

# The innovative potential of Russian commercial banks' lending activity

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**Abstract**—The article reflects the results of the development of the comprehensive approach, which is relevant for the current conditions of commercial banks functioning and which determines lending activities management efficiency level. The expediency of practical application of the proposed approach to the commercial banks registered in the administrative borders of Russia, the loan portfolio leaders according to the national rating, was studied in the process of credit exposure management efficiency monitoring. The article contributes to the development of comprehensive assessment of the commercial banks' lending activities management efficiency in the national financial science and provides an opportunity to modernize existing approaches to diagnostics.

**Keywords**—commercial bank; comprehensive approach; lending activities; loan portfolio

## I. INTRODUCTION

The fundamental theoretical concepts of the commercial bank's lending policy development and implementation are reflected in the works of Ageeva and Mishura [1], Brodsky [2], Bass [3], Kuklin and Schneider [4], Nesvetaylova [5]; economic and mathematical methods and tools used to assess credit exposure was proposed by Borzykh [6], Chortareas, Girardone and Ventouri [7], Egorova and Smulov [8], Nishikawa [9], Summer [10]. The number of publications on the development of comprehensive approaches to assessing the commercial bank's lending activities management efficiency is very small. Most of them are based on the analysis of certain criteria for credit exposure assessment and do not address the issues of taking consolidated assessments [11-14]. Thus, evaluating the results obtained by the authors mentioned, we consider it necessary to note that there are still many aspects that require indepth analysis, elaboration and revision.

Until recently, commercial banks have been seeking to rapidly expand their client base and territory and increase their share in the lending market. The desire to capture the full benefits whittled down the defenses of commercial banks, which often provided loans to dubious borrowers. Therefore, at the moment of macroeconomic instability, characteristic for 2013 and the subsequent period, they faced

huge volumes of defaults that have been causing financial losses up to the present day. Therefore, the problem of modernization of existing and development of new approaches aimed at assessing the efficiency of credit management became especially acute. The purpose of this research is to improve existing methodological approaches to assessing the efficiency of lending management of the commercial banks registered and operating in Russia.

The research objectives: to systematize the basic criteria and financial indicators characterizing credit exposure based on the results of the comparative analysis of diverse approaches to assessing the efficiency of the commercial bank's loan portfolio management; to develop and theoretically substantiate comprehensive methodical approach to assessing the efficiency of managing the lending activities of commercial banks in Russia, to present its mathematical algorithm; to study the feasibility of the practical application of the proposed approach and the presented mathematical algorithm to assessing the efficiency of lending activities of commercial banks registered in the administrative borders of Russia, the loan portfolio leaders according to the national rating.

## II. RESEARCH METHODS

The comprehensive approach to assessing the efficiency of commercial banks' lending activities management proposed by the authors involves four stages. First, the determination of commercial banks' lending activities efficiency criteria groups' weights management by Equation (1):

$$P_i = \frac{\alpha_i}{\sum_{j=1}^n \alpha_j},$$

$$\alpha_i = \sum_{z=1}^k \beta_{iz} \quad (1)$$

where  $P_i$  – weight value of  $i^{\text{th}}$  group of lending activities management efficiency criterion;

$\alpha_i$  – overall rating for  $i^{\text{th}}$  efficiency category;

$\beta_{iz}$  – estimation of  $i^{\text{th}}$  efficiency category by  $z^{\text{th}}$  group of experts;

$n$  – number of groups of criteria for the efficiency of lending management;

$k$  – number of expert groups.

Second, the introduction of financial ratios matrices characterizing the efficiency of commercial banks' lending activities management which is carried out by dividing the entire set of ratios into two matrices: the first one includes the ratios that independently characterize a certain efficiency category (according to the results of the approach approbation, they are loan portfolio risk ratio, general loan portfolio efficiency and security ratio and credit turnover ratio); the second indicates the ratios that characterize a category in a certain aggregate with the other ratios (according to the results of the approach approbation, these are NPL ratio, loan loss coverage ratio, bank's lending activity level, loan policy "aggressiveness – caution" ratio, loan portfolio profitability ratio, bank margin ratio, lending efficiency ratio). In addition, if the values of the ratios called "The bank's lending activity level" and loan policy "aggressiveness – caution" ratio do not fall within the range of optimum values, the deviation from the recommended value is taken into account in the calculation.

Third, the significance of individual financial ratios for the relevant category, indicating effective commercial bank's lending activities management, is defined by introducing the weight values matrix. In this case, the significance of individual financial ratios is reasonable to be calculated only if the efficiency category is represented by two or more ratios.

Schematically, the ratios weights matrix can be represented in the form of Equation (2):

$$Q = \left( \begin{array}{l} q_{11} = \gamma_1 / \sum_{j=1}^2 \gamma_j; q_{12} = \gamma_1 / \sum_{j=1}^2 \gamma_j; q_{13} = 0 \\ q_{21} = \gamma_3 / \sum_{j=3}^4 \gamma_j; q_{22} = \gamma_4 / \sum_{j=3}^4 \gamma_j; q_{23} = 0 \\ q_{31} = \gamma_5 / \sum_{j=5}^7 \gamma_j; q_{32} = \gamma_6 / \sum_{j=5}^7 \gamma_j; q_{33} = \gamma_7 / \sum_{j=5}^7 \gamma_j \end{array} \right) \quad (2)$$

where  $\gamma_j$  is an overall estimate for  $j^{\text{th}}$  financial ratio of the relevant lending activities management efficiency category. Fourth, the calculation of the aggregated indicator characterizing commercial banks' lending activities management efficiency.

The key characteristics of commercial banks are reflected in Table 1.

While approbation of the developed approach, the opinions of experts – the staff and clients of the designated commercial banks (8 expert groups were formed for the research) – as well as the provisions of the main approaches to assessing lending activities management efficiency suggested by leading specialists in the field under study were taken into account.

TABLE I. THE KEY CHARACTERISTICS OF COMMERCIAL BANKS REGISTERED IN THE ADMINISTRATIVE BORDERS OF THE RUSSIAN FEDERATION, THE LOAN PORTFOLIO LEADERS ACCORDING TO THE NATIONAL RATING

Name of commercial bank	Date of registration by the Central Bank of the Russian Federation	Authorized capital, RUB, thousand	Presence of the General License for Banking Activities	Volume of loans granted to individuals, RUB, thousand	Dynamics, 2017-2018.
PJSC "Sberbank"	20.06.1991	67.760.844	11.731.510.967	15.879.842.991	↓
PJSC "Bank VTB"	17.10.1990	651.033.883	5.643.244.963	5.574.379.181	↑
JSC "Bank of GPB"	23.01.1992	194.996.181	3.507.509.606	3.783.696.878	↑
JSC "Rosselkhoz bank"	24.04.2000	384.848.000	1.578.348.107	1.892.395.027	↓
PJSC "Moscow Credit Bank"	05.08.1992	27.079.709	1.498.327.365	1.577.033.866	↑
JSC "Alfa – Bank"	03.01.1991	59.587.623	1.389.153.346	1.612.320.223	↓
PJSC "Otkritie Bank"	15.12.1992	138.000.000	750.545.880	791.577.084	↑
JSC "UniCredit Bank"	15.11.1991	40.438.324	571.314.587	697.478.821	↑
PJSC "Promsvyazbank"	12.05.1995	0.001	643.512.351	675.597.115	↓
JSC "AB "Rossia"	29.12.1991	547.311	401.467.903	385.742.085	↓

Solving the problem the experts often disagree when it comes to assessing the research objects, in the process of ranking the groups of criteria for the commercial bank's lending activities management efficiency it is necessary to take into account consensus degree, for example, using the concordance ratio proposed by Kendall, which can be calculated by equation (3) [15]:

$$P_i = \frac{\alpha_i}{\sum_{j=1}^n \alpha_j}, \quad \alpha_i = \sum_{z=1}^k \beta_{iz} \quad (3)$$

where  $n$  is the number of objects analyzed;

$m$  – number of expert groups;

$R_{ij}$  – the rank of  $j^{\text{th}}$  object, which is assigned to it by  $i^{\text{th}}$  group of experts.

Usually, the specified value of the concordance ratio is 0.5, hence:

- for  $W > 0.5$ , the experts' conclusions are more consistent;

- for  $W < 0.5$ , the estimates cannot be regarded as sufficiently consistent.

While studying the feasibility of the practical application of the proposed comprehensive approach, the concordance

ratio was calculated using the *OpenOffice Calc* and, ultimately, the ratio value amounted to 0.591 that indicates the consistency of the expert groups in ranking the significance of the efficiency criteria for the commercial bank's lending activities management. To increase the reliability of the research results, it is also recommended to determine the weights of financial ratios within the groups of criteria for the commercial bank's lending activities management efficiency, which include more than one indicator. The results of ranking the significance and determining the weights of the financial ratios that form the criteria for the commercial banks' loan portfolio and lending activities and their efficiency assessment using a five-point scale are shown in Table 2.

TABLE II. SIGNIFICANCE RANKING AND DETERMINATION OF THE FINANCIAL RATIOS WEIGHTS THAT FORM THE CRITERIA FOR COMMERCIAL BANKS' LOAN PORTFOLIO AND LENDING ACTIVITIES PERFORMANCE AND THEIR EFFICIENCY ASSESSMENT

Indicators	Indicator weight
<i>Criterion – non-performing loans</i>	
NPL ratio	0.75
Loans losses coverage ratio	0.25
<i>Criterion – commercial bank's lending activities</i>	
Bank's lending activity level	0.42
Bank's credit policy "aggressiveness-caution" ratio	0.58
<i>Criterion –the commercial bank's lending activities efficiency</i>	
Loan portfolio yield ratio	0.35
Bank margin ratio	0.40
Lending efficiency ratio	0.25

The next stage of comprehensive commercial bank's lending activities management efficiency assessment suggests determining the direction of the impact of each financial ratio included in the aggregated indicator criteria. The results of the research indicate the opposite effect of financial ratios on the quality of loan investments that should be taken into account in the process of calculating the aggregate commercial bank's lending activities management efficiency indicator.

### III. RESULTS

The use of the above importance weights for criteria and financial ratios, their impact directions, as well as a set of historical data characterizing commercial banks – leaders according to the national rating of the Russian Federation in terms of credit exposure – allows us to express the aggregate credit management efficiency index in the form of equations (4;5):

$$K = \sum_{i=1}^n (P_i \times \sum_{j=1}^{K_j} Q_{ij} K_{ij}), \quad (4)$$

$$K = 0,214K_1 - 0,238 \times 0,75K_{10} + 0,238 \times 0,25K_2 + 0,196K_3 \pm 0,119 \times 0,425K_8 \pm 0,119 \times 0,575K_9 + 0,054K_4 + 0,179 \times 0,35K_5 + 0,179 \times 0,4K_6 + 0,179 \times 0,25K_7, \quad (5)$$

where  $P_i$  is the score weight for  $i^{\text{th}}$  group of financial ratios, or the significance of a separate group of financial ratios in the general financial assessment;

$Q_{ij}$  is the score weight for  $j^{\text{th}}$  financial ratio in  $i^{\text{th}}$  group, or the significance of an individual ratio in the corresponding group,  $\sum |Q_{ij}| = 1$ . In the event that the growth of  $j^{\text{th}}$  financial ratio positively affects the loan portfolio quality, then  $Q_{ij} > 0$ ; otherwise, and also if the calculated value of  $j^{\text{th}}$  ratio does not fall within the range of optimal values,  $Q_{ij} < 0$ ;

$K_{ij}$  is  $j^{\text{th}}$  financial ratio included into  $i^{\text{th}}$  group, or its deviation from the optimal value, if it does not fall within the range of optimal values;

–  $n$  is the number of indicators groups (in our case,  $n = 6$ );

–  $k_i$  is the number of financial ratios in  $i^{\text{th}}$  group.

The results indicate that the vast majority of commercial banks under study began better addressing new challenges posed by the socioeconomic system in unfavorable external conditions.

### IV. CONCLUSION

The research resulted in a comprehensive methodical approach to assessing the effectiveness of Russian commercial banks' lending activities management taking into account the impact directions and the significance level of the criteria characterizing credit exposure. The proposed tool allows regular monitoring the achieved lending activities performance indicators, compare the efficiency of loan portfolio management in different periods and assessing the level of competitive banks' credit exposure, and also increasing the interest of commercial banks in improving the system of protection from insufficiently qualitative structure of the loan proceeds allocated. Factors that adversely affect the Russian commercial banks, leaders according to the national rating by the volume of the loan portfolio, lending management effectiveness were identified – aggressive credit policy and the growing volume of nonperforming liabilities.

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