



# Bank of Russia

The Central Bank of the Russian Federation

## **Banking rehabilitation policy: impact on competition and stability in the banking sector**

## ***Abstract***

*We assess the impact of the Bank of Russia's sector banking rehabilitation policy on the level of competition and stability in the banking sector<sup>1</sup>. We use interest rate spreads (maximum interest rate less minimum interest rate) as a measure of competition and volatility of monthly growth in the bank's loan portfolio for last 12 months, net of the entire banking sector's systemic volatility for last 12 months, as a measure of stability.*

*Our research showed that:*

- a significant change in dynamic of competition, measured through interest rate spreads, was only characteristic of retail deposits with maturities of one to three years and of retail and corporate loans with maturities exceeding three years. But in all cases these changes were caused by macroeconomic factors and were not linked to the Bank of Russia's banking sector rehabilitation policy. In other cases the dynamic of competition had no significant changes.*
- a reduction in corporate and retail lending growth volatility was observed following the launch by the Bank of Russia of its banking sector rehabilitation policy. This was noted both for the cluster of banks carrying a relatively low level of non-performing loans and for those with a relatively high level of non-performing loans*

*Consequently, during the period under review, the decrease in the number of banks as a result of the Bank of Russia's banking sector rehabilitation policy has had no significant adverse impact on competition. Moreover, lending growth volatility has abated, contributing to increased stability of the banking system. According to our estimates, the systemic stability indicator has risen 4% in retail lending and 41% in corporate lending.*

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<sup>1</sup> We employ monthly reporting forms No. 128 and No. 129 containing data on the amount of the weighted average interest rates and the volume of new deposits and loans, as well as monthly reporting form No. 101 containing data on banks' key balance sheet items. The period under review is January 2010 through March 2017

## Introduction

According to the regulation of the Russian Federation the Bank of Russia together with the Government of the Russian Federation elaborates and pursues the policy of financial sector development and ensuring its stability. This policy cannot be viewed without active banking supervisory policy that implies revocation of licenses from banks with various legal and regulatory violations. Between 2013 and June 1, 2017, the Bank of Russia revoked 332 licenses from credit institutions that grossly violated prudential standards.

The purpose of this analytical note<sup>2</sup> is to determine whether the banking sector rehabilitation policy has had any impact on the level of competition and stability in the banking sector<sup>3</sup>. This paper uses empirical data to offer a quantitative assessment of effect the Bank of Russia's banking sector rehabilitation policy.

## Data and methodology

Monthly reporting forms No. 128 and No. 129 containing data on the amount of the weighted average interest rates and the volume of new deposits and loans, as well as monthly reporting form No. 101 containing data on banks' key balance sheet items, formed the empirical basis for our study.

The period under review is January 2010 through March 2017.

For the assessment of the effect of banking rehabilitation policy we use two indicators: structural indicator of banking sector stability and price indicator of competition.

According to the World Bank research (Beck, 2008) the traditional concentration ratios only reflect market structure without allowing inferences on competitive behavior of banks. Beck shows that during the process of banking sector consolidation we can see the increase in concentration ratios and in competition simultaneously. Indeed, the academic literature still lacks consensus as to whether market structure indicators represent the definitive drivers of bank behaviour (the "structure-behaviour-outcome" paradigm) or, on the contrary, the market structure is a result of bank operating efficiency (the "efficient structure" paradigm, (Demsetz, 1973)). Thus, purely structural indicators (concentration ratios) are unable to give us full picture about the degree of competition and stability in the banking sector or their dynamics over time. This determines the necessity to switch from analysis of concentration dynamic solely (Appendix 1) to analysis a complex of indicators of competition and stability.

## Measure of stability

As a measure of *stability* we use structural indicator – share of banks with stable loan portfolio growth rates:

Stability of banking sector =

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<sup>2</sup> Based on the working paper preprint Kruglova A., Ushakova Y. "Banking rehabilitation policy: impact on competition and stability in the banking sector" (Bank of Russia Working Paper Series).

<sup>3</sup> In the paper Ponomarenko A., Sinyakov A. "Proactive Supervisory policy: little loss and big gain" theoretical modeling showed that banking rehabilitation policy, while positively contributing to long-run effectiveness and sustainability of financial sector, may cause short run reduction in competition that under certain circumstances can potentially lead to adverse impact on stability in the banking sector".

$$= \frac{\text{Number}^4 \text{ of banks with stable growth rate of loan portfolio } t}{\text{Total number of banks } t}, \text{ where } t - \text{month}$$

We consider that a bank has stable loan portfolio growth if its volatility is less or equal to systemic volatility<sup>5</sup>. We assumed that banks that demonstrate less stable growth rates (net of any systemic volatility impact) accumulate extra risks and so contribute to accumulating instability of the entire banking system and of total lending. On the contrary, banks that demonstrate more stable loan portfolio growth rates (net of any systemic volatility impact) contribute to more stable growth in total lending to the economy.

To analyze the effect of the banking sector rehabilitation policy on the stability of the banking system, we broke down the dynamics of the above indicators into the periods “before policy launch” and “after policy launch” and compared the two. We considered October 2013 as the policy launch. From the mathematician point of view it means that we compare empirical distributions of specific stability indicators (density functions for different subperiods).

### Measure of competition

We interpret competition as a bank rivalry for new clients and/or retaining existing clients.

According to classic economic theory (Robinson, 1934), perfect competitive markets feature many identical players that bear no influence on prices. The price is, therefore, set by the market, is the same across all players and only includes costs. On a monopoly market, however, a single player sets the price including a “monopoly premium” in addition to costs (Lerner, 1934). Consequently, in theory, the presence of identical players but different prices on a market could be interpreted as imperfect competition. Thus price dispersion on the market with standardised product among identical players serves as a proxy to degree of competition.

Regarding banking sector it means that a movement towards perfect competition would be accompanied by a narrowing of interest rate spreads among identical players. For instance, on the liabilities side, banks compete for depositors by trying to win them over with more lucrative interest rates, pushing the minimum deposit rate upwards. At the same time, the rise in the maximum deposit rate will be limited by the availability of other sources of funding (such as transactions at the Central Bank’s REPO rate). As a result, intensifying competition on the liabilities side will lead to a narrowing of interest rate spreads. Similarly, on the assets side, banks will seek to bring rates down to attract borrowers with an acceptable level of risk. At the same time, the reduction in the minimum rate is limited, among other things, by yields that can be earned on alternative products (such as the rates at the Central Bank’s deposit auctions). As a result, intensifying competition will lead to a narrowing of interest rate spreads. Notably, the reduction in the number of banks by 332 does not automatically imply that the spreads would narrow, as it is not known in advance ex-

<sup>4</sup> Weighted to the size of the bank

<sup>5</sup> Individual stability indicator<sub>it</sub> =

$$= \frac{12\text{-months lending growth volatility}_{it}}{12\text{-months volatility of the banking system's total loan portfolio growth}_t}, \text{ where } i = \text{bank}, t = \text{month}.$$

If the above ratio is less than 1, the bank is “more stable” than the system as a whole. If it is equal to 1 then the bank has the same degree of stability as banking system. If it is greater than 1, then the bank is less stable than the banking system. Adjustment of individual volatility to system volatility allows abstracting from any influence of systemic factors (such as the business cycle, oil prices, changes in macro prudential politics etc.) to arrive at a specific (idiosyncratic) volatility.

actly how the newfound slice of the market would be redistributed among the remaining players, i.e., how each bank's market share would change.

In this way as a measure of *competition* we used interest rate spreads (maximum less minimum interest rate<sup>6</sup>) for each key banking activity: attracting retail and corporate deposits, as well as corporate and retail lending. To ensure more homogeneity of the product we analyzed the competition dynamics within each of the above areas using the equal maturity products making up the bulk of the banking system's deposits and loans. It is worth noting that we only used data on rouble deposits and loans to analyze competition. In our view, rates on foreign-currency deposits or loans may distort competition dynamics in those segments because of macroprudential policy and geopolitical factors. As a result, we selected the following instruments:

- retail rouble deposits with maturities between 91 and 180 days, 181 days and 1 year, and 1 and 3 years (75% of total retail deposits in the banking system as of 01.04.2017);
- corporate rouble deposits with maturities between 31 and 90 days and with maturities exceeding 3 years (41% of total corporate deposits in the banking system as of 01.04.2017);
- retail rouble loans with maturities between 1 and 3 years and with maturities exceeding 3 years (81% of total retail loans in the banking system as of 01.04.2017);
- corporate rouble loans with maturities between 1 and 3 years and with maturities exceeding 3 years (76% of total corporate loans in the banking system as of 01.04.2017).

According to arbitrage pricing theory (Ross S., 1976) interest rate is a sum of risk-free return and return for a number of risks (individual risk, systemic risk etc.). Thus if banks are identical from the risk point of view and they operate on a competitive markets with identical assets then prices for this assets would converge. Consequently we adjust interest rates on bank specific and systemic risks in order to achieve more homogeneity of players and assets<sup>7</sup>.

We assumed that the competition in the retail segment would be different in nature from that in the corporate segment. For instance, individuals tend to choose a bank based on the size of the rate.<sup>8</sup> It implies that individuals do not have "ties" to the specific banks based on their previous experience and so-called national champions do not hold any privileges (Vernikov, 2013). Choice of bank on the base of rate size assumes geographical differentiation of banking services markets. However we have only data that aggregated on the holding company addresses. Absence of the disaggregated on the subsidiaries data deprive us of the opportunity to analyse the dynamic of competition in each region of the Russian Federation. But we can check the robustness of our findings from aggregated data. We assess the dynamic of competition on the aggregated level and additionally in 5 regions of the Russian Federation<sup>9</sup> that are characterized by big volumes of banking operations and receive noncontroversial results<sup>10</sup>.

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<sup>6</sup> Maximum interest rate is a value of interest rate that corresponds to 95% percentile of interest rate distribution in each point of time, minimum interest rate – to 5% percentile. It is caused by desire to cut off errors of reporting that are concentrated in distribution tails in our opinion.

<sup>7</sup> Bank specific risk is proxied by non-performing loan portfolio share. Systemic risk is proxied by Russia CDS USD 5Y

<sup>8</sup> Also thanks to Deposit insurance scheme

<sup>9</sup> The judgement of belonging of particular bank to particular region was received from ZIP address of the bank. We understand that big banks were automatically prescribed to Moscow or Saint-Petersburg in this way. But at the same time convergence of interest rates in other regions (not Moscow and Saint-Petersburg) is also a sufficient evidence for postulating increase in competition in the region.

<sup>10</sup> Results can be provided upon request.

Corporates decide based on both the size of the rate and the size of the bank, something that could be caused by economy of scale or a previous experience of doing business with it. In addition, in selecting their bank, corporates might try to mitigate the risk of losing their principal, which is, in a certain sense, also a function of the bank's size. That is why while analyzing the dynamics of competition in the corporate segment we also adjust interest rate on the size of the bank.

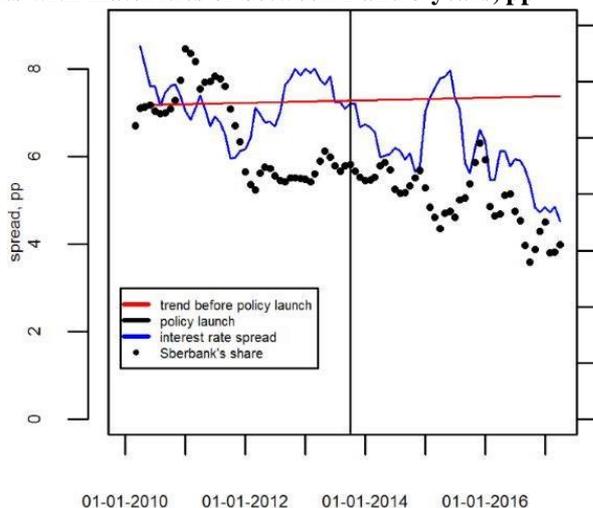
As a result, according to classic economic theory (Robinson, 1934; Lerner, 1934) and arbitrage pricing theory (Ross, 1976) for achieving identity of banks and homogeneity of the rates we analyzed the dynamics of competition in the household segment using the dynamics of interest rate spreads adjusted for systemic and specific risks only. For the corporate segment, we analyzed the dynamics of interest rate spreads adjusted for bank size, in addition to systemic and specific risks. We also interpreted a narrowing of interest rate spreads as signifying an increase in competition in a given banking services segment.

## Main Findings

Our statistical analysis showed that the banking sector rehabilitation policy had no significant effect on competition measured as interest rates spreads in any of the banking services market segments under review.

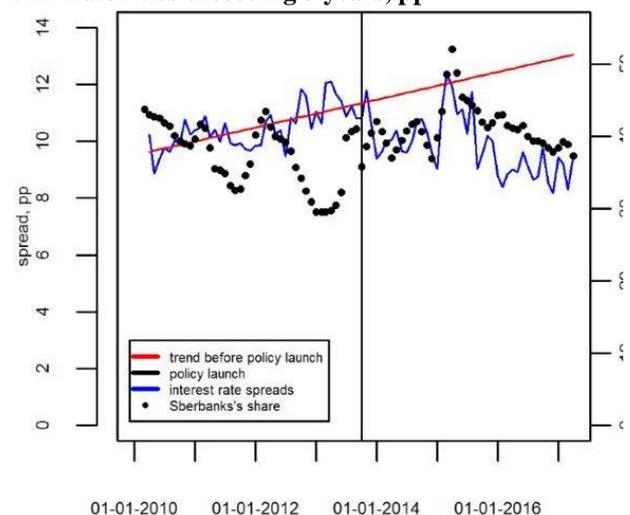
A significant change in dynamic of competition, measured through interest rate spreads, was only observed for retail deposits with maturities of 1 to 3 years (Figure 1) and of retail (Figure 2) and corporate loans with maturities exceeding 3 years. But in all cases these changes were caused by macroeconomic factors and were not linked to the Bank of Russia's banking sector rehabilitation policy. In other cases the dynamic of competition had no significant changes.

**Figure 1. Interest rate spread dynamics\* for retail deposits with maturities of between 1 and 3 years, pp**



Source: authors' calculations

**Figure 2. Interest rate spread dynamics\* for retail loans with maturities exceeding 3 years, pp**



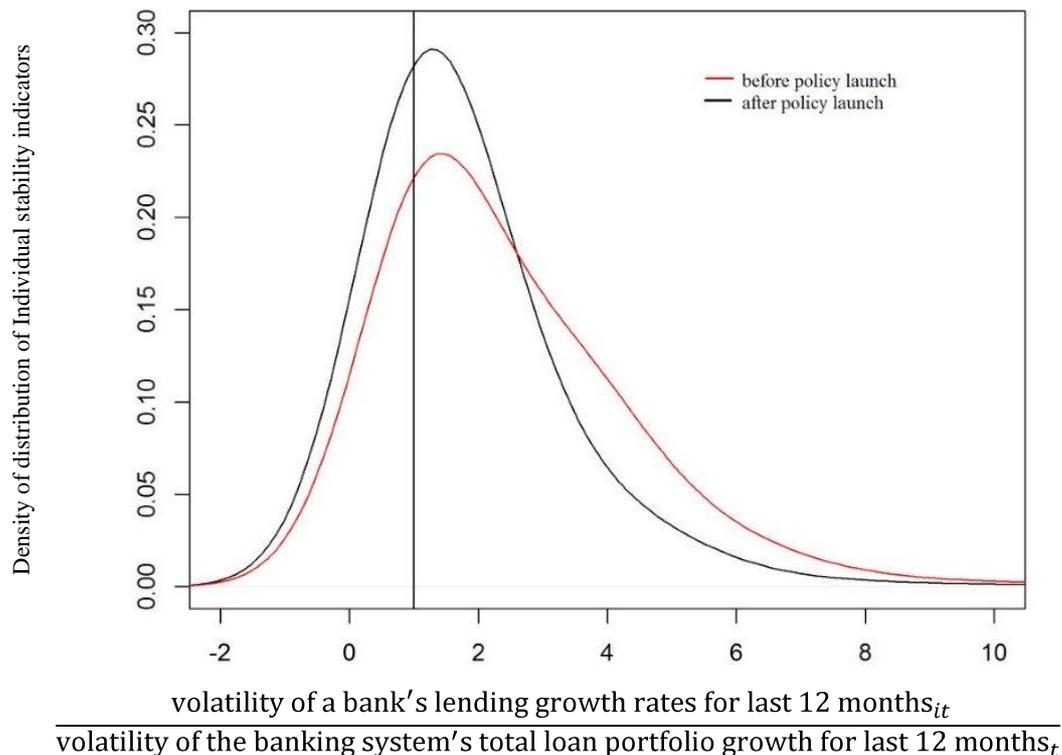
Source: authors' calculations

\*Note: Spread of interest rates adjusted for systemic and specific risks.

For instance, no potential short-term decrease in competition mentioned in the paper Ponomarenko A., Sinyakov A. "Proactive Supervisory policy: little loss and big gain" was identified to accompany the long-term positive impact in the period under review.

At the same time, the indicator of stability of banking system showed a convergence of the growth rates of both retail and corporate loan portfolios following launch of the banking sector rehabilitation policy. Admittedly, the effect has so far been more pronounced in the corporate lending segment. According to our estimates, the above-mentioned indicator has increased 3.7% in retail lending and 41% in corporate lending (Figure 3).

**Figure 3. Density of distribution of individual stability indicators\* for the corporate loan portfolio, before and after policy launch**

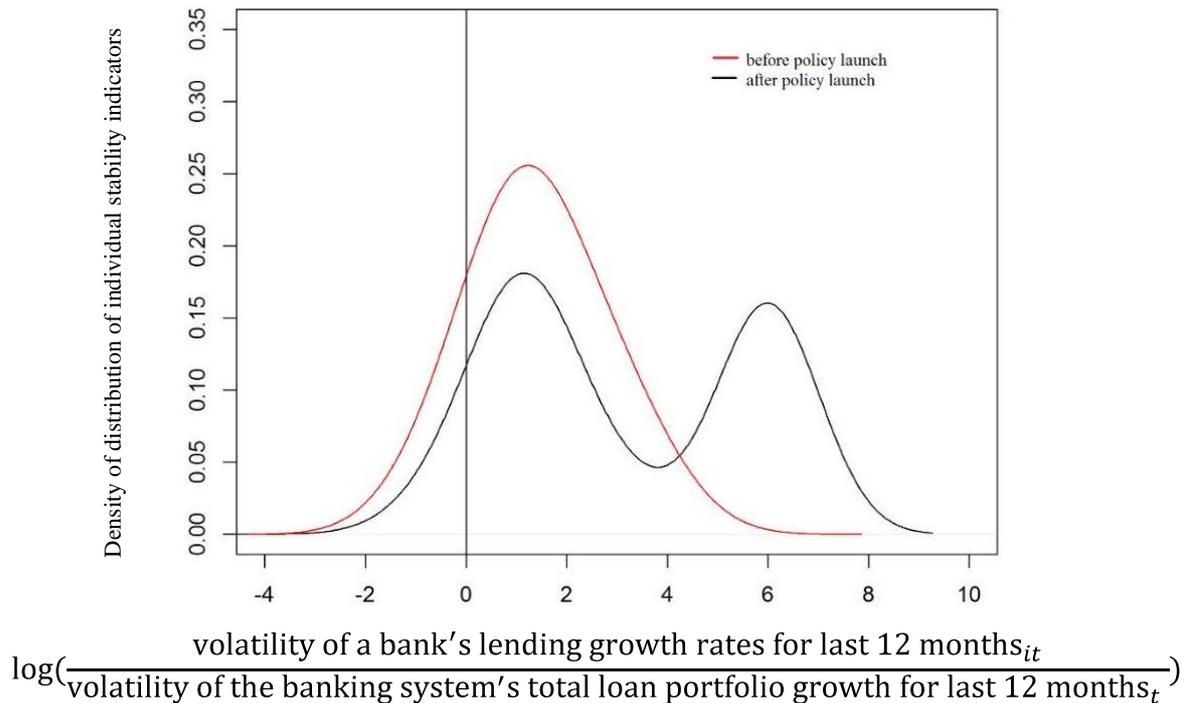


*Source: authors' calculations*

\*Note: Figure 3 shows an empirical distribution of ratios of volatility of a bank's loan portfolio monthly growth rates for last 12 months to volatility of the banking system's total loan portfolio monthly growth rates for last 12 months. The area under the curve left of 1 is the indicator of stability of banking system. Moving left of 1 signifies an increase in stability. On Figure 3, the area under the black curve (after policy launch) up to 1 is equal to 0.301, and the one under the red curve (before policy launch) up to 1 is equal to 0.213.

It is worth noting that the banking sector rehabilitation policy affects both banks carrying a relatively low share of arrears and, to a certain extent, high-risk banks carrying a relatively high share of non-performing loans. A convergence of loan portfolio growth rates was observed in clusters with a relatively low share of arrears in both corporate and retail lending. At the same time, the cluster of banks with a relatively high share of arrears showed a division into banks with more stable lending growth rates after policy launch and those whose loan portfolio growth volatility remained high, including because of the bank's size (Figure 4).

**Figure 4. Density of distribution of individual stability indicators\* for the cluster with a high level of arrears and a low share of retail loans in portfolio, before and after policy launch**



*Source: authors' calculations*

\*Note: We took logarithms of specific stability indicators to emphasize their evident heterogeneity.

## Conclusion

We assessed the effect of the Bank of Russia's banking sector rehabilitation policy on the dynamics of competition and lending volatility in the banking sector. Our analysis showed that the observed deviation of completion dynamics measured through the interest rate spread dynamics was significant only on the several banking services markets. And for those banking services markets where the deviation of the interest rate spread dynamic proved meaningful, it is explained by other factors not due to the Bank of Russia's banking sector rehabilitation policy. Moreover, during the period since policy launch, we observed a decrease in volatility of both corporate and retail lending for banks carrying a relatively low share of arrears and, to a certain extent, for high-risk banks carrying a relatively high level of arrears. Consequently, during the period under review, the Bank of Russia's banking sector rehabilitation policy had no significant adverse effect on competition, while, by reducing the volatility of lending growth rates, it contributed to an increase in the banking system's stability.

## Appendix 1.

Table 1. Russian banking sector concentration (existing CIs), %

	01.01.2013	01.01.2014	01.01.2015	01.01.2016	01.01.2017
<b>share in assets of top 5 banks, %</b>	50.3	52.7	53.6	54.1	55.3
<b>share in assets of top 20 banks, %</b>	69.8	71.7	75.1	75.7	78.1
<b>share in assets of top 50 banks, %</b>	81.4	82.8	85.7	87	88.7
<b>HHI (asests based)</b>	1104	1153	1156	1162	1221

*Source: Bank of Russia*

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