern as a contribution of domestic developments to the change in the shape of transmission, in particular, the trend toward de-dollarization of the liabilities of the banking sector. Second, the difference in the transmission through the balance sheets of domestically owned banks and foreign bank subsidiaries, both on the asset side (loans) and the liability side (cross-border funding), persists even in the after-LIRE period. To the extent that the two groups of banks we subject to exactly the same regulations, we interpret this difference as suggestive evidence supporting the existence of the international bank lending channel of transmission, which is in line with findings of Cetorelli and Goldberg (2012) and Morais et al. (2019), among others.

6 Conclusion

The main conclusion of the paper seems to be that the effects of the US monetary policy to domestic lending works predominantly through the effect on the activity of foreign bank subsidiaries. In response to monetary loosening in the US, foreign bank affiliates borrow more abroad, take on more risk, and change the composition of their loan portfolios toward US dollar denominated loans. This pattern is similar to findings of Cetorelli and Goldberg (2012) and Morais et al. (2019). At the same time, the effects of U.S. monetary policy on the lending activity in Russia, including foreign bank subsidiaries’ activity, substantially decrease in 2014-2019 compared to the previous sub-period and

become even statistically insignificant. This result can be explained by developments in the domestic policy regimes in Russia. In the low interest rate environment, the effect is sometimes amplified and sometimes reversed, which, unlike Cao et al. (2023), prevents us from making stark conclusion about the unquestionable dominance of the international bank lending channel under low rates. The response of domestically owned banks is muted both in terms of lending and interbank activities. This could be explained by a certain degree of market fragmentation but this perhaps is contrary to anecdotal evidence and conventional wisdom.

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Table 1: Definition of variables

Variable name	Definition
Dependent variables: Lending	
<i>Lending</i>	QoQ growth rate of loans to private non-financial borrowers
<i>LendingNet</i>	QoQ growth rate of loans to private non-financial borrowers net of FX valuation effect
<i>Lending^{RUB}</i>	QoQ growth rate of RUB-denominated loans to private non-financial borrowers
<i>LendingNet^{USD}</i>	QoQ growth rate of USD-denominated loans to private non-financial borrowers net of FX valuation effect
<i>LendingNonFin</i>	QoQ growth rate of USD-denominated loans to private non-financial firms
<i>LendingIndiv</i>	QoQ growth rate of USD-denominated loans to individuals
<i>LoansShare^{USD}</i>	Share of USD-denominated loans in total loans
Dependent variables: Funding	
<i>XBfunding</i>	Ratio of interbank loans from nonresidents to assets
<i>IBloansReceived</i>	Ratio of interbank loans received to liabilities
<i>IBloansIssued</i>	Ratio of interbank loans issued to assets
<i>MMfunding</i>	Money market funding ratio: ratio of interbank loans received and securities issued to liabilities
Dependent variables: Risk	
<i>NPL</i>	Ratio of non-performing loans to total loans
<i>LLP</i>	Ratio of loan loss provisions to total loans
Regressors of interest	
<i>Rate^{USD}</i>	3-month money market rate in the US
<i>Spread^{USD}</i>	10Y-3M term spread in the US
<i>Low^{USD}</i>	Dummy = 1 if <i>Rate^{USD}</i> is in the lowest quartile of the sample distribution and 0 otherwise
<i>Foreign</i>	dummy = 1 if foreign bank subsidiary and 0 otherwise
Macro controls	
<i>Rate^{RUB}</i>	3-month money market rate in Russia

$Spread^{RUB}$	10Y-3M term spread in Russia
GDP^{RUS}	Quarterly GDP growth in Russia, s.a.
CPI^{RUS}	CPI inflation in Russia, s.a.
	Bank controls
$Equity$	Ratio of capital to total assets
$Securities$	Ratio of securities owned to total assets
$LiquidAssets$	Ratio of liquid assets to total assets
$Deposits$	Ratio of customer deposits to total assets

Table 2: Descriptive statistics

Variable	No. obs	Mean	Median	Min	Max	S.D.
Dependent variables:						
<i>Lending</i>	2,337	17.8	13.9	-27.7	72.8	31.4
<i>LendingNet</i>	2,276	16.4	12.0	-29.1	71.0	31.2
<i>Lending</i> ^{RUB}	2,337	20.2	15.2	-29.7	84.1	35.1
<i>LendingNet</i> ^{USD}	2,276	10.5	-1.3	-76.4	128.3	60.5
<i>LendingNonFin</i>	2,321	15.9	12.2	-37.2	80.5	36.4
<i>LendingIndiv</i>	2,331	28.7	18.5	-34.1	120.8	47.4
<i>LoansShare</i> ^{USD}	2,367	21.9	17.6	0	84.1	18.6
<i>XBfunding</i>	2,368	5.5	2.0	0	46.4	8.7
<i>IBloansReceived</i>	2,398	11.2	7.6	0	60.8	11.4
<i>IBloansIssued</i>	2,368	0.25	0.17	0	1.4	0.25
<i>MMfunding</i>	2,398	16.2	18.4	0	66.7	13.4
<i>NPL</i>	2,396	5.1	3.0	0	30.5	5.9
<i>LLP</i>	2,396	10.9	8.5	0.9	59.7	9.3
Regressors of interest:						
<i>Rate</i> ^{USD}	2,398	1.63	1.04	0.01	6.02	1.76
<i>Spread</i> ^{USD}	2,398	1.80	1.94	-0.45	3.61	1.12
<i>Low</i> ^{USD}	2,398	0.238	0	0	1	0.426
<i>Foreign</i>	2,398	0.13	0	0	1	0.34
Macro controls:						
<i>Rate</i> ^{RUB}	2,338	8.96	8.04	4.23	21.14	3.46
<i>Spread</i> ^{RUB}	2,338	1.75	0.54	-10.93	30.23	5.97
<i>GDP</i> ^{RUS}	2,368	3.26	3.77	-17.08	10.23	4.69
<i>CPI</i> ^{RUS}	2,398	2.53	2.10	0.13	15.91	2.04
Bank controls:						
<i>Equity</i>	2,398	14.3	11.9	5.0	58.9	8.6
<i>Securities</i>	2,398	11.4	10.1	0	35.7	8.1
<i>Deposits</i>	2,398	47.8	48.7	3.7	91.7	19.4
<i>LiquidAssets</i>	2,398	23.6	20.9	3.6	66.6	12.0

Table 3: The dynamic effect of US monetary policy on lending net of FX valuation effect

Regressor	Dependent: $Lending_{b,t+h}^h$							
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 0$	$h = 1$	$h = 2$	$h = 3$
$\Delta Rate_t^{US}$	3.946 (3.271)	-1.634 (2.801)	-4.897** (2.274)	-1.482 (1.945)	5.075 (3.838)	-1.211 (3.383)	-5.827** (2.712)	-2.201 (2.433)
$\Delta Rate_t^{US} \times Foreign_b$	-0.128 (5.157)	-3.584 (5.239)	-3.767 (4.915)	-5.983 (4.985)	3.136 (7.164)	-1.209 (7.249)	-0.929 (7.078)	-5.669 (6.801)
$\Delta Rate_t^{US} \times Low_t^{US}$	-76.902 (49.106)	-29.084 (26.999)	-22.432 (19.793)	-20.871 (18.383)				
$\Delta Rate_t^{US} \times Low_t^{US} \times Foreign_b$	9.544 (66.915)	-8.005 (35.328)	21.719 (28.233)	38.253 (26.809)				
$\Delta Rate_t^{US} \times Post2008_t$					-117.175*** (36.027)	-44.932** (18.446)	-37.634* (18.609)	-49.118*** (15.433)
$\Delta Rate_t^{US} \times Post2008_t \times Foreign_b$					-0.572 (43.397)	6.012 (23.430)	29.531 (22.733)	46.626* (23.246)
$\Delta Rate_t^{US} \times Post2014_t$					143.078*** (40.901)	64.484*** (22.510)	35.836 (21.167)	49.833** (18.441)
$\Delta Rate_t^{US} \times Post2014_t \times Foreign_b$					17.443 (47.915)	13.564 (28.384)	-12.172 (21.644)	-24.031 (22.021)
$\Delta Spread_t^{US}$	-1.973 (2.040)	-1.730 (2.191)	0.325 (1.442)	-0.550 (1.121)	2.108 (3.762)	-0.641 (3.211)	-2.074 (2.047)	-2.436 (1.911)
$\Delta Spread_t^{US} \times Foreign_b$	1.019 (7.266)	-0.496 (4.190)	1.000 (4.914)	-1.847 (3.752)	5.607 (11.692)	2.616 (6.984)	4.844 (8.000)	-1.460 (3.591)
$\Delta Spread_t^{US} \times Low_t^{US}$	2.049 (3.790)	3.749 (2.966)	2.336 (2.350)	1.310 (1.795)				
$\Delta Spread_t^{US} \times Low_t^{US} \times Foreign_b$	-5.900 (11.224)	-6.397 (10.429)	-0.558 (9.874)	6.120 (9.275)				
$\Delta Spread_t^{US} \times Post2008_t$					-6.142 (3.884)	0.358 (3.534)	6.719** (2.552)	3.893 (2.459)
$\Delta Spread_t^{US} \times Post2008_t \times Foreign_b$					-14.161 (12.875)	-11.780 (9.917)	-8.760 (11.034)	1.429 (5.516)
$\Delta Spread_t^{US} \times Post2014_t$					4.438 (4.957)	0.970 (3.460)	-1.147 (2.298)	3.202* (1.853)
$\Delta Spread_t^{US} \times Post2014_t \times Foreign_b$					11.912 (8.291)	14.808* (7.732)	7.843 (6.297)	3.038 (4.903)
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. obs	2249	2220	2191	2162	2249	2220	2191	2162
No. banks	30	30	30	30	30	30	30	30
R-sq. within	0.28	0.37	0.43	0.47	0.28	0.37	0.43	0.47
R-sq. between	0.00	0.01	0.00	0.00	0.02	0.02	0.01	0.01
R-sq. overall	0.26	0.34	0.39	0.42	0.27	0.34	0.39	0.43

Notes: See Table 1 for the definition of variables. Clustered at the bank level standard level errors are shown in the parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Table 4: The dynamic effect of US monetary policy on RUB-denominated lending

Regressor	Dependent: $Lending_{b,t+h}^{RUB,h}$							
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 0$	$h = 1$	$h = 2$	$h = 3$
$\Delta Rate_t^{US}$	2.334 (3.667)	-3.317 (3.229)	-7.028*** (2.425)	-3.323* (1.941)	2.253 (4.460)	-3.158 (4.176)	-7.457** (3.136)	-4.972** (2.417)
$\Delta Rate_t^{US} \times Foreign_b$	6.537 (6.544)	7.659 (6.402)	4.393 (7.951)	2.224 (7.657)	9.022 (10.145)	11.692** (5.628)	8.880 (8.269)	6.869 (7.434)
$\Delta Rate_t^{US} \times Low_t^{US}$	-76.961 (46.924)	-56.509* (31.937)	-34.591 (28.394)	-12.863 (20.463)				
$\Delta Rate_t^{US} \times Low_t^{US} \times Foreign_b$	-9.681 (80.573)	-20.921 (50.436)	33.909 (39.112)	17.714 (42.063)				
$\Delta Rate_t^{US} \times Post2008_t$					-132.107*** (42.183)	-59.630** (26.189)	-37.870 (23.791)	-37.529** (17.612)
$\Delta Rate_t^{US} \times Post2008_t \times Foreign_b$					16.885 (60.470)	3.206 (40.978)	41.974 (26.097)	25.228 (28.159)
$\Delta Rate_t^{US} \times Post2014_t$					171.325*** (45.476)	80.657** (30.983)	28.826 (25.568)	36.747* (18.953)
$\Delta Rate_t^{US} \times Post2014_t \times Foreign_b$					7.065 (64.468)	24.837 (37.752)	-16.856 (22.473)	-2.302 (20.791)
$\Delta Spread_t^{US}$	-3.858 (2.877)	-3.098 (2.905)	0.158 (1.718)	-0.854 (1.298)	-0.443 (4.746)	-1.939 (3.904)	-0.997 (2.360)	-3.306 (2.000)
$\Delta Spread_t^{US} \times Foreign_b$	-4.218 (8.389)	-0.779 (4.600)	-3.037 (4.771)	-7.102* (3.713)	-2.356 (16.410)	1.217 (8.092)	-1.279 (8.359)	-5.890 (4.713)
$\Delta Spread_t^{US} \times Low_t^{US}$	1.998 (3.967)	3.309 (3.123)	3.236 (2.816)	3.843 (2.409)				
$\Delta Spread_t^{US} \times Low_t^{US} \times Foreign_b$	11.969 (16.501)	7.399 (14.493)	13.729 (12.633)	17.267 (12.271)				
$\Delta Spread_t^{US} \times Post2008_t$					-6.182 (5.218)	-1.151 (3.804)	3.302 (2.824)	4.892* (2.410)
$\Delta Spread_t^{US} \times Post2008_t \times Foreign_b$					0.574 (21.417)	-2.749 (13.991)	3.050 (12.707)	7.808 (7.973)
$\Delta Spread_t^{US} \times Post2014_t$					10.513* (5.366)	6.088* (3.337)	2.632 (2.890)	3.110 (2.272)
$\Delta Spread_t^{US} \times Post2014_t \times Foreign_b$					-1.499 (5.462)	10.081 (7.196)	3.422 (5.571)	-0.169 (4.419)
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. obs	2307	2277	2247	2217	2307	2277	2247	2217
No. banks	30	30	30	30	30	30	30	30
R-sq. within	0.22	0.30	0.36	0.39	0.23	0.31	0.36	0.40
R-sq. between	0.02	0.02	0.02	0.02	0.04	0.03	0.03	0.03
R-sq. overall	0.21	0.28	0.33	0.36	0.21	0.28	0.33	0.36

Notes: See Table 1 for the definition of variables. Clustered at the bank level standard errors are shown in the parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Table 5: The dynamic effect of US monetary policy on USD-denominated lending net of FX valuation effect

Regressor	Dependent: $Lending_{b,t+h}^{USD,h}$							
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 0$	$h = 1$	$h = 2$	$h = 3$
$\Delta Rate_t^{US}$	-0.587 (6.604)	2.759 (5.327)	0.321 (5.155)	1.158 (4.440)	2.605 (7.089)	1.567 (6.792)	-2.290 (6.448)	0.260 (5.675)
$\Delta Rate_t^{US} \times Foreign_b$	-18.678*** (6.625)	-27.027*** (7.006)	-11.897*** (4.136)	-11.193* (5.506)	-13.817 (9.523)	-19.231* (11.278)	-8.328 (8.536)	-16.389 (10.117)
$\Delta Rate_t^{US} \times Low_t^{US}$	-26.516 (133.504)	21.405 (111.262)	-88.704 (92.879)	-82.066 (87.811)				
$\Delta Rate_t^{US} \times Low_t^{US} \times Foreign_b$	79.627 (109.654)	5.184 (74.826)	-18.813 (71.655)	-18.417 (69.831)				
$\Delta Rate_t^{US} \times Post2008_t$					-40.331 (84.096)	-48.457 (80.241)	-103.854 (63.128)	-99.178 (69.035)
$\Delta Rate_t^{US} \times Post2008_t \times Foreign_b$					53.161 (88.610)	92.325 (76.996)	105.656 (71.965)	111.009* (59.495)
$\Delta Rate_t^{US} \times Post2014_t$					41.259 (100.529)	24.638 (102.356)	104.885 (78.482)	119.118 (76.545)
$\Delta Rate_t^{US} \times Post2014_t \times Foreign_b$					-69.987 (91.479)	-104.537 (86.436)	-111.458 (84.172)	-102.938 (73.839)
$\Delta Spread_t^{US}$	-0.100 (5.099)	4.294 (3.835)	2.224 (2.895)	0.614 (3.394)	5.445 (7.806)	0.208 (6.257)	-3.602 (4.602)	-1.822 (5.057)
$\Delta Spread_t^{US} \times Foreign_b$	-6.379 (10.491)	-16.738** (6.718)	-3.113 (6.895)	-1.908 (5.528)	-0.919 (12.989)	-6.735 (9.428)	3.574 (10.602)	-5.294 (7.189)
$\Delta Spread_t^{US} \times Low_t^{US}$	6.326 (7.105)	5.130 (7.334)	-3.840 (6.026)	-7.099 (5.015)				
$\Delta Spread_t^{US} \times Low_t^{US} \times Foreign_b$	-53.804*** (19.407)	-37.174*** (13.318)	-35.112** (15.153)	-16.899 (10.912)				
$\Delta Spread_t^{US} \times Post2008_t$					-2.672 (12.802)	16.800* (8.917)	16.490** (7.084)	4.913 (6.026)
$\Delta Spread_t^{US} \times Post2008_t \times Foreign_b$					-44.742** (18.813)	-43.615*** (12.822)	-34.054** (13.437)	-7.960 (8.166)
$\Delta Spread_t^{US} \times Post2014_t$					-19.171 (11.873)	-25.728** (10.093)	-14.974 (10.458)	0.965 (8.121)
$\Delta Spread_t^{US} \times Post2014_t \times Foreign_b$					64.917** (25.761)	48.594** (18.508)	31.324 (20.086)	24.130 (16.792)
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. banks	2249	2220	2191	2162	2249	2220	2191	2162
No. banks	30	30	30	30	30	30	30	30
R-sq. within	0.10	0.15	0.19	0.22	0.10	0.16	0.19	0.22
R-sq. between	0.05	0.02	0.02	0.02	0.01	0.00	0.02	0.03
R-sq. overall	0.09	0.14	0.17	0.20	0.09	0.14	0.17	0.20

Notes: See Table 1 for the definition of variables. Clustered at the bank level standard errors are shown in the parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Table 6: The dynamic effect of US monetary policy on lending to private non-financial firms net of FX valuation effect

Regressor	Dependent: $LendingNonFin_{b,t+h}^h$							
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 0$	$h = 1$	$h = 2$	$h = 3$
$\Delta Rate_t^{US}$	3.714 (3.925)	-1.942 (3.556)	-4.155 (2.853)	-0.294 (2.335)	6.293 (4.231)	-1.228 (4.060)	-4.874 (3.223)	-1.206 (2.456)
$\Delta Rate_t^{US} \times Foreign_b$	-4.570 (5.179)	-7.876 (5.262)	-6.725 (4.217)	-7.086 (5.238)	-4.063 (6.401)	-7.478 (7.599)	-7.211 (5.923)	-10.932 (7.002)
$\Delta Rate_t^{US} \times Low_t^{US}$	-23.114 (77.505)	-10.743 (53.192)	-34.167 (49.839)	-12.974 (41.743)				
$\Delta Rate_t^{US} \times Low_t^{US} \times Foreign_b$	10.246 (101.359)	2.014 (47.973)	33.774 (35.302)	14.541 (37.056)				
$\Delta Rate_t^{US} \times Post2008_t$					-66.725 (55.242)	-25.832 (43.338)	-51.403 (38.066)	-40.058 (31.152)
$\Delta Rate_t^{US} \times Post2008_t \times Foreign_b$					5.006 (67.505)	45.625 (29.407)	97.605** (39.020)	91.010** (33.808)
$\Delta Rate_t^{US} \times Post2014_t$					87.627 (61.770)	39.370 (50.720)	56.965 (50.017)	47.842 (40.178)
$\Delta Rate_t^{US} \times Post2014_t \times Foreign_b$					20.249 (74.819)	-9.141 (34.789)	-54.509 (42.309)	-38.609 (35.357)
$\Delta Spread_t^{US}$	-0.596 (2.441)	-0.604 (2.729)	1.491 (1.518)	0.163 (1.627)	5.688 (3.631)	0.857 (3.549)	-0.244 (2.060)	-1.925 (2.125)
$\Delta Spread_t^{US} \times Foreign_b$	0.727 (8.482)	-2.727 (5.033)	-0.275 (5.424)	-1.196 (3.899)	4.049 (12.499)	0.906 (7.839)	2.908 (8.100)	-2.373 (3.673)
$\Delta Spread_t^{US} \times Low_t^{US}$	7.355 (4.443)	9.463** (4.279)	6.345* (3.267)	3.540 (2.704)				
$\Delta Spread_t^{US} \times Low_t^{US} \times Foreign_b$	-11.358 (12.568)	-14.204 (12.947)	-12.642 (11.458)	-7.144 (11.871)				
$\Delta Spread_t^{US} \times Post2008_t$					-6.409 (5.064)	4.047 (3.683)	9.212*** (3.191)	6.084** (2.296)
$\Delta Spread_t^{US} \times Post2008_t \times Foreign_b$					-16.207 (13.403)	-20.325* (11.123)	-17.909 (11.965)	-6.678 (7.337)
$\Delta Spread_t^{US} \times Post2014_t$					-4.826 (5.332)	-11.089** (5.095)	-11.262** (4.670)	-1.258 (3.048)
$\Delta Spread_t^{US} \times Post2014_t \times Foreign_b$					15.758 (9.831)	25.633** (12.312)	20.923 (12.441)	15.549* (9.079)
Macro controls	Yes	Yes	Yes	Yes				
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. obs	2238	2209	2180	2151	2238	2209	2180	2151
No. banks	30	30	30	30	30	30	30	30
R-sq. within	0.18	0.25	0.31	0.37	0.18	0.25	0.32	0.37
R-sq. between	0.05	0.06	0.06	0.06	0.05	0.06	0.05	0.05
R-sq. overall	0.17	0.24	0.29	0.33	0.17	0.23	0.29	0.33

Notes: See Table 1 for the definition of variables. Clustered at the bank level standard errors are shown in the parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Table 7: The dynamic effect of US monetary policy on lending to individuals net of FX valuation effect

Regressor	Dependent: $LendingIndiv_{b,t+h}^h$							
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 0$	$h = 1$	$h = 2$	$h = 3$
$\Delta Rate_t^{US}$	4.823 (4.884)	-1.142 (3.991)	-0.937 (3.517)	0.091 (3.498)	4.862 (6.157)	-0.615 (4.459)	-0.465 (4.117)	-2.666 (4.628)
$\Delta Rate_t^{US} \times Foreign_b$	9.158 (7.556)	3.797 (8.058)	6.081 (7.484)	0.308 (9.265)	12.810 (10.633)	8.744 (10.045)	15.215 (9.489)	13.746 (12.294)
$\Delta Rate_t^{US} \times Low_t^{US}$	-69.645** (31.003)	-29.336 (30.861)	-37.579 (31.138)	-47.564 (30.992)				
$\Delta Rate_t^{US} \times Low_t^{US} \times Foreign_b$	51.390 (57.946)	12.781 (50.211)	18.602 (53.905)	15.657 (52.659)				
$\Delta Rate_t^{US} \times Post2008_t$					-110.437** (41.481)	-45.732 (38.692)	-60.393** (25.204)	-84.576*** (25.337)
$\Delta Rate_t^{US} \times Post2008_t \times Foreign_b$					-27.228 (51.998)	-36.781 (51.885)	-32.336 (52.081)	-32.052 (52.887)
$\Delta Rate_t^{US} \times Post2014_t$					146.821*** (40.978)	75.175* (37.072)	49.134 (30.712)	84.263*** (28.271)
$\Delta Rate_t^{US} \times Post2014_t \times Foreign_b$					10.784 (49.737)	13.913 (46.817)	-8.605 (50.078)	-17.485 (52.551)
$\Delta Spread_t^{US}$	1.093 (3.695)	1.236 (2.484)	1.780 (1.310)	-2.608 (2.081)	4.776 (6.607)	3.408 (4.460)	1.736 (2.617)	-7.225* (4.090)
$\Delta Spread_t^{US} \times Foreign_b$	-3.558 (3.887)	-4.915 (5.125)	-2.727 (4.872)	-1.458 (3.554)	-5.860 (8.052)	-5.898 (8.806)	1.207 (8.171)	7.131 (5.492)
$\Delta Spread_t^{US} \times Low_t^{US}$	-7.390** (3.309)	-3.336 (2.895)	-4.501* (2.541)	-4.899** (2.266)				
$\Delta Spread_t^{US} \times Low_t^{US} \times Foreign_b$	0.828 (9.926)	4.558 (8.435)	8.518 (9.133)	12.500 (7.777)				
$\Delta Spread_t^{US} \times Post2008_t$					-8.296 (6.404)	-6.561 (4.659)	-1.969 (3.362)	4.051 (3.793)
$\Delta Spread_t^{US} \times Post2008_t \times Foreign_b$					5.667 (10.174)	4.978 (10.349)	0.305 (10.142)	-2.470 (6.562)
$\Delta Spread_t^{US} \times Post2014_t$					6.913 (6.007)	12.005*** (3.563)	6.978** (3.156)	12.484*** (1.991)
$\Delta Spread_t^{US} \times Post2014_t \times Foreign_b$					8.591 (7.502)	10.626* (5.343)	3.748 (3.594)	-6.541** (3.064)
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. obs	2170	2141	2112	2083	2170	2141	2112	2083
No. banks	30	30	30	30	30	30	30	30
R-sq. within	0.39	0.43	0.46	0.49	0.39	0.44	0.47	0.49
R-sq. between	0.04	0.02	0.05	0.02	0.03	0.01	0.03	0.01
R-sq. overall	0.38	0.42	0.45	0.47	0.38	0.42	0.45	0.47

Notes: See Table 1 for the definition of variables. Clustered at the bank level standard errors are shown in the parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Table 8: The dynamic effect of US monetary policy on the currency composition of banks' loan portfolios

Regressor	Dependent: $LoansShare_{b,t+h}^{USD}$							
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 0$	$h = 1$	$h = 2$	$h = 3$
$\Delta Rate_t^{US}$	-0.475 (0.684)	-0.374 (0.650)	0.136 (0.642)	0.527 (0.513)	-0.855 (0.704)	-0.786 (0.631)	-0.749 (0.619)	0.080 (0.481)
$\Delta Rate_t^{US} \times Foreign_b$	-1.397 (2.592)	-4.341 (2.707)	-5.610** (2.524)	-7.573*** (2.662)	3.561 (2.098)	1.462 (2.489)	0.935 (2.017)	-1.675 (2.478)
$\Delta Rate_t^{US} \times Low_t^{US}$	-13.143 (8.257)	-2.318 (8.886)	-8.995 (6.622)	-15.765** (6.348)				
$\Delta Rate_t^{US} \times Low_t^{US} \times Foreign_b$	16.493 (19.755)	14.113 (21.127)	2.204 (20.470)	5.153 (17.625)				
$\Delta Rate_t^{US} \times Post2008_t$					0.018 (6.578)	7.697 (6.102)	0.925 (6.709)	-3.767 (6.642)
$\Delta Rate_t^{US} \times Post2008_t \times Foreign_b$					-23.098* (12.122)	-22.109 (16.868)	-27.321 (18.002)	-17.693 (19.426)
$\Delta Rate_t^{US} \times Post2014_t$					1.605 (7.223)	-7.649 (7.786)	3.483 (7.085)	7.388 (6.213)
$\Delta Rate_t^{US} \times Post2014_t \times Foreign_b$					20.155 (13.417)	13.899 (18.565)	14.995 (19.277)	5.804 (18.141)
$\Delta Spread_t^{US}$	-0.932*** (0.329)	-0.466 (0.303)	-0.357 (0.273)	-0.229 (0.293)	-0.333 (0.540)	-0.066 (0.518)	-0.574 (0.399)	0.100 (0.387)
$\Delta Spread_t^{US} \times Foreign_b$	-0.745 (0.673)	-2.742*** (0.872)	-2.772*** (0.649)	-3.070*** (0.916)	-1.011 (0.968)	-2.034 (1.265)	-0.843 (0.886)	-1.438 (1.013)
$\Delta Spread_t^{US} \times Low_t^{US}$	-0.116 (0.441)	-0.137 (0.483)	-0.654 (0.440)	-1.154** (0.561)				
$\Delta Spread_t^{US} \times Low_t^{US} \times Foreign_b$	-4.661*** (1.289)	-4.654*** (1.598)	-5.808*** (1.548)	-4.749*** (1.445)				
$\Delta Spread_t^{US} \times Post2008_t$					-0.406 (0.645)	-0.225 (0.795)	0.701 (0.526)	-0.862* (0.468)
$\Delta Spread_t^{US} \times Post2008_t \times Foreign_b$					-1.501 (1.427)	-1.747 (1.565)	-3.559** (1.327)	-1.474 (1.128)
$\Delta Spread_t^{US} \times Post2014_t$					-2.436*** (0.803)	-2.710*** (0.705)	-2.668*** (0.877)	-1.150 (1.019)
$\Delta Spread_t^{US} \times Post2014_t \times Foreign_b$					4.524** (2.054)	3.917*** (1.414)	3.353** (1.538)	1.889 (2.468)
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. obs	2307	2277	2247	2217	2307	2277	2247	2217
No. banks	30	30	30	30	30	30	30	30
R-sq. within	0.38	0.39	0.40	0.41	0.43	0.43	0.44	0.45
R-sq. between	0.02	0.02	0.01	0.01	0.32	0.32	0.30	0.28
R-sq. overall	0.12	0.12	0.12	0.13	0.02	0.03	0.03	0.04

Notes: See Table 1 for the definition of variables. Clustered at the bank level standard errors are shown in the parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Table 9: The dynamic effect of US monetary policy on banks' cross-border funding

Regressor	Dependent: $XBfunding_{b,t+h}$							
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 0$	$h = 1$	$h = 2$	$h = 3$
$\Delta Rate_t^{US}$	0.611 (0.608)	0.378 (0.603)	-0.030 (0.568)	0.730 (0.578)	0.654 (0.690)	0.616 (0.685)	-0.204 (0.486)	0.652 (0.620)
$\Delta Rate_t^{US} \times Foreign_b$	-4.007*** (1.305)	-5.550*** (1.516)	-7.275*** (1.387)	-8.371*** (1.841)	-2.842 (1.782)	-3.197* (1.809)	-3.963** (1.620)	-5.992*** (1.748)
$\Delta Rate_t^{US} \times Low_t^{US}$	6.304 (7.061)	5.699 (7.447)	7.709 (5.580)	4.860 (5.129)				
$\Delta Rate_t^{US} \times Low_t^{US} \times Foreign_b$	-47.707* (24.022)	-60.151** (22.023)	-56.076** (22.974)	-50.041* (29.333)				
$\Delta Rate_t^{US} \times Post2008_t$					1.172 (5.117)	-1.827 (6.263)	2.327 (4.750)	0.035 (5.088)
$\Delta Rate_t^{US} \times Post2008_t \times Foreign_b$					-15.845 (17.280)	-37.133** (16.637)	-32.332* (15.903)	-24.543 (16.364)
$\Delta Rate_t^{US} \times Post2014_t$					0.399 (5.325)	1.411 (5.726)	-0.281 (4.624)	0.729 (4.791)
$\Delta Rate_t^{US} \times Post2014_t \times Foreign_b$					14.222 (18.599)	33.630* (17.852)	28.320 (17.015)	23.508 (16.755)
$\Delta Spread_t^{US}$	0.003 (0.210)	0.277 (0.282)	-0.181 (0.189)	0.152 (0.251)	0.491 (0.318)	0.919 (0.573)	-0.029 (0.258)	0.462 (0.483)
$\Delta Spread_t^{US} \times Foreign_b$	2.324*** (0.585)	0.842 (0.780)	-0.146 (0.610)	-1.996 (1.240)	1.508** (0.668)	1.183 (1.211)	1.403* (0.741)	-1.681 (1.596)
$\Delta Spread_t^{US} \times Low_t^{US}$	-0.306 (0.414)	-0.557 (0.352)	-0.165 (0.317)	-0.016 (0.288)				
$\Delta Spread_t^{US} \times Low_t^{US} \times Foreign_b$	-5.851** (2.373)	-3.035 (2.197)	-2.443 (1.866)	0.032 (1.856)				
$\Delta Spread_t^{US} \times Post2008_t$					-0.633 (0.531)	-1.190* (0.696)	-0.342 (0.305)	-0.810 (0.559)
$\Delta Spread_t^{US} \times Post2008_t \times Foreign_b$					-1.882 (1.336)	-1.796 (2.155)	-3.397** (1.383)	1.052 (2.377)
$\Delta Spread_t^{US} \times Post2014_t$					-0.265 (0.531)	0.186 (0.548)	0.293 (0.423)	0.352 (0.365)
$\Delta Spread_t^{US} \times Post2014_t \times Foreign_b$					2.032 (1.251)	1.070 (1.418)	1.935 (1.189)	-0.360 (1.157)
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. obs	2308	2278	2248	2218	2308	2278	2248	2218
No. banks	30	30	30	30	30	30	30	30
R-sq. within	0.35	0.36	0.36	0.37	0.37	0.38	0.38	0.38
R-sq. between	0.06	0.05	0.04	0.02	0.00	0.01	0.01	0.02
R-sq. overall	0.26	0.26	0.26	0.26	0.23	0.22	0.22	0.21

Notes: See Table 1 for the definition of variables. Clustered at the bank level standard errors are shown in the parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Table 10: The dynamic effect of US monetary policy on interbank loans received

Regressor	Dependent: $IBloansReceived_{b,t+h}$							
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 0$	$h = 1$	$h = 2$	$h = 3$
$\Delta Rate_t^{US}$	1.242 (0.885)	0.273 (0.872)	0.701 (0.823)	1.342 (0.792)	0.595 (1.017)	0.206 (0.732)	0.122 (0.683)	0.879 (0.770)
$\Delta Rate_t^{US} \times Foreign_b$	-5.066*** (1.667)	-6.252*** (2.211)	-8.028*** (2.245)	-8.713*** (2.634)	-0.510 (1.564)	-0.869 (1.694)	-2.471 (1.720)	-3.771* (2.109)
$\Delta Rate_t^{US} \times Low_t^{US}$	-7.631 (15.800)	-18.640 (16.174)	2.864 (13.930)	18.514** (7.896)				
$\Delta Rate_t^{US} \times Low_t^{US} \times Foreign_b$	-41.852 (26.251)	-51.901* (28.297)	-78.285** (34.053)	-79.270* (42.026)				
$\Delta Rate_t^{US} \times Post2008_t$					-8.993 (12.142)	-13.893 (11.371)	-0.931 (9.300)	6.491 (6.940)
$\Delta Rate_t^{US} \times Post2008_t \times Foreign_b$					-13.406 (11.376)	-23.105* (13.330)	-37.800** (17.110)	-39.567 (24.556)
$\Delta Rate_t^{US} \times Post2014_t$					16.799 (12.134)	16.397 (10.761)	4.902 (8.768)	-4.850 (6.882)
$\Delta Rate_t^{US} \times Post2014_t \times Foreign_b$					2.656 (10.702)	13.311 (13.974)	30.218 (17.917)	37.922 (25.533)
$\Delta Spread_t^{US}$	-0.084 (0.427)	0.188 (0.399)	0.162 (0.304)	0.796 (0.489)	0.265 (0.762)	0.833 (0.545)	0.043 (0.469)	0.875 (0.793)
$\Delta Spread_t^{US} \times Foreign_b$	1.568* (0.849)	1.195 (1.301)	-0.300 (1.266)	-1.429 (1.662)	2.049** (0.858)	2.416 (1.601)	1.191 (1.223)	-0.498 (1.876)
$\Delta Spread_t^{US} \times Low_t^{US}$	-0.078 (0.706)	0.665 (0.803)	0.976 (0.838)	0.986 (0.645)				
$\Delta Spread_t^{US} \times Low_t^{US} \times Foreign_b$	-6.653** (2.863)	-5.444 (3.314)	-4.467 (2.937)	-4.110 (3.040)				
$\Delta Spread_t^{US} \times Post2008_t$					-0.137 (1.095)	-0.878 (0.620)	0.286 (0.623)	-0.443 (0.868)
$\Delta Spread_t^{US} \times Post2008_t \times Foreign_b$					-4.172** (1.630)	-3.537 (2.648)	-2.834 (1.868)	-0.416 (2.728)
$\Delta Spread_t^{US} \times Post2014_t$					-0.371 (0.805)	0.992 (1.142)	1.309 (1.148)	0.905 (1.112)
$\Delta Spread_t^{US} \times Post2014_t \times Foreign_b$					2.839* (1.641)	0.140 (1.890)	-0.150 (2.139)	-1.315 (2.395)
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. obs	2308	2278	2248	2218	2308	2278	2248	2218
No. banks	30	30	30	30	30	30	30	30
R-sq. within	0.21	0.19	0.17	0.16	0.25	0.24	0.21	0.20
R-sq. between	0.14	0.14	0.15	0.13	0.01	0.01	0.00	0.00
R-sq. overall	0.19	0.18	0.17	0.15	0.15	0.13	0.12	0.11

Notes: See Table 1 for the definition of variables. Clustered at the bank level standard errors are shown in the parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Table 11: The dynamic effect of US monetary policy on interbank loans issued

Regressor	Dependent: $IBloansIssued_{b,t+h}$							
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 0$	$h = 1$	$h = 2$	$h = 3$
$\Delta Rate_t^{US}$	-0.007 (0.017)	-0.037** (0.015)	-0.024* (0.012)	0.006 (0.021)	-0.032* (0.018)	-0.039** (0.015)	-0.015 (0.012)	0.001 (0.023)
$\Delta Rate_t^{US} \times Foreign_b$	-0.072* (0.037)	-0.072 (0.060)	-0.123* (0.072)	-0.139** (0.066)	-0.047 (0.038)	-0.063 (0.063)	-0.119 (0.080)	-0.098 (0.065)
$\Delta Rate_t^{US} \times Low_t^{US}$	0.322 (0.310)	0.361 (0.320)	0.079 (0.215)	-0.084 (0.173)				
$\Delta Rate_t^{US} \times Low_t^{US} \times Foreign_b$	0.159 (0.501)	-0.579* (0.311)	0.199 (0.640)	-0.780 (0.557)				
$\Delta Rate_t^{US} \times Post2008_t$					0.183 (0.196)	0.320 (0.231)	0.170 (0.194)	0.075 (0.181)
$\Delta Rate_t^{US} \times Post2008_t \times Foreign_b$					1.075* (0.551)	-0.234 (0.295)	-0.211 (0.657)	-0.707 (0.444)
$\Delta Rate_t^{US} \times Post2014_t$					-0.002 (0.206)	-0.275 (0.251)	-0.199 (0.218)	-0.189 (0.197)
$\Delta Rate_t^{US} \times Post2014_t \times Foreign_b$					-1.178* (0.581)	0.130 (0.367)	0.290 (0.596)	0.772* (0.407)
$\Delta Spread_t^{US}$	0.001 (0.006)	0.008 (0.007)	-0.012 (0.010)	0.007 (0.010)	-0.016 (0.011)	0.015 (0.012)	0.007 (0.015)	0.002 (0.017)
$\Delta Spread_t^{US} \times Foreign_b$	0.029 (0.033)	0.040 (0.028)	0.002 (0.025)	0.009 (0.022)	0.001 (0.040)	-0.007 (0.053)	-0.044 (0.038)	0.017 (0.024)
$\Delta Spread_t^{US} \times Low_t^{US}$	0.020 (0.019)	-0.014 (0.026)	0.008 (0.019)	0.024 (0.016)				
$\Delta Spread_t^{US} \times Low_t^{US} \times Foreign_b$	-0.020 (0.167)	-0.007 (0.137)	-0.032 (0.120)	-0.011 (0.111)				
$\Delta Spread_t^{US} \times Post2008_t$					0.029 (0.022)	-0.013 (0.018)	-0.039** (0.018)	0.010 (0.014)
$\Delta Spread_t^{US} \times Post2008_t \times Foreign_b$					0.023 (0.071)	0.069 (0.063)	0.066 (0.067)	-0.001 (0.069)
$\Delta Spread_t^{US} \times Post2014_t$					0.030 (0.024)	-0.005 (0.018)	0.026 (0.019)	0.006 (0.022)
$\Delta Spread_t^{US} \times Post2014_t \times Foreign_b$					0.008 (0.099)	0.020 (0.083)	-0.011 (0.062)	-0.063 (0.093)
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. obs	2308	2278	2248	2218	2308	2278	2248	2218
No. banks	30	30	30	30	30	30	30	30
R-sq. within	0.11	0.11	0.10	0.11	0.13	0.12	0.12	0.12
R-sq. between	0.07	0.09	0.08	0.08	0.19	0.13	0.09	0.08
R-sq. overall	0.09	0.09	0.08	0.08	0.03	0.04	0.05	0.05

Notes: See Table 1 for the definition of variables. Clustered at the bank level standard errors are shown in the parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Table 12: The dynamic effect of US monetary policy on non-performing loan ratio

Regressor	Dependent: $NPL_{b,t+h}$							
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 0$	$h = 1$	$h = 2$	$h = 3$
$\Delta Rate_t^{US}$	-0.068 (0.224)	0.422* (0.211)	0.704*** (0.228)	0.556*** (0.201)	-0.195 (0.226)	0.236 (0.271)	0.575** (0.263)	0.347 (0.218)
$\Delta Rate_t^{US} \times Foreign_b$	-1.389** (0.632)	-1.603** (0.666)	-1.569** (0.631)	-1.573** (0.580)	-1.050 (0.718)	-0.899 (0.646)	-0.635 (0.613)	-0.246 (0.510)
$\Delta Rate_t^{US} \times Low_t^{US}$	-0.260 (6.657)	-1.602 (4.098)	-5.525 (4.281)	-5.158 (5.042)				
$\Delta Rate_t^{US} \times Low_t^{US} \times Foreign_b$	5.505 (5.723)	3.940 (7.497)	3.058 (8.636)	1.380 (8.539)				
$\Delta Rate_t^{US} \times Post2008_t$					5.326 (3.227)	4.833 (3.184)	0.983 (3.169)	-0.512 (4.080)
$\Delta Rate_t^{US} \times Post2008_t \times Foreign_b$					7.815* (4.123)	7.960 (5.707)	8.046 (5.962)	7.920 (5.187)
$\Delta Rate_t^{US} \times Post2014_t$					-6.655* (3.289)	-6.146 (3.645)	-2.497 (3.556)	-1.165 (3.980)
$\Delta Rate_t^{US} \times Post2014_t \times Foreign_b$					-6.142 (4.424)	-8.525 (7.149)	-10.601 (8.137)	-12.035 (7.699)
$\Delta Spread_t^{US}$	-0.100 (0.111)	-0.051 (0.122)	-0.101 (0.087)	-0.181 (0.115)	-0.236 (0.182)	-0.174 (0.182)	-0.103 (0.180)	-0.336** (0.155)
$\Delta Spread_t^{US} \times Foreign_b$	0.257 (0.308)	0.027 (0.320)	-0.057 (0.235)	-0.340 (0.219)	-0.468 (0.503)	-0.354 (0.413)	-0.197 (0.365)	0.059 (0.233)
$\Delta Spread_t^{US} \times Low_t^{US}$	0.922*** (0.317)	0.562** (0.258)	0.895** (0.363)	0.976** (0.452)				
$\Delta Spread_t^{US} \times Low_t^{US} \times Foreign_b$	0.025 (1.012)	-0.048 (0.985)	-0.543 (0.682)	-0.408 (0.491)				
$\Delta Spread_t^{US} \times Post2008_t$					0.645* (0.378)	0.599* (0.344)	0.443* (0.238)	1.005*** (0.356)
$\Delta Spread_t^{US} \times Post2008_t \times Foreign_b$					0.548 (0.780)	0.215 (0.632)	-0.158 (0.693)	-0.764 (0.522)
$\Delta Spread_t^{US} \times Post2014_t$					-0.651 (0.426)	-0.987*** (0.315)	-1.167*** (0.246)	-2.036*** (0.646)
$\Delta Spread_t^{US} \times Post2014_t \times Foreign_b$					1.211 (0.851)	1.547* (0.777)	1.452** (0.632)	1.416** (0.547)
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. obs	2307	2277	2247	2217	2307	2277	2247	2217
No. banks	30	30	30	30	30	30	30	30
R-sq. within	0.35	0.34	0.33	0.33	0.36	0.35	0.34	0.34
R-sq. between	0.21	0.22	0.25	0.29	0.06	0.06	0.07	0.08
R-sq. overall	0.15	0.15	0.15	0.16	0.18	0.19	0.19	0.19

Notes: See Table 1 for the definition of variables. Clustered at the bank level standard errors are shown in the parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Table 13: The dynamic effect of US monetary policy on loan loss provisioning

Regressor	Dependent: $LLP_{b,t+h}$							
	$h = 0$	$h = 1$	$h = 2$	$h = 3$	$h = 0$	$h = 1$	$h = 2$	$h = 3$
$\Delta Rate_t^{US}$	0.192 (0.359)	0.413 (0.363)	0.948** (0.393)	1.480*** (0.407)	-0.175 (0.439)	-0.127 (0.469)	0.294 (0.530)	0.700* (0.357)
$\Delta Rate_t^{US} \times Foreign_b$	-3.756*** (1.167)	-4.001*** (1.087)	-3.684*** (0.961)	-3.706*** (0.988)	-3.127** (1.498)	-2.793** (1.209)	-1.703 (1.229)	-0.909 (1.042)
$\Delta Rate_t^{US} \times Low_t^{US}$	-0.732 (12.804)	-4.142 (7.020)	-13.369* (7.357)	-12.505* (7.102)				
$\Delta Rate_t^{US} \times Low_t^{US} \times Foreign_b$	18.588 (12.694)	22.286 (13.408)	25.339 (16.161)	21.339 (15.300)				
$\Delta Rate_t^{US} \times Post2008_t$					10.046 (8.695)	11.643 (7.813)	-1.534 (5.768)	-3.493 (5.447)
$\Delta Rate_t^{US} \times Post2008_t \times Foreign_b$					8.004 (9.748)	16.849 (10.394)	22.591* (11.939)	23.732* (12.170)
$\Delta Rate_t^{US} \times Post2014_t$					-11.248 (9.040)	-8.680 (8.574)	5.267 (8.009)	7.359 (8.160)
$\Delta Rate_t^{US} \times Post2014_t \times Foreign_b$					-10.485 (10.399)	-27.945* (13.841)	-40.589** (16.827)	-43.095** (17.498)
$\Delta Spread_t^{US}$	-0.096 (0.167)	-0.255 (0.181)	-0.238 (0.185)	0.107 (0.338)	-0.549 (0.379)	-0.579* (0.321)	-0.685 (0.406)	-0.612 (0.415)
$\Delta Spread_t^{US} \times Foreign_b$	-0.151 (0.675)	-0.346 (0.616)	-0.286 (0.549)	-1.012* (0.561)	-1.348 (0.942)	-1.051 (0.787)	-0.152 (0.940)	0.264 (0.714)
$\Delta Spread_t^{US} \times Low_t^{US}$	1.486** (0.672)	1.174** (0.508)	1.301** (0.590)	1.437** (0.638)				
$\Delta Spread_t^{US} \times Low_t^{US} \times Foreign_b$	1.466 (1.750)	1.121 (1.727)	0.544 (1.309)	0.697 (1.176)				
$\Delta Spread_t^{US} \times Post2008_t$					1.333* (0.708)	1.457** (0.621)	1.262** (0.601)	1.524*** (0.492)
$\Delta Spread_t^{US} \times Post2008_t \times Foreign_b$					1.670 (1.375)	1.249 (1.334)	0.063 (1.425)	-1.269 (1.066)
$\Delta Spread_t^{US} \times Post2014_t$					-0.855 (0.799)	-2.141*** (0.584)	-1.204 (0.832)	0.037 (1.667)
$\Delta Spread_t^{US} \times Post2014_t \times Foreign_b$					2.775 (1.744)	2.692 (1.626)	1.632 (1.465)	-0.447 (1.622)
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. obs	2307	2277	2247	2217	2307	2277	2247	2217
No. banks	30	30	30	30	30	30	30	30
R-sq. within	0.24	0.22	0.21	0.21	0.25	0.23	0.22	0.22
R-sq. between	0.05	0.07	0.09	0.15	0.00	0.00	0.00	0.00
R-sq. overall	0.13	0.12	0.12	0.12	0.17	0.17	0.16	0.16

Notes: See Table 1 for the definition of variables. Clustered at the bank level standard errors are shown in the parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

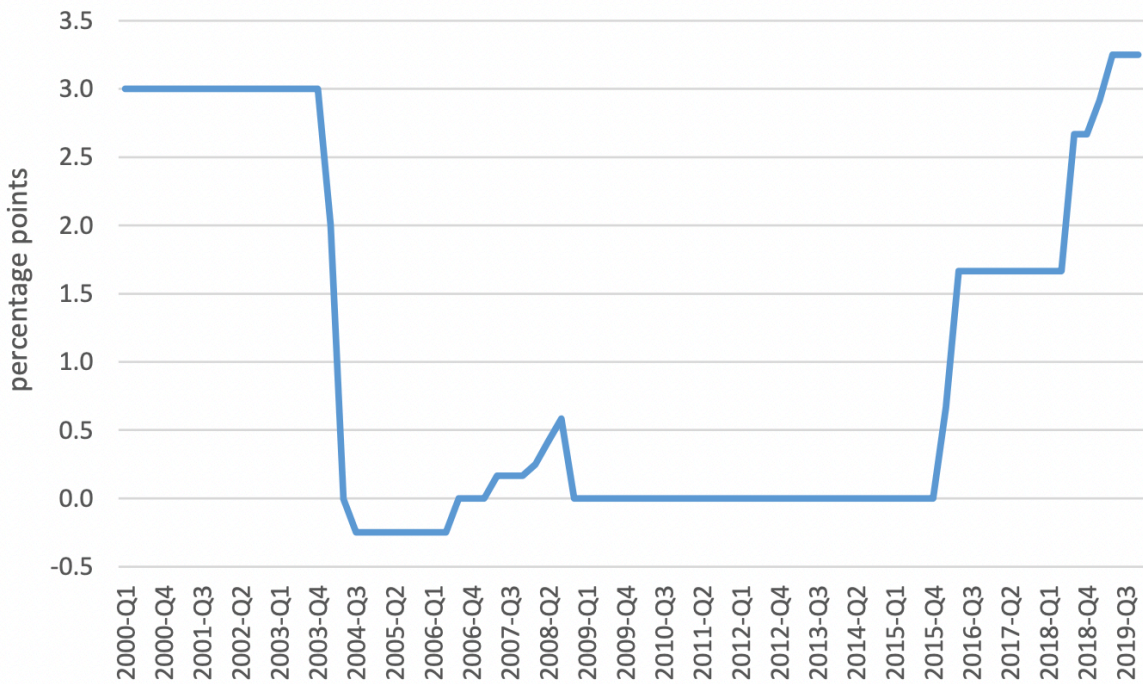


Figure 1: Difference between reserve requirements on foreign currency liabilities and on liabilities in roubles, percentage points

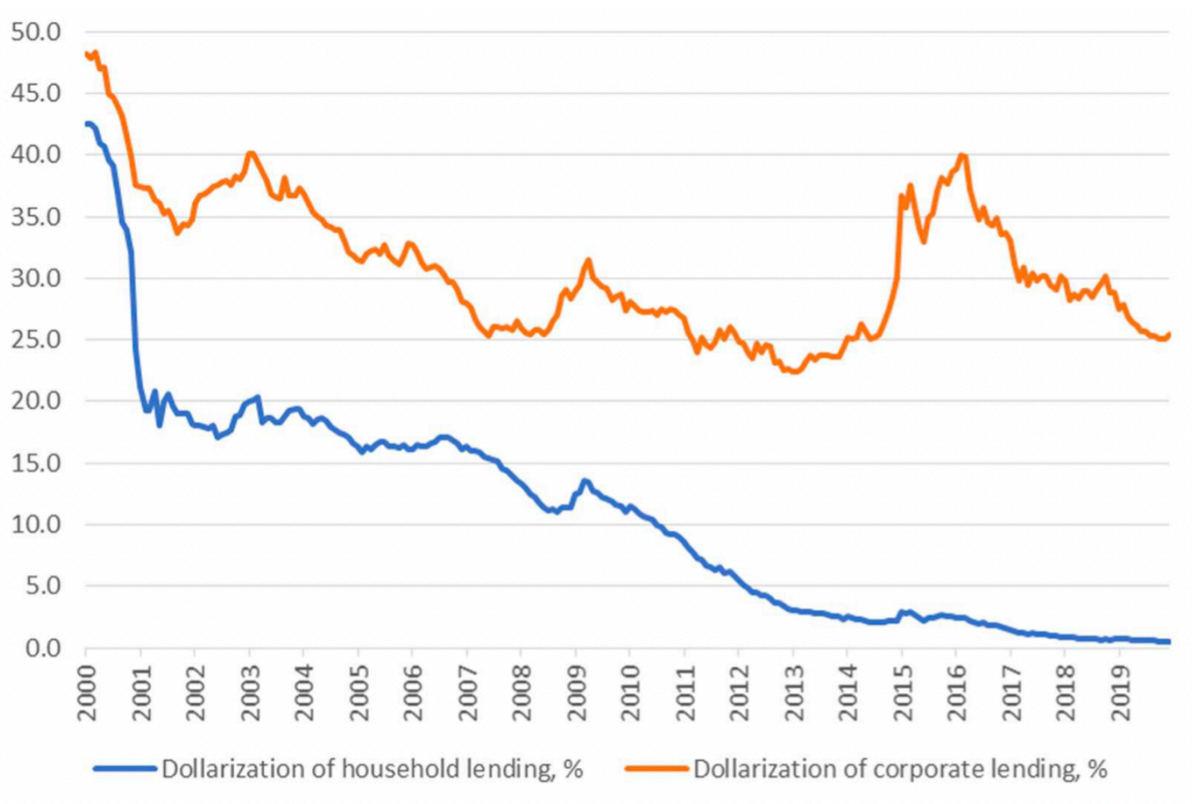


Figure 2: Dollarization of corporate and households lending, percentage (aggregate data)

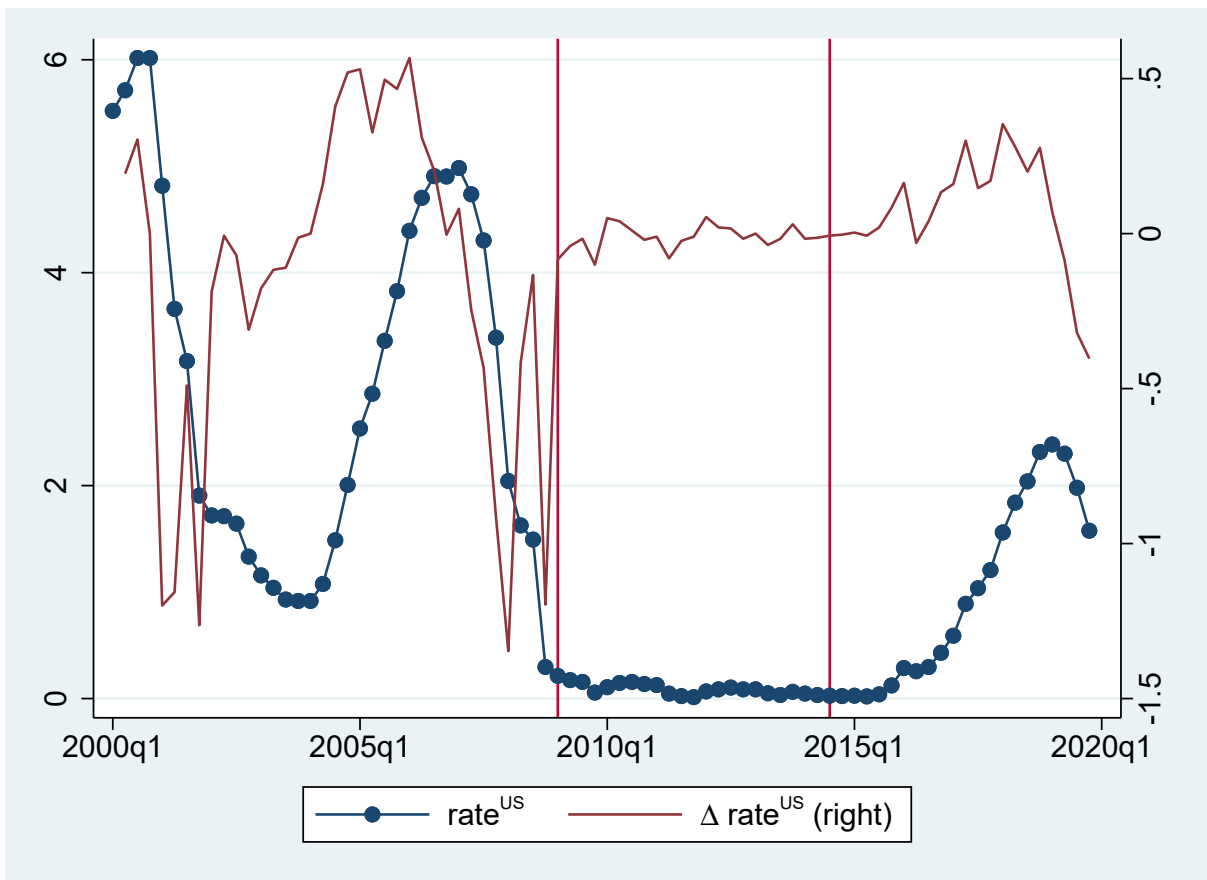


Figure 3: **US 3-month rate in levels and in quarterly changes** Two vertical dashed lines indicate 2009Q1 and 2014Q1

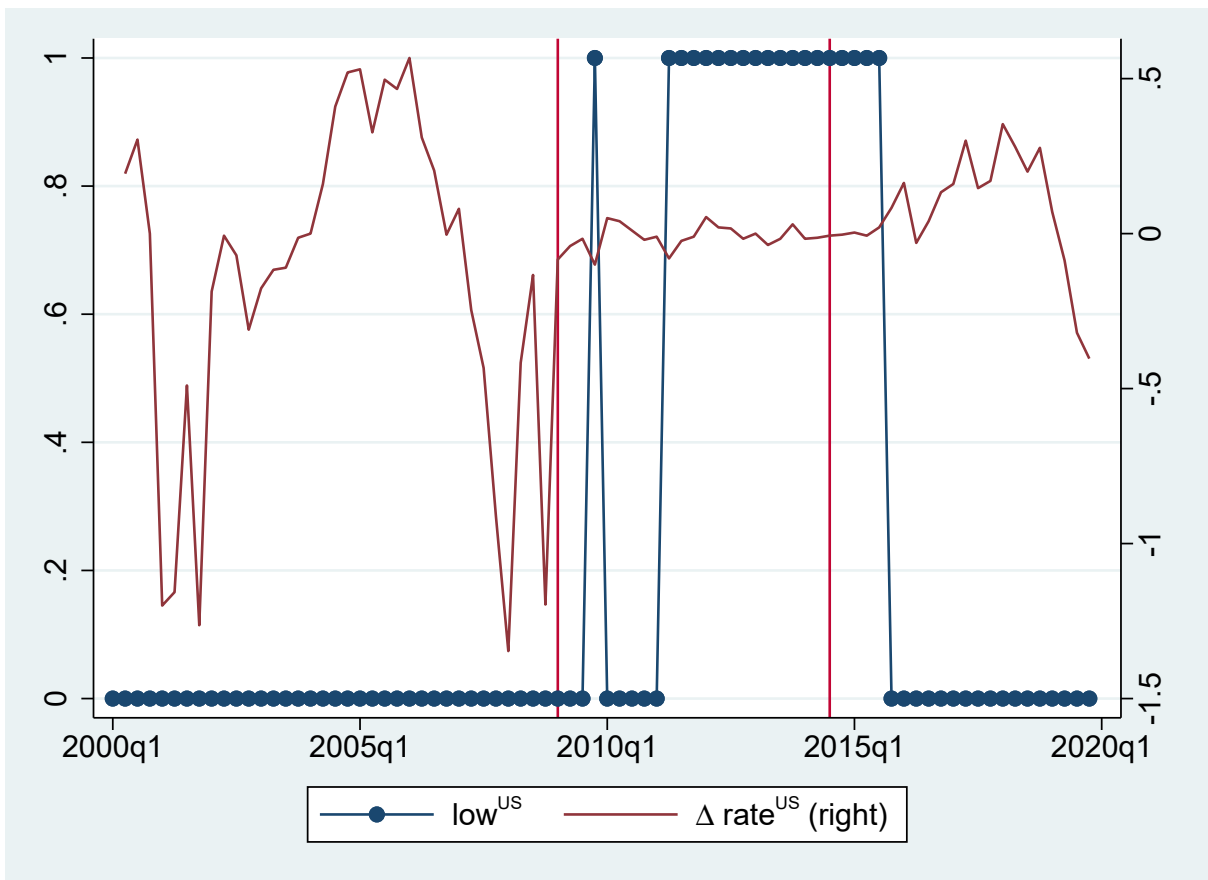


Figure 4: US low rate dummy and US 3-month rate in quarterly changes Two vertical dashed lines indicate 2009Q1 and 2014Q1

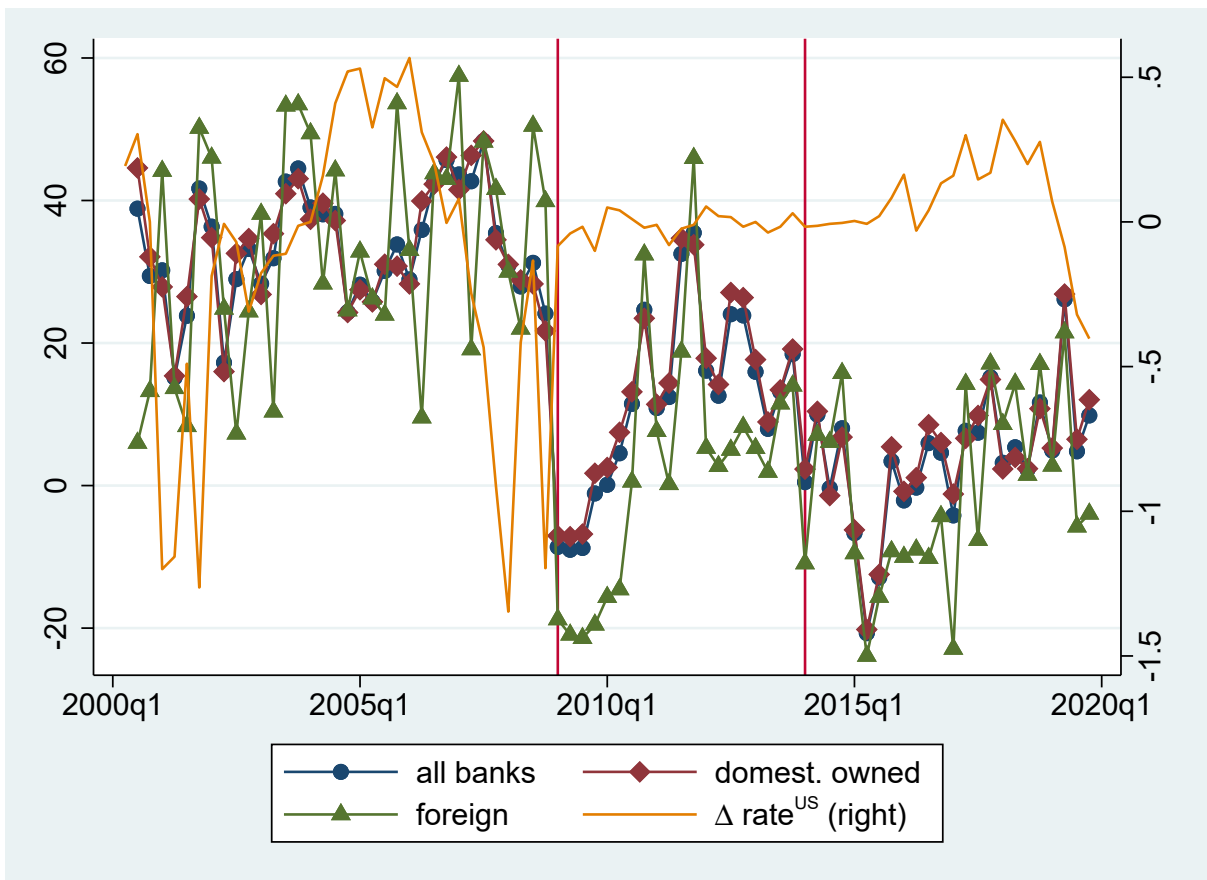


Figure 5: Quarterly (annualized) growth in loans denominated in all currencies net of FX valuation Two vertical dashed lines indicate 2009Q1 and 2014Q1

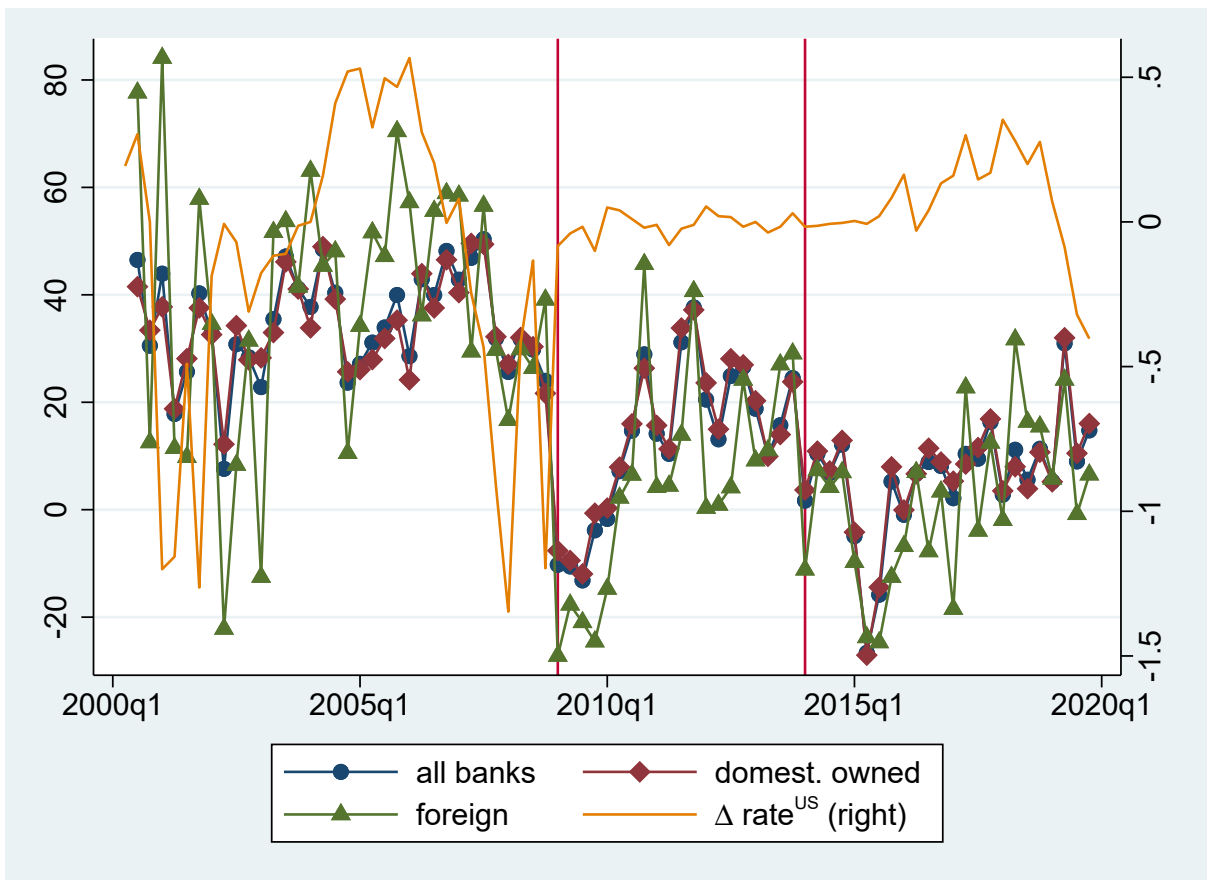


Figure 6: **Quarterly (annualized) growth in loans denominated in rubles** Two vertical dashed lines indicate 2009Q1 and 2014Q1

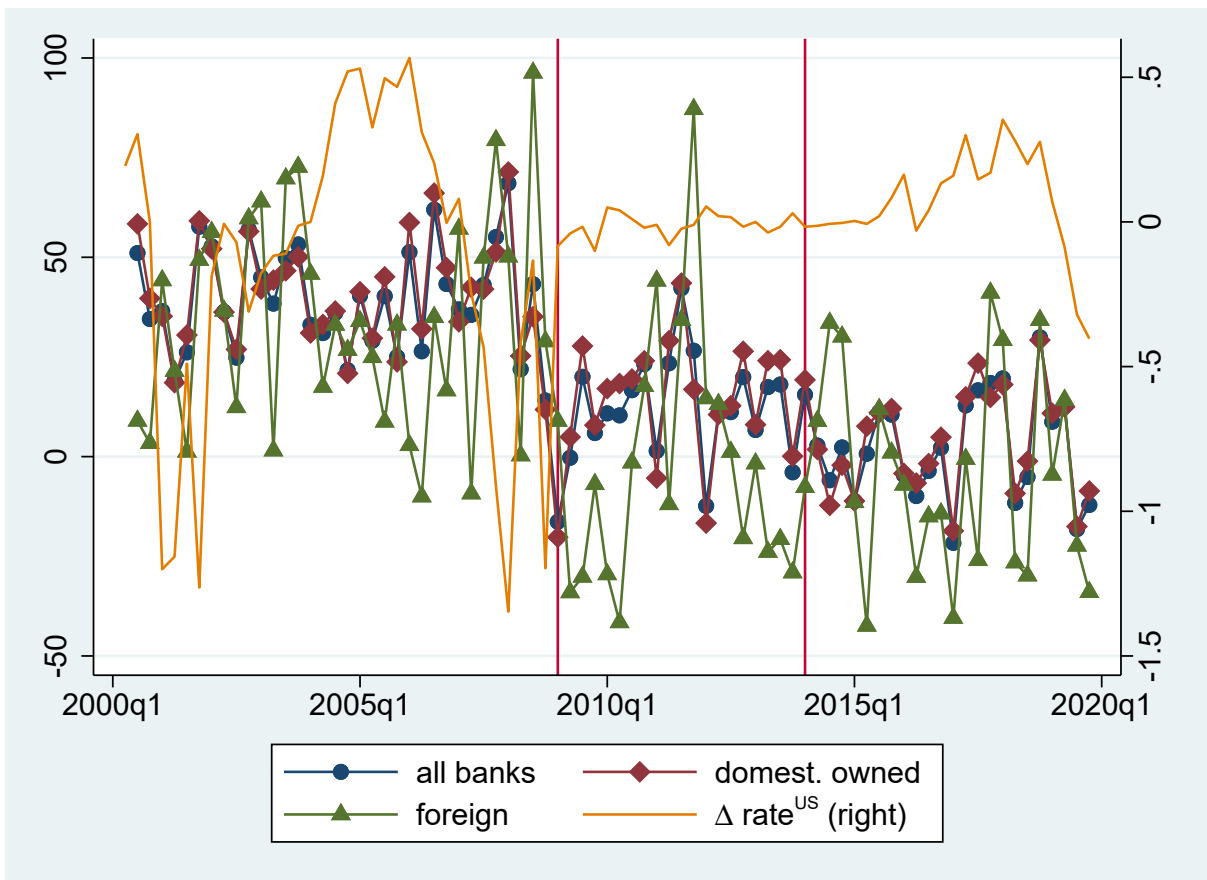


Figure 7: Quarterly (annualized) growth in loans denominated in foreign currencies net of FX valuation Two vertical dashed lines indicate 2009Q1 and 2014Q1

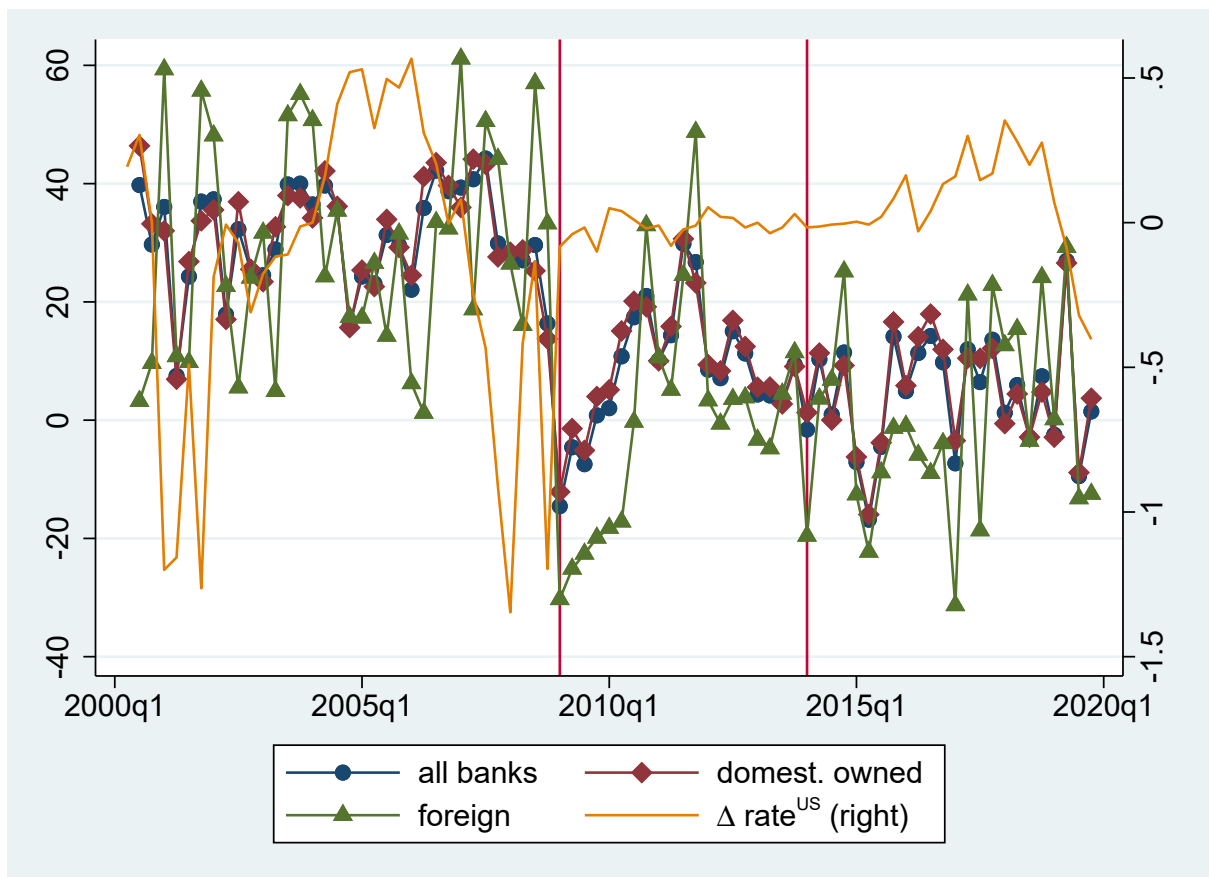


Figure 8: **Quarterly (annualized) growth in loans to non-financial firms denominated in all currencies net of FX valuation** Two vertical dashed lines indicate 2009Q1 and 2014Q1

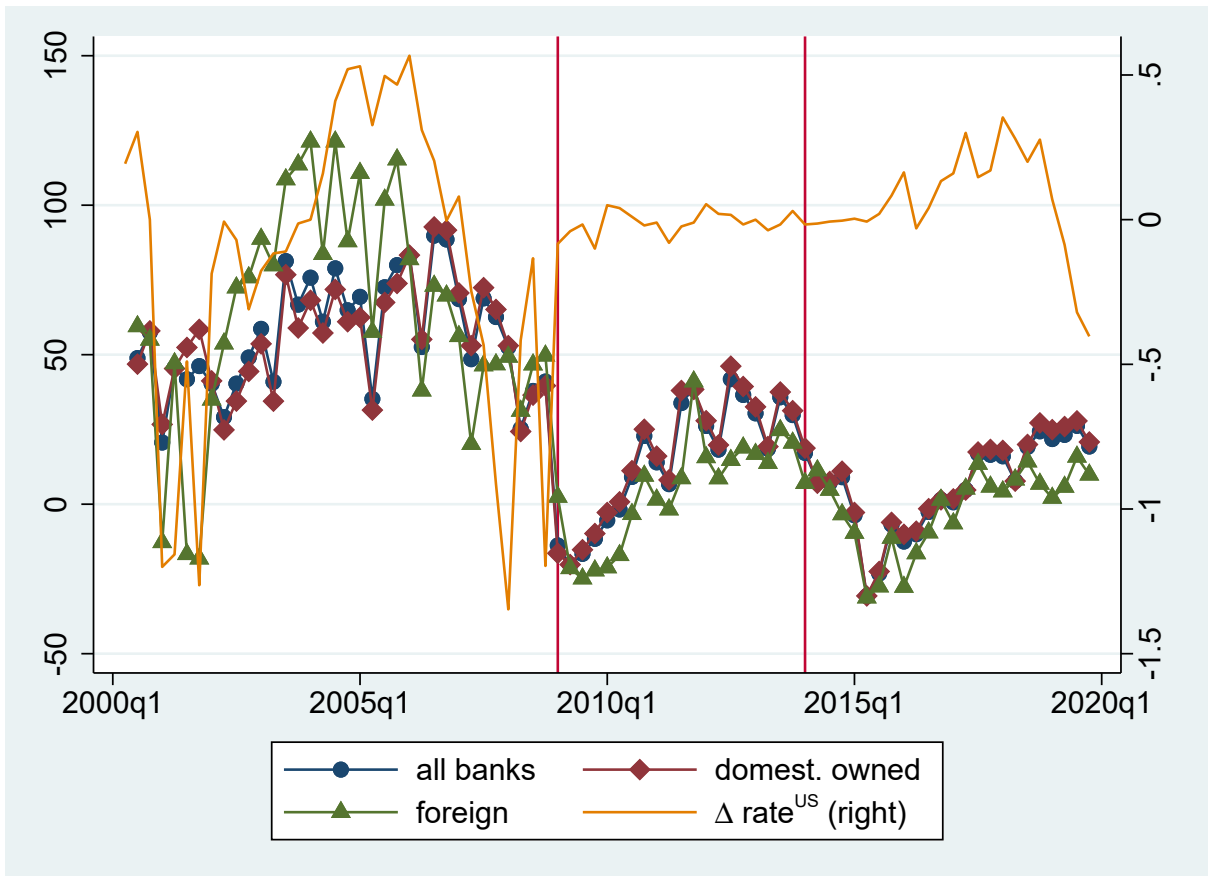


Figure 9: Quarterly (annualized) growth in loans to individuals denominated in all currencies net of FX valuation Two vertical dashed lines indicate 2009Q1 and 2014Q1

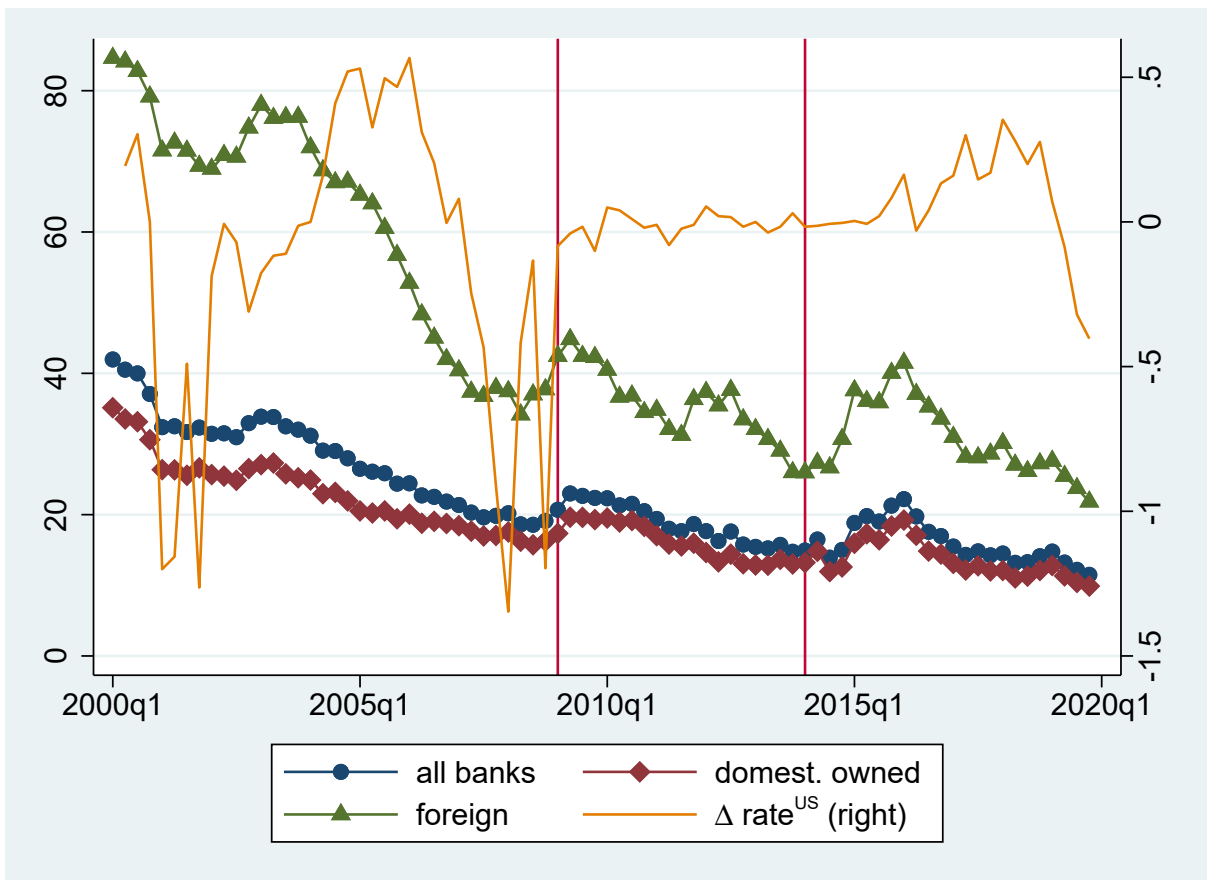


Figure 10: **Loans denominated in foreign currencies as percentage of total loans**
 Two vertical dashed lines indicate 2009Q1 and 2014Q1

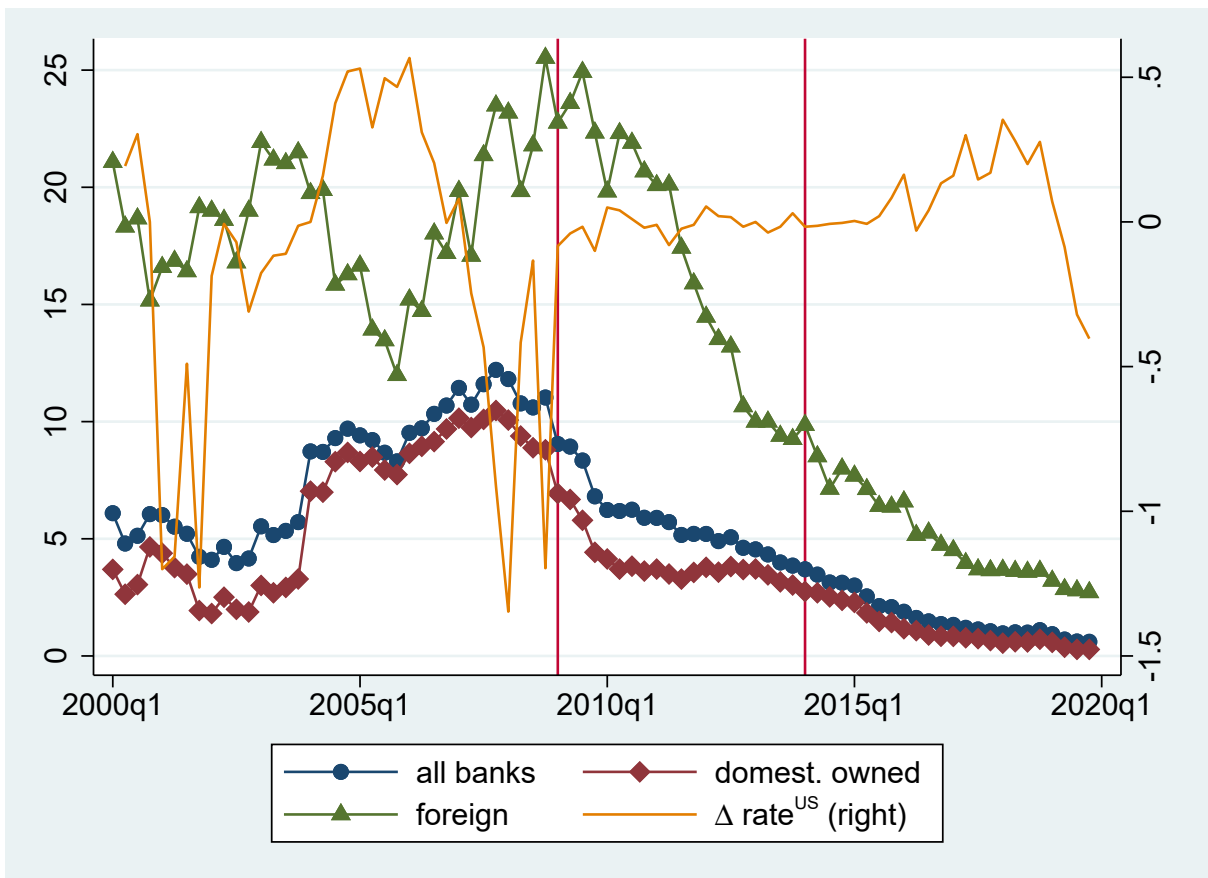


Figure 11: **Cross-border funding as percentage of total liabilities** Two vertical dashed lines indicate 2009Q1 and 2014Q1

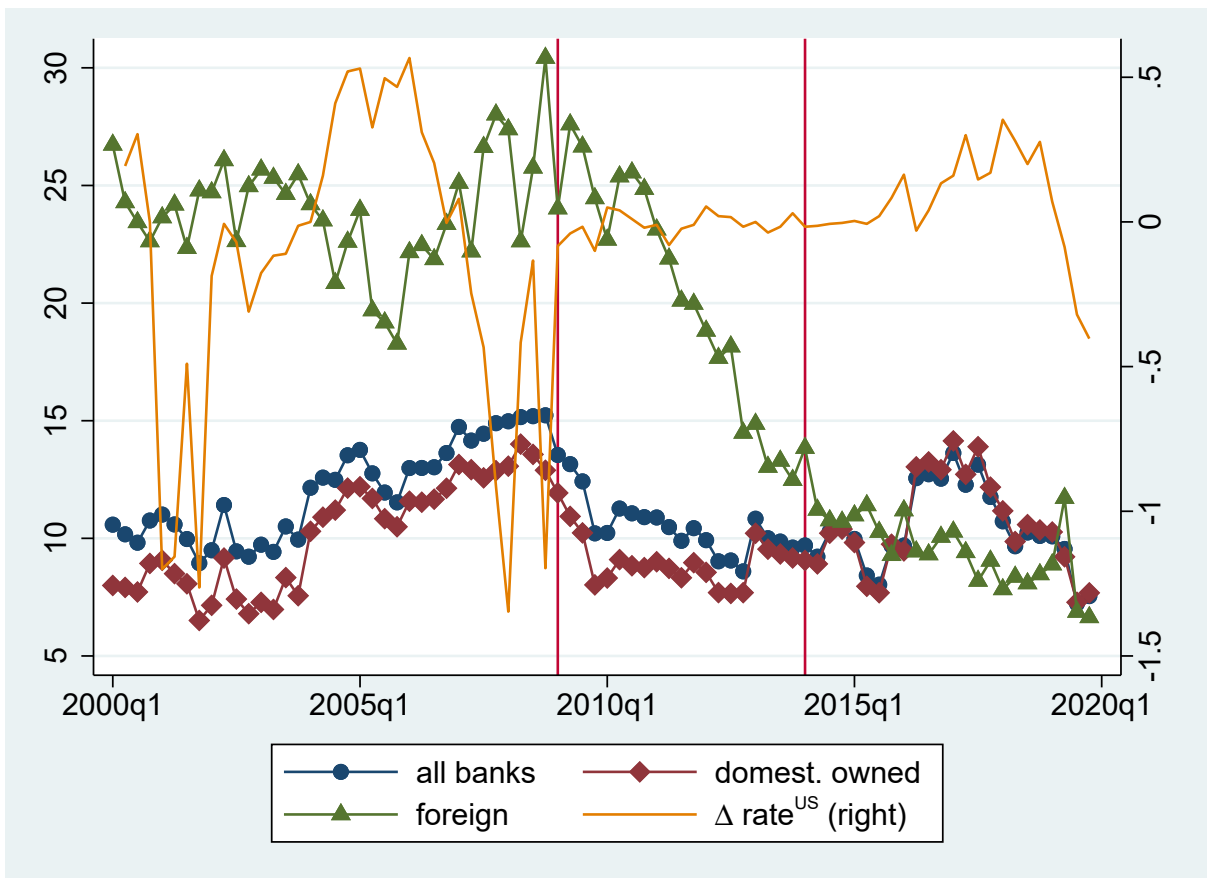


Figure 12: **Interbank loans received as percentage of total liabilities** Two vertical dashed lines indicate 2009Q1 and 2014Q1

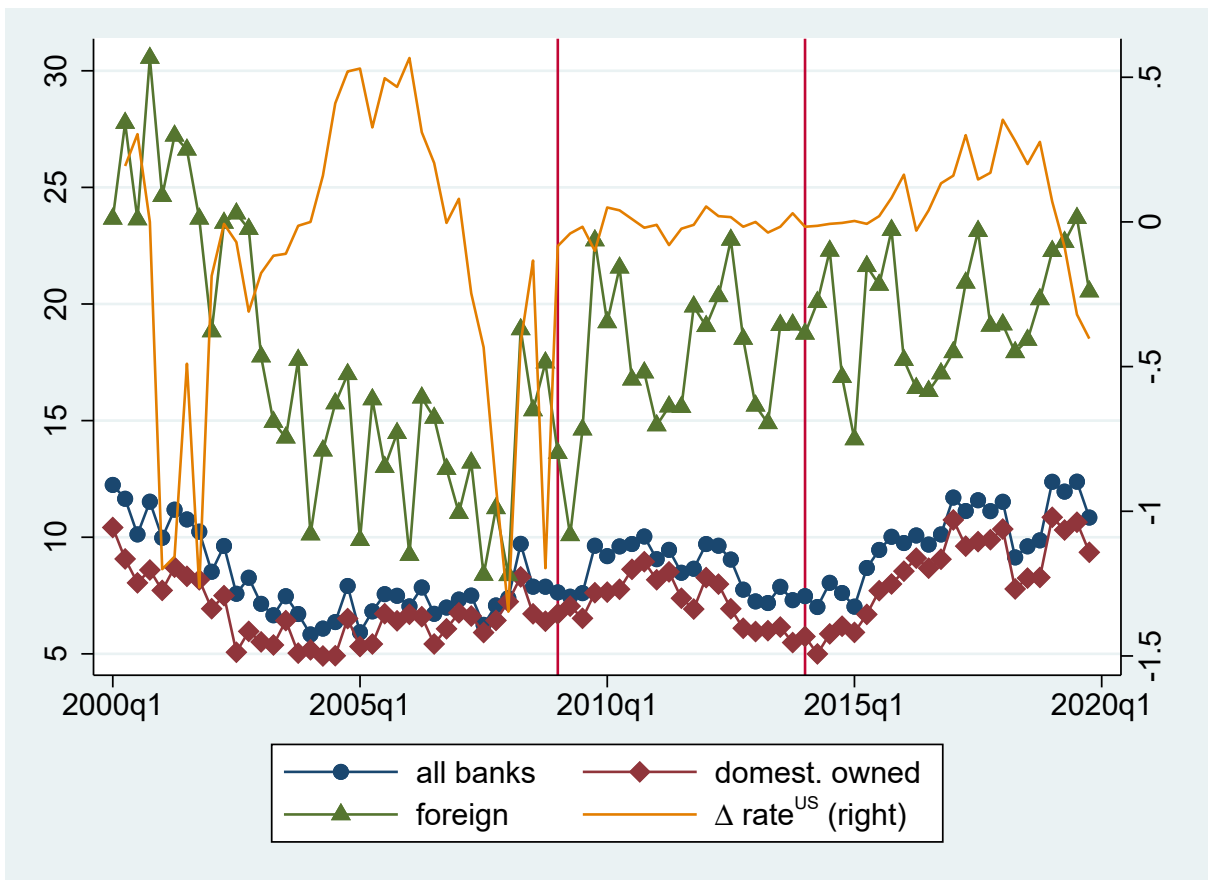


Figure 13: **Interbank loans issued as percentage of total assets** Two vertical dashed lines indicate 2009Q1 and 2014Q1

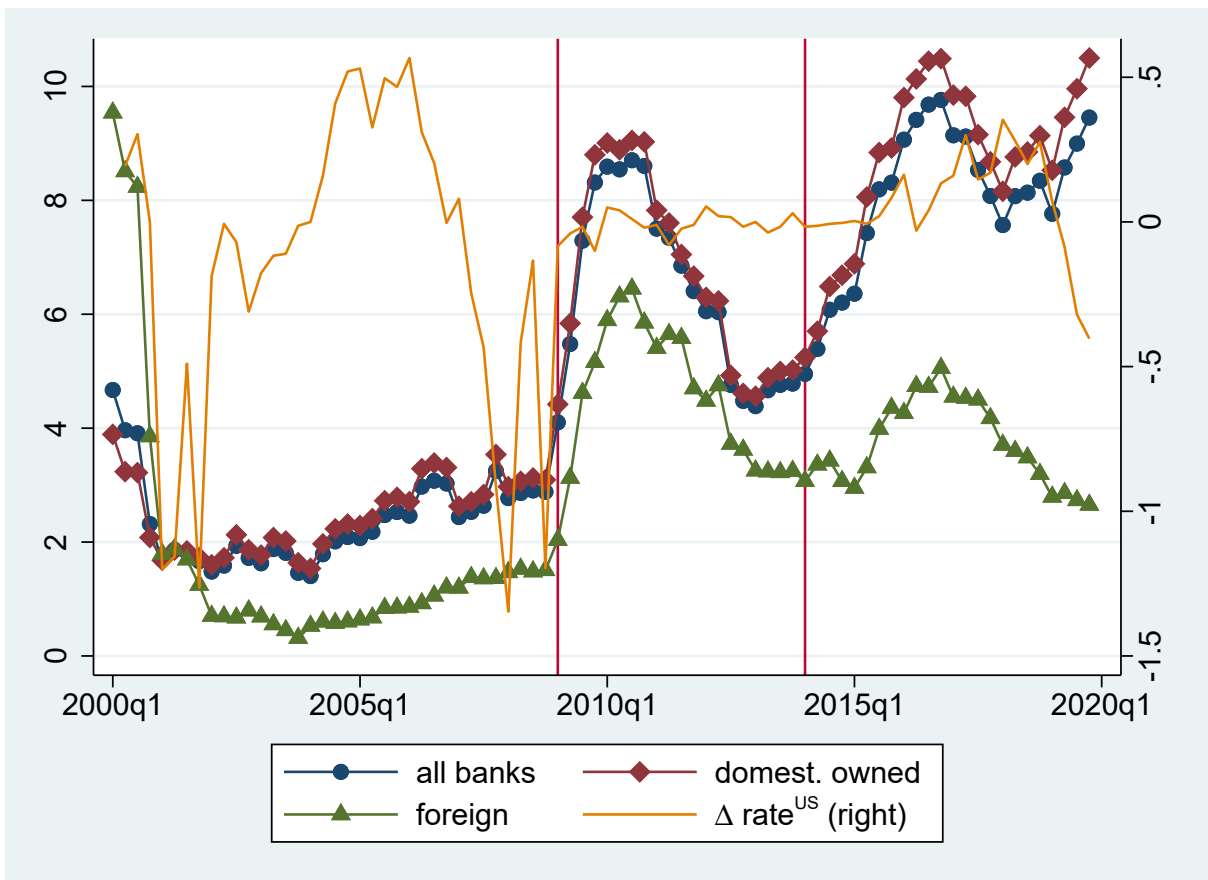


Figure 14: **Non-performing loans as percentage of total loans** Two vertical dashed lines indicate 2009Q1 and 2014Q1

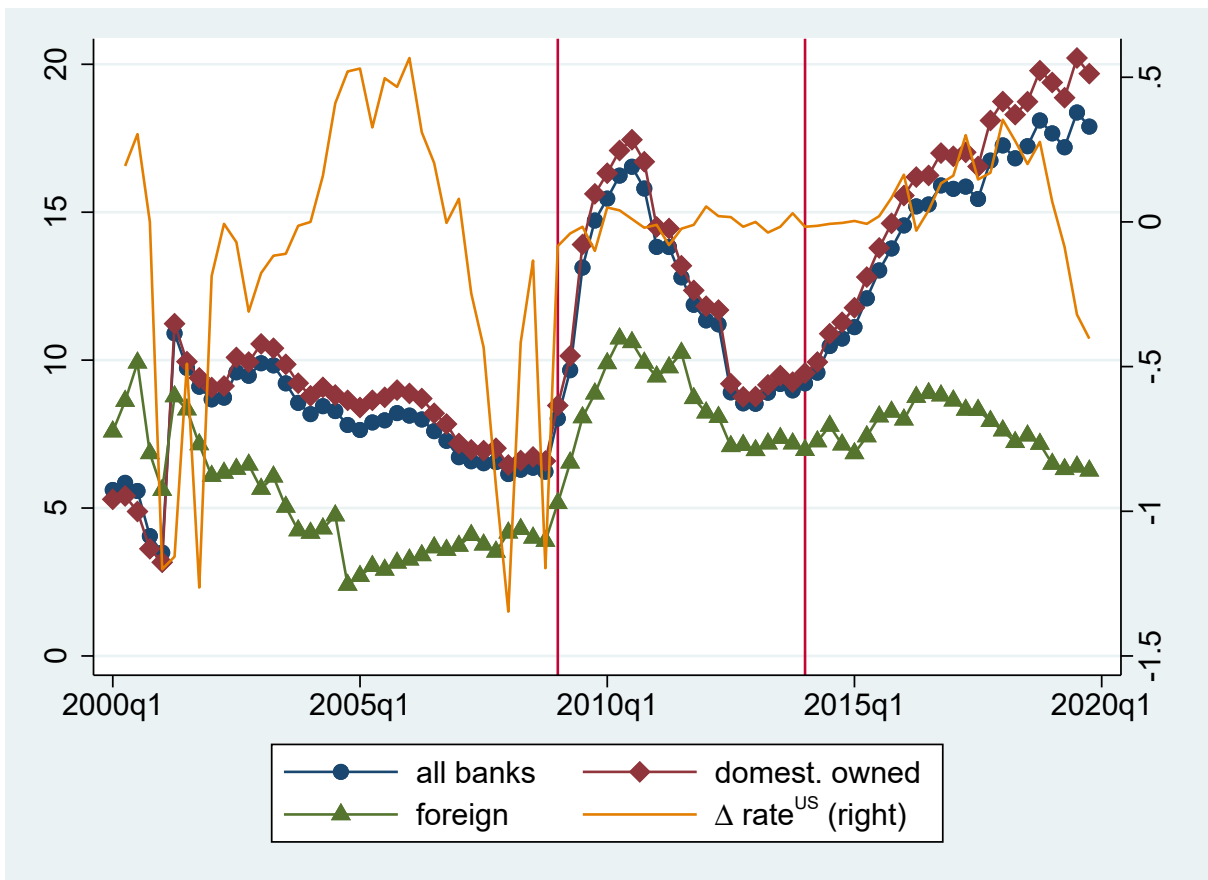


Figure 15: **Loan loss provisions as percentage of total loans** Two vertical dashed lines indicate 2009Q1 and 2014Q1