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The Development of Macroprudential Regulation of Bank Household Lending in Russia

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ABSTRACT

The article highlights the use of macroprudential instruments by the Bank of Russia that regulate the population lending of the Russian banking sector. **The purpose** of the work is to study the theoretical background and practical results of using indicators of the total cost of credit and the debt load of the population to ensure stability of the banking sector. The authors used **methods** of qualitative and quantitative analysis of scientific publications, regulatory sources, retrospective statistics. **The study showed** that initially, the regulator introduces new macroprudential instruments as recommended, and subsequently transfers them to mandatory. The regulatory mechanism is based on the ratio dependence of the bank capital adequacy on the actual values of the total loan cost and debt load of the borrower – individual. The mortgage debt to collateral value ratio supports the housing mortgage lending regulation process. The authors **concluded** that the banking sector's reaction to the introduction of the total credit cost indicator is more prominent than the introduction of the debt burden indicator. When the Bank of Russia obliged to take into account the full cost of the loan when measuring capital adequacy, banks were not able to increase capital; they reduced high-risk lending. The practice of macroprudential regulation of credit risks in the banking sector is complemented by the introduction of credit holidays for borrowers – individuals, who are struggling because of the pandemic. The obtained theoretical and practical **results** can be used in the development of the financial stability regulation practice in Russia, at the micro-level – when designing and changing credit policy.

Keywords: payment-to-income ratio (PTI); debt-to-income ratio (DTI); bank capital adequacy; macroprudential policy; household income; non-performing loans (NPL); loan loss provisions; pandemic

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INTRODUCTION

The stable functioning of the national banking sector ensures financial and macroeconomic stability in the country. By redistributing available resources from owners to borrowers, banks seek to ensure profitability at an acceptable level of risk. Households — the borrowers of the banking sector — are one of the most important counterparties. As of January 1, 2020, the balance of debt on household loans provided by Russian credit organizations amounted to 17,650.7 billion rubles, or 18.3% of the total assets of the banking sector (a year earlier, as of the beginning of 2019, indicated share amounted to 15.8% of total assets)¹. Profit-seeking credit intermediaries expand lending by simplifying the requirements for potential borrowers, while not considering the ratio of income and payments of borrowers on loans. At the same time, some borrowers have outstanding loans in various banks, as well as outstanding obligations to non-credit financial institutions. The loan portfolio in Russia is growing mainly due to loans provided to individuals with medium and low income; a significant part of mortgage lending transactions is a consequence of the need [1]. In the segment of high incomes customers, an interest in investment products was noticed [2]. Moreover, one in five borrowers with unsecured consumer loans spends 80% or more of their income on loan payments². Such borrowers are limited to manage their loans with their own income or do not have such an opportunity at all, and have overdue loans. They are constantly under pressure and look for additional sources of income, which leads to social tension. *Individual* lenders (a bank, other financial institution) may succeed in

collecting debts from such borrowers and credit risk may not be realized, however, other creditors have to deal with late payments. Accordingly, lending to households without taking into account the ratio of the *total* amount of debt payments to household income threatens the financial stability of the banking and financial sectors, as well as the country's economy.

The aim of the paper is to study the theoretical background and practical results of using indicators of the true interest cost and debt burden of household loans to ensure the stability of the banking sector. To achieve this the evolution of sectoral macroprudential instruments in relation to bank household lending in Russia is defined; foreign experience in regulating bank household lending is generalized using indicators that consider the income of borrowers; The Russian practice of macroprudential regulation of bank household lending is analyzed using the true interest cost indicator (TIC) and payment-to-income ratio (PTI).

EVOLUTION OF SECTORAL MACROPRUDENTIAL INSTRUMENTS IN TERMS OF THE BANK HOUSEHOLD LENDING IN RUSSIA

Financial and banking macroeconomic stability issues are addressed by leading scientists and regulators [3]. Macroprudential policy is aimed at ensuring financial stability, which involves the use of prudential instruments to reduce systemic risk in the financial sector as a whole or in its segments [4]. The basis of macroprudential policy instruments was in the process of formation since the 1990s of the 20th century, however, there is a positive experience of regulation using separate instruments [5–7]. According to foreign researchers [8], the timely introduction of macroprudential policies in Italy, Germany and the UK before the crisis would have reduced the

¹ Review of the Banking Sector of the Russian Federation. URL: https://cbr.ru/banking_sector/statistics/ (accessed on 15.03.2020).

² Russian Banking Sector Developments in 2019. URL: https://cbr.ru/Collection/Collection/File/25854/razv_bs_19_12.pdf (accessed on 15.03.2020).

likelihood of its occurrence. Studying the practice of macroprudential regulation in the EU countries, C. Badarau, M. Carias, J.-M. Figuet revealed a positive effect of special reserves on bank capital and its elements, depending on various risk factors [9]. The use of macroprudential instruments aimed at borrowers has a special positive effect on financial stability [10, 11].

To prevent threats to financial and banking macroeconomic stability caused by household lending risks and considering the borrower's income by individual lenders only at micro-level and based on their estimates of the total debt burden of an individual, the theory and practice of macroprudential policy provide so-called sectoral measures. In particular, such measures in relation to the household lending sector may include limits on the volume or expansion of lending, special requirements for the lender's capital, requirements for lenders to calculate the indicators that limit the possible size of loan payments depending on the borrower's income.

The Central Bank of Russia, as sectoral measures of the implemented macroprudential policy, widely applies special capital requirements for banks — household lenders. The regulator determines the categories of household loans that carry increased risks for the banking and financial sectors of the economy. Increased risks are associated with unsecured loans, mortgages loans with a low share of own funds, loan payments, which make up a significant part of borrowers' incomes, as well as loans in foreign currency.

At the beginning of 2020, the share of household loans provided by the banking sector in foreign currency amounted to less than 0.5%³ of the total household loan portfolio. In this regard, amid the ruble depreciation in March 2020, there is no reason for

a sharp decline in the loan portfolio quality of banks.

Special capital requirements for lenders require the use of higher risk ratios when evaluating certain types of household loans. As known, in accordance with the generally accepted international methodology, the minimum capital adequacy is defined as the ratio of capital to total risks, multiplied by 100%. Provided risks form the denominator of the bank's capital adequacy standards, for the same amount of undesirable, in the opinion of the regulatory body, types of household loans with increased risk ratios, the creditor bank needs a large amount of equity (reflected in the numerator when defining capital adequacy standards).

Initially, since 2013, following the above logic, the application of increased capital requirements was determined by the value of the indicator of the true interest cost (TIC). The TIC indicator itself was introduced in Russia in 2008 to disclose the loan payment principal to the borrower to eliminate unfair banking practices. Later the role of the TIC indicator changed and it is used by the regulator to stabilize the unfavorable situation, characterized by excessive interest rates on household loans⁴.

As of July 1, 2013, the Central Bank of the Russian Federation introduced a scale of increasing risk ratios for household loans, depending on the value of TIC. Loans with high TICs were distinguished by significant pressure on bank capital, which, given the banking sector's limited capabilities to increase equity, required a reduction in loans at high interest rates and, as a result, led to a decrease in average market rates for the bank household loans.

³ Compiled by the authors on the basis of "Review of the Banking Sector of the Russian Federation". URL: https://cbr.ru/banking_sector/statistics/ (accessed on 15.04.2020).

⁴ Inflated rates applied by some banks and non-credit financial institutions when establishing minimum requirements for borrowers' solvency or the complete absence of such requirements led to the formation of a low-quality loan portfolio and caused increased risks for the national banking and financial system.

Later, the norms of the Federal Law of December 21, 2013, No. 353-FZ “On Consumer Credit (Loan)” come into force, according to which the total cost of a household loan is currently estimated as in annual percentage terms and in monetary terms. The TIC calculation includes the amount of due interest on a contract; payments of the borrower in favor of the creditor provided for by the loan agreement, including payment for the issuance and maintenance of electronic means of payment; payments in favor of third parties stipulated by the contract at the rates applied by third parties; in some cases — the size of the insurance premium⁵.

To estimate the total cost of a household loan as a percentage, payments of the borrower are calculated based on the established duration of the calendar year of 365 days.

The calculated TIC for a household loan of the borrower is compared with the average market value of the TIC in percent per annum, which is determined by the Bank of Russia as the weighted average of at least one hundred largest lenders of the corresponding consumer credit category or at least one third of the total number of lenders providing the corresponding category of the consumer credit (loan). As of July 1, 2014, at the time of conclusion of the contract, an individual TIC cannot exceed a minimum of two values: more than one third the average market price of the corresponding category TIC used in the calendar quarter, or 365% per annum.

Thus, in Russian practice, the initial use of the TIC in indirect macroprudential measures was supported by a legislative restriction on the interest rate on relevant household loans.

The consequences of the TIC indicator introduction and its use for financial stability,

including banking, are assessed positively by the Central Bank of Russia⁶. The structure of the banking portfolio of household loans has changed: the share of loans with high TIC has decreased with the growth of the share of loans with reduced TIC. The decrease in the TIC helped to reduce the pressure of loan payments on borrowers' incomes, and to reduce the potential risks of the loan portfolio for the households, which positively (although with some lag) affected the financial stability of the banking sector.

The practice of macroprudential regulation of the credit sector is not limited to using the TIC indicator. Following an assessment of the Russian realities and relevant foreign experience, the Central Bank of the Russian Federation presented the analytical report on “Risk assessment of individual borrowers based on the debt burden indicator” in 2017. The report describes the coefficients used in other countries, which consider the income of borrowers in households lending.

The indicator “debt ratio” is used in foreign practices of macroprudential regulation of household lending. There are different approaches to calculate it. Depending on the calculation procedure, indicators such as DTI (or LTI) and PTI (PTI is also called DSTI and DSR) are used as a debt ratio.

DTI (debt-to-income) / LTI (loan-to-income) ratio is calculated as the ratio of the total loan debt to the *annual* income of the borrower, for example, in the UK, the borrower's LTI should not exceed 4.5.

PTI (payment-to-income) / DSR (debt servicing), DSTI (debt servicing-to-income) ratio is calculated as the ratio of the debt service amount to the total *monthly* income of the borrower, reduced by the total monthly expenses.

⁵ “On Consumer Credit (Loan)” the Federal Law of December 21, 2013, No. 353-FZ URL: <http://pravo.gov.ru/proxy/ips/?docbody=&nd=102170297> (accessed on 10.03.2020).

⁶ Financial Stability Review. Information and analytical review. The Central Bank of the Russian Federation. No. 2 (15). 2019 Q2–Q3. URL: <https://www.cbr.ru/publ/stability/> (accessed on 15.04.2020).

The value of the indicator of the debt burden of the households at the macro level varies considerably from country to country. According to the OECD⁷, in 2018 the largest tax burden, defined as DTI / LTI, was noted in Denmark — 282%, in the UK — 141%, in the USA — 105%, in Germany — 95%, in Russia — 30%. According to foreign researchers, strict restrictions on the maximum ratio of debt services to household incomes determine the effectiveness of government lending policies [12, 13].

The tax burden indicators supported by special indicators aimed at limiting the relevant banking risks are used to regulate housing mortgage lending (HML). The indicators are LTV and CLTV.

LTV (loan-to-value ratio) is calculated as the ratio of HML debt to the collateral value. CLTV (combined loan-to-value ratio) is calculated as the ratio of the aggregate principal balances of all loans to the property's purchase price or fair market value.

Studying the consequences of using LTV and CLTV indicators in foreign countries allowed scientists to confirm that the value of the LTV coefficient is one of the most important predictors of the severity of losses [14]; CLTV is the most important factor determining the amount of credit risk [15]; introduction into practice of regulation of LTV and DTI indicators, as well as a change in their normative values, leads to a change in indicators of bank household lending [16]; the macroprudential restriction of the ratio of a loan to value reduces the negative impact of the crisis on GDP [17].

In Canada, the regulator has established additional debt burden indicators aimed at limiting HML risks: gross debt service ratio (GDS) and total debt service ratio (TDS). GDS is defined as the ratio of the main debt of the HML, interest, property taxes and heating costs to the total annual income of the borrower. TDS is defined as the ratio of

the main debt of the HML, interest, property taxes, heating costs and payments of other debt obligations to the total annual income of the borrower.

In Russia, the mortgage loan segment is also affected by the applied sectoral macroprudential instruments of the Central Bank of the Russian Federation. To regulate the mortgage segment, the Bank of Russia uses two indicators at the same time: LTV and PTI, while TIC is taken into account when calculating PTI.

As of January 1, 2015, the Central Bank of the Russian Federation lowered the risk coefficient for low-risk mortgage loans. The following low-risk criteria were established for loans: LTV is less than 50% and PTI is less than 40%.

At the same time, the regulator relaxes the requirements for loan loss provisions (LLP) on mortgage loans without overdue payments, reducing the minimum level of provisions from 0.5% to 0.35%. The combination of macroprudential policies and requirements for bank provisions is widely used in the international practice of banking regulation [18].

Thus, as in the case of the introduction of macroprudential regulation of the TIC indicator in Russian practice, the PTI indicator is initially used in indirect regulation, since it affects different risk ratios when weighing debt on relevant loans.

RUSSIAN PRACTICE OF MACROPRUDENTIAL REGULATION OF HOUSEHOLD LENDING USING INDICATORS OF THE TRUE INTEREST COST AND DEBT BURDEN

Household lending is one of the developing segments of the domestic banking market. Household loans contribute to income received by individual lenders, and at the macro level, a potential threat to financial stability from excessive aggregate lending to individuals. In turn, the violation of financial stability negatively affects the wel-

⁷ Household debt. URL: <https://data.oecd.org/hha/household-debt.htm> (accessed on 02.04.2020).

Table 1

Data on household loans provided by the Russian banking sector, beginning of 2020, %

Indicators describing household loans, including overdue debt	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Lending to individuals, as % of GDP	8.8	9.9	12.4	15	14.3	12.9	12.6	13.3	14.3	16.1
Lending to individuals, as % of banking sector assets	12.1	13.3	15.6	17.3	14.6	12.9	13.5	14.3	15.8	18.3
Lending to individuals, as % of household money income	12.6	15.6	19.4	22.3	23.9	20.1	19.9	21.7	25.5	28.5
Lending to individual's growth rate	14.3	35.9	39.4	28.7	13.8	-5.7	1.1	12.7	22.4	18.5
GDP growth rate	19.3	30.2	13.1	7.3	8.1	5.1	3.0	7.3	13.6	4.8

Source: Review of the Banking Sector of the Russian Federation. URL: <https://www.cbr.ru/analytics/bnksyst/> (accessed on 12.03.2020).

fare of the population [19], the ability of financial intermediaries to meet the needs of the economy in cash [20].

The data on household loans provided by the Russian banking sector are presented in Table 1.

The data in Table 1 show that in 2014–2015 there was a decrease in the share of household loans in GDP and banking sector assets due to a decrease in the volume of loans. This was caused by the unfavorable macroeconomic situation as a result of the imposed external sanctions, which

was characterized by an increase in interest rates, inflation and the depreciation of the national currency. However, in 2016 there was an increase in the amount of individuals' debt on bank loans, which in 2017 reached the indicator of 2014 and almost doubled in 2018. The excess of the growth rate of individuals' debt over the growth rate of GDP (excluding 2015–2016), as well as the constant increase in the share of credit debt in the income of the households (except for 2016 and 2017), is assessed by the regulator as a threat to financial sta-

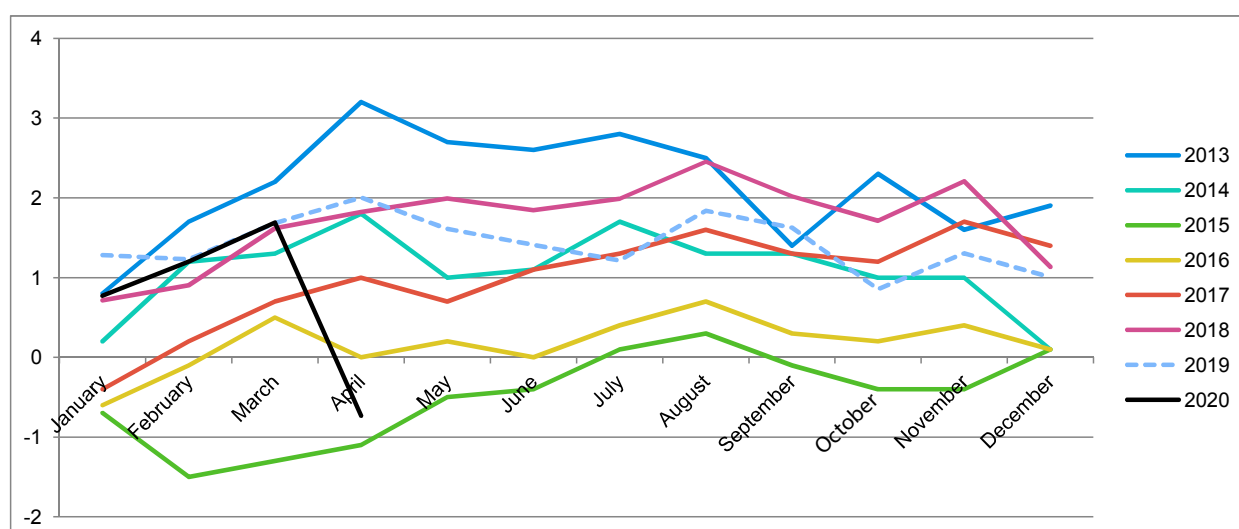


Fig. 1. Monthly growth rate of household loans provided by the Russian banking sector, %

Source: compiled by the authors based on "Review of the Banking Sector of the Russian Federation". URL: <https://www.cbr.ru/analytics/bnksyst/> (accessed on 25.05.2020).

bility. These conclusions are supported by V.N. Alekseev and N.N. Sharkov [21].

In April 2012, the Central Bank of the Russian Federation published an assessment of the debt burden on household loans provided by the Russian banking sector. The indicator was calculated on the basis of the survey data provided by the largest banks and did not consider the **total** debt of borrowers with loans in various credit and non-credit financial institutions. The aggregate PTI ranged from 7.3 to 10.6% during 2012–2019, reaching maximum values at the beginning of 2015 and as of October 1, 2019 (10.4 and 10.6%, respectively). However, PTI for housing mortgage loans and PTI for other household loans differed significantly. According to the HML, PTI ranged from 0.7 to 1.7% and constantly increased in the analyzed period. For other household loans, PTI ranged from 6.6 to 9.3% (the maximum value at the beginning of 2015); as of October 1, 2019, PTI on other household loans was 8.9%⁸.

To prevent risks associated with excessive household lending, from October 1,

2019, the Bank of Russia introduced a compulsory mechanism of increased pressure on the capital of household lending risks using increased ratios depending on PTI. The most important requirement for the calculation of PTI stipulated by the new regulatory mechanism was the need to account for **all** outstanding loans of the borrower to all credit and non-credit financial institutions; at the same time, the amount of debt was calculated with the inclusion of TIC. The introduction of the mechanism was announced in advance by the regulator, and the banking sector had time to adapt to changes. It was assumed that banks would adjust their lending policies: they would either limit or refuse to lend to borrowers with high PTI or take measures to increase their own funds. An assumption was also based on foreign studies [22]. The response of the Russian banking sector to the introduction of a regulatory mechanism using TIC and PTI is presented in Fig. 1.

The data in Fig. 1 show that in January the volume of household lending was insignificant, except for 2015; in the first quarter, there was an annual increase in the growth of household loans provided by the domestic banking sector. At the end of

⁸ Financial Stability Review. URL: <https://www.cbr.ru/publ/stability/> (accessed on 15.04.2020).

the year (except for 2013 and 2015), on the contrary, there was a decrease in lending growth rates. In the third quarter of 2013, there was a sharp decrease in the growth rate of household loans provided by credit organizations, which was a consequence of the change in the TIC indicator as of July 1, 2013, from optional to mandatory when calculating the capital adequacy ratio. The decrease in lending to individuals at the beginning of 2015 was due to adverse events in 2014 that occurred in the fourth quarter of 2014 (changes in the exchange rate regime, depreciation of the ruble, growth in inflation, growth in arrears). The pre-crisis growth rate of household lending was recovering in 2015–2016, by 2017. There was no significant decrease in the growth rate of household lending in the 4th quarter of 2019, which was a reaction to the introduction of PTI as a mandatory macroprudential tool as of October 1, 2019, although a slight decrease takes place.

With negative growth in January, February and March 2020, bank loans to households grew at the same pace as in the corresponding months of 2019. However, in April 2020, positive growth rates turned negative (–0.7%). This was caused by the pandemic, not by the PTI regulatory mechanism.

The situation, characterized by a reduction in bank lending, including household loans, may lead to a banking crisis (in 2015, the monthly growth rates of the volume of household loans were negative, except for July, August and December). With a well-designed government policy to support business and citizens, as well as stabilization measures carried out by the financial megaregulator, serious problems can be avoided and a stable banking system maintained. One of these measures was the introduction of payment holidays in Russia from April 2020⁹.

⁹ Federal Law as of April 3, 2020 No. 106–FZ “On Amendments to the Federal Law ‘On the Central Bank of the Russian Federation (Bank of Russia)’ and certain legislative acts

In accordance with the current legislation, borrowers — individuals and individual entrepreneurs who have received loans for purposes not related to entrepreneurial activity — are eligible to apply for payment holidays. At the same time, the volume of loans is limited depending on the collateral for them: for consumer loans to individuals — 250 thousand rubles, to individual entrepreneurs — 300 thousand rubles; for consumer loans with a credit limit — 100 thousand rubles; for consumer loans for the purchase of a car with a car pledge — 600 thousand rubles. For loans secured by a mortgage, the loan amount depends on the place of residence. In general, the size of such loans is limited to 2 million rubles, for residential premises secured by a mortgage in Moscow — 4.5 million rubles, in the Moscow region, in St. Petersburg, and the Far Eastern Federal District — 3 million rubles¹⁰.

It is advisable to assess the consequences of the introduction of a mechanism of special capital requirements depending on the TIC and PTI for banking stability using the indicators of the financial stability of the banking sector.

The most important indicators of financial soundness (FSI) of depository institutions, characterizing the quality of assets, are the share of non-performing loans in the total volume of loans, as well as indicators characterizing loan loss provisions on non-performing loans. According to the IMF methodology, non-performing loans (NPL) are loans with payments overdue for 90 days

of the Russian Federation regarding the specifics of changing the terms of a credit agreement, loan agreement” URL: <http://ivo.garant.ru/#/document/73842090/paragraph/1:0> (accessed on 15.04.2020).

¹⁰ Resolution of the Government of the Russian Federation of April 3, 2020 No. 435 “On establishing the maximum loan size for obtaining loans, according to which the borrower has the right to apply to the lender with a demand to change the terms of the loan agreement (loan agreement), providing for the suspension of the borrower’s performance of his obligations” URL: <http://ivo.garant.ru/#/document/73846652/paragraph/1:1> (accessed on 15.04.2020).

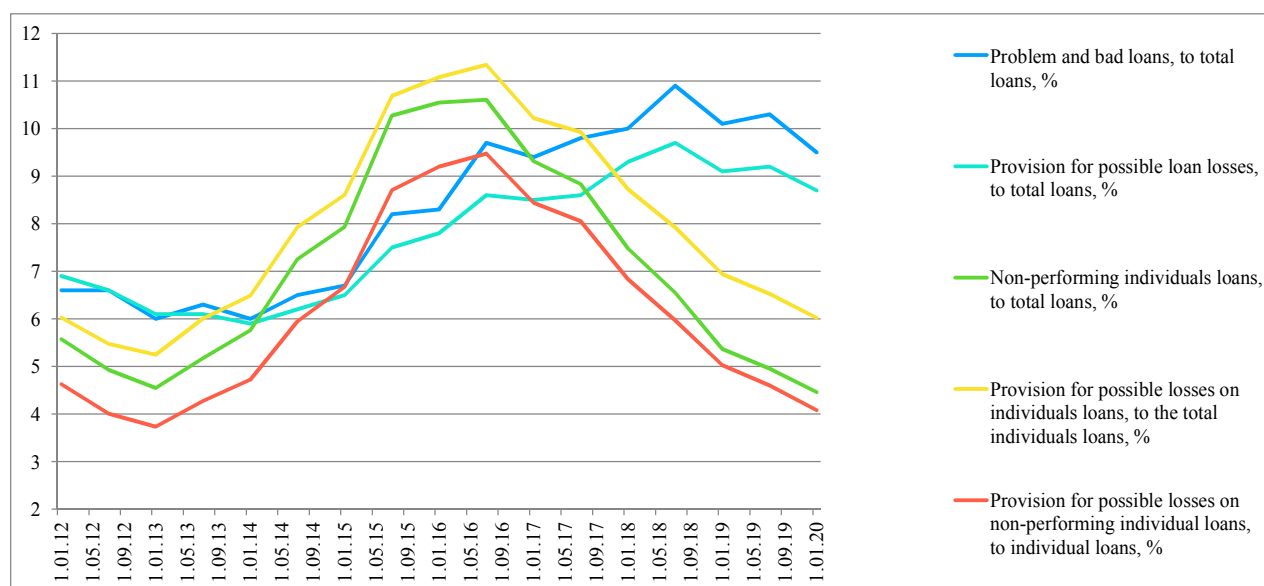


Fig. 2. Macroprudential indicators of the credit risk of personal bank loans, %

Source: compiled by the authors based on "Review of the Banking Sector of the Russian Federation". URL: <https://www.cbr.ru/analytics/bnksyst/> (accessed on 20.04.2020).

or more. The data on the values of these indicators are presented in Fig. 2.

Fig. 2 shows that from July 1, 2013 (the date of entry into force of the regulatory mechanism with the obligatory use of the TIC value) for loans to individuals, the share of the loan loss provisions in the total volume of loans exceeded the corresponding indicator for all bank loans, which is due to additional fees in accordance with the introduced regulatory requirements. At the beginning of 2014, a similar excess of the corresponding indicator for total loans to individuals was noted for the share of non-performing loans in the total volume of household loans. Since 2015 — the share of LLPs for loans to individuals exceeded the credit risk indicators of the total portfolio of bank loans. The credit risk indicators' excess for loans to individuals over indicators for total loans provided by the domestic banking sector was noted until 2016. In the same period (2015–2016, especially at the beginning of 2015), Russian credit institutions were characterized by the slow growth of loans to individuals (see Fig. 1). In the first half of 2016, the credit risk indicator values for

loans to individuals stabilized. During the second half of the same year and until 2020, the credit risk associated with lending to individuals decreased; the credit risk indicator values for loans to individuals since 2018 are lower than the corresponding indicator values for the aggregate bank loan portfolio.

When assessing the contribution of loans to individuals to the aggregate credit risk of the Russian banking sector during 2018–2019 it should be noted that this contribution is positive (it reduces the aggregate credit risk), since loans to individuals assessed using the regulatory methodology are less risky than the aggregate loan portfolio of the Russian credit institutions. A comparison of the dynamics of the share of non-performing loans to individuals and the share of LLPs on them in the total volume of household loans shows a positive trend. The values of these indicators are close, i.e. the share of non-performing loans to individuals covered by LLPs is close to 100%, which, given the worsening economic conditions (due to the self-isolation regime, termination of employment relationships amid coronavirus pandemic) will

prevent a sharp deterioration in the quality of the loan portfolio. Introduced payment holiday measures are also aimed at maintaining the current trend.

It is advisable to carry out an analysis of credit risk indicators on loans to individuals, considering insufficient loan loss provisions. The insufficient loan loss provisions are defined as the difference between the estimated and actual provisions. The regulator sets the requirements for calculating the amount of the estimated provisions. From the beginning of the analyzed period and until August 2017, these requirements were governed by the regulation of the Central Bank of the Russian Federation dated April 26, 2004 No. 254-P "On the procedure for making loss provisions by credit institutions for loans, loan and similar debts", hereinafter starting from August 2017 — by the regulation of the Central Bank of the Russian Federation dated June 28, 2017, No. 590-P.

Insufficient provisions will distort credit risk indicators, which are calculated based on the amount of the actual provisions. There are no official statistical data on the insufficient provisions in the Russian banking sector. Therefore, provisions should be estimated indirectly based on indicators characterizing the factors of decline in total capital and the adequacy of bank capital.

In the analyzed period, the regulatory procedure for determining the amount of total capital, as well as indicators of the bank's capital adequacy, changed. Until 2015, the regulatory documents of the Central Bank of the Russian Federation provided for the calculation of capital by the procedure based on the updated methodology of the first Basel Accord – Basel I. By this methodology, insufficient reserves, including insufficient LLPs, reduced the amount of bank's own funds after determining the amount of the main and additional capital, i.e., they were involved in the immobilization of capital as a whole. Thus, with a significant amount of insufficient re-

serves, there was a threat of compliance with the requirements for the adequacy of its own funds (capital adequacy ratio CAR1.0, former CAR1). By the requirements of Basel III [23], the transition to which was fully implemented in Russia in 2015, the insufficient LLPs reduce the cost of the most qualitative element of total capital – common equity Tier 1 capital and may lead to the non-compliance with the requirements for its sufficiency (CET1 ratio).

The indicators characterizing the factors of decline and the adequacy of bank capital illustrate the absence of a significant volume of insufficient LLPs on non-performing household loans to individuals in the Russian banking sector.

There were no facts of violation of the equity capital adequacy indicator in the Russian banking sector in 2012–2019. The minimum value of the capital adequacy ratio CAR1.0 (CAR1) at the level of 11.6–11.8% was noted in the IV quarter of 2017, during 2018–2019 on most dates, the value of CAR1.0 exceeded 12%¹¹. The value of the capital adequacy ratio was noted since the introduction of the facts of its violation. Values of the CET1 ratio in the period 2015–2019 were in the range from 7.8% (as of early December 2017) to 8.9%, with the minimum allowable value of 4.5%. It suggests that insufficient LLP of the banking sector is insignificant and does not have a substantial impact on the indicators of credit risk for household loans provided by the banking sector published and analyzed in this study.

On the whole, the identified trends suggest that the pressure of credit risks associated with household lending on the stability of the Russian banking sector has decreased.

CONCLUSIONS

Macroprudential regulation of bank household lending in Russia is developing, new sectoral instruments are being introduced to limit credit risks of the local banking sector

¹¹ Review of the Banking Sector of the Russian Federation. URL: https://cbr.ru/banking_sector/statistics/ (accessed on 15.05.2020).

and ensure the stability of the banking and financial sectors of the Russian economy.

The Russian practice of macroprudential regulation of household lending is based on international regulatory standards and guidelines. During 2013–2019 to ensure the stability of the local banking sector, the Bank of Russia introduced requirements for the mandatory calculation of the true interest cost and debt burden indicators on loans and the assessment of credit risks, depending on the actual value of these indicators. The response of the banking sector to the true interest cost indicator is more visible than to the debt burden indicator. This is due to the re-orientation of bank lending policies, which began in 2013 and generally ended by 2019, from aggressive behavior in the loan market to more cautious. The credit institutions' response to the introduction of PTI should be studied over a longer period in a post-pandemic environment.

We believe that the true interest cost and debt burden indicators should be viewed as macroprudential instruments of indefinite action and should be maintained dur-

ing the pandemic. The growth of possible credit risks as a result of lower incomes of borrowers in the banking sector should be balanced by anti-crisis measures of a temporary nature, such as payment holidays.

Due to the consequences of the expected decline in production, lower incomes of households, and the outflow of deposits of individuals, structural shifts in the assets and liabilities of the banking sector are forecast both in terms of maturity and between different credit institutions. In this regard, one more direction should be considered to eliminate threats to the stability of banking activities, including the increased risks of household lending. We believe that the regulator should create conditions that ensure the ability of creditors to restructure bona fide debts during the pandemic without risking bank liquidity. Such regulatory conditions can be shaped by expanding operations to provide the banking sector with additional liquidity, including monthly and annual repo auctions. The effectiveness of measures to ensure liquidity of the banking sector in the context of a decrease in household incomes may be the subject of further research.

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REFERENCES

1. Rogova M.V. Mortgage: Unjustified expectations or economically inefficient behavior? *EKO: vserossiiskii ekonomicheskii zhurnal* = *ECO Journal*. 2017;(3):147–154. (In Russ.).
2. Timokhina G.S. Behavior of high-income consumers: Result of research of the private banking services market in Russia. *Upravlenets* = *The Manager*. 2019;10(4):85–97. (In Russ.). DOI: 10.29141/2218–5003–2019–10–4–8
3. Larionova I.V. Triggers and barriers to financial stability. *Bankovskie uslugi* = *Banking Services*. 2020;(2):20–27. (In Russ.). DOI: 10.36992/2075–1915_2020_2_20
4. Danilova O.E., Elizarova N.B. Macroprudential policy: Theoretical aspects and Bank of Russia experience. *Den'gi i kredit* = *Russian Journal of Money and Finance*. 2017;(6):5–17. (In Russ.).
5. Gibson H. D., Hall S. G., Petroulas P., Tavlás G. S. On the effects of the ECB's funding policies on bank lending. *Journal of International Money and Finance*. 2020;102:102112. DOI: 10.1016/j.jimonfin.2019.102112
6. Gambacorta L., Murcia A. The impact of macroprudential policies in Latin America: An empirical analysis using credit registry data. *Journal of Financial Intermediation*. 2019;42:100828. DOI: 10.1016/j.jfi.2019.04.004

7. Palek J., Schwanebeck B. Optimal monetary and macroprudential policy in a currency union. *Journal of International Money and Finance*. 2019;93:167–186. DOI: 10.1016/j.jimonfin.2019.01.008
8. Davis E.P., Liadze I., Piggott R. Assessing the macroeconomic impact of alternative macroprudential policies. *Economic Modelling*. 2019;80:407–428. DOI: 10.1016/j.econmod.2018.11.025
9. Badarau C., Carias M., Figuet J.-M. Cross-border spillovers of macroprudential policy in the Euro area. *The Quarterly Review of Economics and Finance*. 2020 (In Press). DOI: 10.1016/j.qref.2020.01.005
10. Ely R.A., Tabak B.M., Teixeira A.M. The transmission mechanisms of macroprudential policies on bank risk. *Economic Modelling*. 2020 (In Press). DOI: 10.1016/j.econmod.2020.02.005
11. Bechlioulis A. P., Brissimis S. N. Consumer debt non-payment and the borrowing constraint: Implications for consumer behavior. *Journal of Banking & Finance*. 2019;101:161–172. DOI: 10.1016/j.jbankfin.2019.02.009
12. Hull I. Amortization requirements and household indebtedness: An application to Swedish-style mortgages. *European Economic Review*. 2017;91:72–88. DOI: 10.1016/j.euroecorev.2016.09.011
13. Kelly R., McCann F. Some defaults are deeper than others: Understanding long-term mortgage arrears. *Journal of Banking & Finance*. 2016;72:15–27. DOI: 10.1016/j.jbankfin.2016.07.006
14. Andersson F., Mayock T. Loss severities on residential real estate debt during the Great Recession. *Journal of Banking & Finance*. 2014;46:266–284. DOI: 10.1016/j.jbankfin.2014.05.010
15. Do H.X, Rösch D., Scheule H. Predicting loss severities for residential mortgage loans: A three-step selection approach. *European Journal of Operational Research*. 2018;270(1):246–259. DOI: 10.1016/j.ejor.2018.02.057
16. Kim S., Oh J. Macroeconomic effects of macroprudential policies: Evidence from LTV and DTI policies in Korea. *Japan and the World Economy*. 2020;53:100997. DOI: 10.1016/j.japwor.2020.100997
17. Punzi M. T. The impact of uncertainty on the macro-financial linkage with international financial exposure. *Journal of Economics and Business*. 2020 (In Press). DOI: 10.1016/j.jeconbus.2020.105894
18. Akinci O., Olmstead-Rumsey J. How effective are macroprudential policies? An empirical investigation. *Journal of Financial Intermediation*. 2018;33:33–57. DOI: 10.1016/j.jfi.2017.04.001
19. Ivanov V. V., Ievleva A. Yu., L'vova N.A., Pokrovskaya N. V. National models of financial well-being. *Finansy i biznes = Finance and Business*. 2019;15(1):16–32. (In Russ.). DOI: 10.31085/1814-4802-2019-15-1-16-32
20. Abramova M.A., Igonina L.L. Monetary and credit factors of increasing domestic investment demand in the Russian economy. *Finansy: teoriya i praktika = Finance: Theory and Practice*. 2018;22(1):128–143. (In Russ.). DOI: 10.26794/2587-5671-2018-22-1-128-143
21. Alekseev V.N., Sharkov N. N. Approaches to development of financial infrastructure informational-regulative system. *Nauchno-issledovatel'skii finansovyi institut. Finansovyi zhurnal = Financial Research Institute. Financial Journal*. 2019;(2):109–121. (In Russ.). DOI: 10.31107/2075-1990-2019-2-109-121
22. Meeks R. Capital regulation and the macroeconomy: Empirical evidence and macroprudential policy. *European Economic Review*. 2017;95:125–141. DOI: 10.1016/j.euroecorev.2017.03.010
23. Krüger S., Rösch D., Scheule H. The impact of loan loss provisioning on bank capital requirements. *Journal of Financial Stability*. 2018;36:114–129. DOI: 10.1016/j.jfs.2018.02.009

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Miroshnichenko O. S. — defined the problem, developed conceptual framework, performed analysis of the sources.

Voronova N. S. — interpreted and described results, wrote the conclusions.

Gamukin V. V. — collected statistical data, designed tables and graphical representations.

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