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## RESEARCH AND ASSESSMENT OF THE TASKS OF THE LOAN PORTFOLIO QUALITY MANAGEMENT WITHIN THE PROCESS ACTIVITIES OF COMMERCIAL BANKS OF BELARUS AND CHINA

*The lending scale increase will free up more liquidity to increase leverage, which, in turn, will require intensified actions to form the quality parameters of the loan portfolio, one of the most important tools of a commercial bank, directly affecting its financial stability and reliability.*

**Keywords:** banking management, loan portfolio, organization quality, loan transactions, subprocess, management functions, management tools, efficiency

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## ИССЛЕДОВАНИЕ И ОЦЕНКА ЗАДАЧ УПРАВЛЕНИЯ КАЧЕСТВОМ КРЕДИТНОГО ПОРТФЕЛЯ В РАМКАХ ПРОЦЕССНОЙ ДЕЯТЕЛЬНОСТИ КОММЕРЧЕСКИХ БАНКОВ БЕЛАРУСИ И КИТАЯ

*Рост масштабов кредитования высвободит больше ликвидности для увеличения кредитного плеча, что, в свою очередь, потребует активизации действий по формированию качественных параметров кредитного портфеля — одного из важнейших инструментов коммерческого банка, непосредственно влияющего на его финансовую устойчивость и надежность.*

**Ключевые слова:** банковское управление, кредитный портфель, качество организации, кредитные сделки, подпроцесс, функции управления, инструменты управления, эффективность

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### Introduction

The loan portfolio is a kind of indicator that reflects the total composition of outstanding debt on all current bank loans as of a specified date, and for certain time periods it signals trends in the bank's allocation of its resources. On the other hand, the loan portfolio with its certain qualitative components (the degree and type of credit risk, the level of liquidity, the level of profitability) is the most important tool in

the activities of a commercial bank, directly affecting its financial stability and reliability, determining the quality of banking management, the good relationships between banks, their clients, financial and credit institutions and other representatives interested parties.

The prerequisites for the emergence of the assessing problem of a portfolio loan quality are the very specifics of the activities of commercial banks in the financial services market. Thus, improving the quality of banking management in the system of commercial banks in Belarus and China began along with market reforms. In order to facilitate their market-oriented functioning, commercial banks began to operate regardless of their form of ownership [1]. In today's environment, commercial banks, customers, employees, investors, regulators and the public are paying more attention to environmental, social and governance issues than ever before [2]. ESG (Environmental, Social, Governance) is business activity carried out in compliance with the principles of sustainable development, which implies attitudes towards the environment, society and management standards [3].

China Banking and Insurance Regulatory Commission (CBIRC) limited the regions of activity of various commercial banks and the content of their business. Chinese commercial banks are divided into large state-owned commercial banks, joint-stock commercial banks, urban commercial banks and rural commercial banks. At the same time, different types of commercial banks are assigned geographical zones, their activities differ in regulatory policies and administrative licenses.

Transformational changes in the banking system of Belarus and China revealed its internal nature, revealed the fragility of financial supervision and the need to further promote reforms to maintain financial market stability and improve the efficiency of supervision, in particular, of the credit banking sector. The requirements of the Basel Committee on Banking Supervision (BCBS) and the Financial Stability Board (FSB) have significantly advanced a number of international banking supervision reforms, with an emphasis on the macro and micro product components of supervision. This made it possible to raise the financial security of commercial banks in China and Belarus to the level of state management of systemic financial risks, which are associated with four aspects of activity: shadow banking, asset management, Internet finance and finance of holding companies [4].

In order for the bank to make informed decisions, it is important to form a loan portfolio at a high-quality level and effectively manage this important tool when analyzing the competitive environment, which includes five key aspects:

- 1) competition in industries;
- 2) potential participants;
- 3) alternative products or services;
- 4) bargaining power of suppliers;
- 5) bargaining power of buyers or service users.

It's important to conduct regular analysis of the loan portfolio, taking into account internal changes in various divisions of the bank, which will allow the data obtained to be used when adjusting strategic and tactical decisions.

This article is devoted to methods of managing the quality of the loan portfolio and their improvement within the framework of the process activities of commercial banks in Belarus and China. For this purpose, a methodological approach is analyzed aimed at a comprehensive assessment of the quality of the loan portfolio, which can be used to evaluate several commercial banks. The main tools for leveling the negative impact of credit risk on the financial security of commercial banks are presented. On the one hand, it is important to reduce the time spent on analyzing the financial condition of the lender by more carefully selecting objects accepted for lending and excluding those that do not comply with the bank's credit policy. On the other hand, it is necessary to strive reducing credit risk through timely adjustments to credit policy.

### **Research methodology**

The problems study of managing the loan portfolio quality is carried out using the techniques of the monographic method as part of the practical activities' analysis of commercial banks in Belarus and China. The most relevant for these objects and, in particular, lending processes at the modern level is the solution of several key problems of a methodological and technological nature [5]. According to our research, the most relevant when designing the main elements of a commercial loan portfolio banks operating in economic and social environments, the following problem areas are:

1. Formation of a clear and flexible structure of the composition and content of lending processes based on the positions of quality management; determining who is responsible for the quality of credit transactions; identification of procedures assessing the quality of the lending process, taking into account all interested parties. The application of Osterwalder's business models is useful here.

2. Detailing of credit portfolio management tasks based on a functional approach, methods of their technologization, coordination of their solutions in terms of time, connections, and quality. In this direction, it is advisable to use methods of linear programming.

3. Full and effective use of all tools and their capabilities for the timely completion of all tasks of effective loan portfolio management. Markov chains are used in this direction.

4. O justification for the structure and number of personnel of the divisions of the creditor bank and coordination of interaction within the framework of their functioning. The Osterwalder business model is used [5].

5. Establishment of a scientifically based level of competencies for solving problems of credit portfolio management in accordance with the criteria of quality and efficiency. It's possible using a Markov chains [6].

## Results and its discussion

The interpretation of the category «loan portfolio» of a commercial bank is distinguished by its ambiguity and heterogeneity. This is due to the fact that the loan portfolio in the substantive sense includes not only the result of the bank's directed activities, assessed by the totality of all loans issued for a certain period of time, but also represents a system used by lenders to ensure the return of outstanding loans from the court within a certain period of time and involves developing a credit policy, establishing a client's credit rating and pursuing borrowers with overdue loans. In this case, the loan portfolio characterizes the totality of the bank's assets in the form of loans, discounted bills, interbank loans, deposits and other credit-related claims, classified into groups of quality of loans issued based on certain criteria (the totality of the lender's claims for the loans provided).

In the banking community of Belarus, Russia and China, the term «loan portfolio» is most widely used in scientific and methodological literature and in reports on the results of credit transactions in relation to the practice of banking management, where, along with a bank loan, commodity credit is considered (Article 822 of the Civil Code of the Russian Federation); commercial loan (Article 823 of the Civil Code of the Russian Federation); budget loan (targeted foreign loan, Article 6 of the Budget Code of the Russian Federation); investment tax credit (Article 6 of the Tax Code of the Russian Federation). Moreover, in all of the listed terms there is a different content that differs from the content of the term «bank loan».

Credit relations between the lender and the borrower can be formalized not only on the basis of drawing up a credit agreement or loan agreement. They are often formalized using a purchase and sale agreement or promissory notes (bills). The online borrowing market has received progressive development not only in countries with a high level of digital technology development, including China, but also in Belarus and Russia. Online borrowing takes place in two directions:

P2B – borrowing, where business financing is carried out by a private person;

P2P – borrowing associated with peer-to-peer financing, i. e. financing by one individual to another.

In both cases, the process of transferring funds from the lender to the borrower takes place on specialized Internet platforms – online borrowing services [7].

There are also many approaches, strategies, and concepts for managing the «loan portfolio» in a commercial bank. Thus, G. Chitaya considers approaches to determining the optimal debt structure of commercial bank borrowers for the medium term based on a modified Markov problem. Mathematical modeling was carried out based on a combination of the apparatus of simple Markov chains with the linear programming method. The main result of solving this problem is the share distribution of categories of borrowers based on overdue debt in combination with the debt collection strategies used by the bank [8]. Consequently, the main target is achieved by introducing into the calculations the qualitative parameters of the bank's loan portfolio.

However, the concept of «quality of the loan portfolio», as well as the concept of the «loan portfolio» itself, is defined ambiguously. On the one hand, it can be perceived as a sign of the quality of the loan portfolio, and on the other hand, as a positive a criterion parameter by which a loan portfolio can be

characterized. But the best definition the quality of the loan portfolio, from our point of view, was given O. Lavrushin [et al.], considering such a property of its qualitative parameters, which has the ability to provide the maximum level of profitability with an acceptable credit risk and balance sheet liquidity based on constant monitoring of credit transactions [6]. In Belarusian banking practice, a step-by-step classification assessment of the quality of a loan portfolio is widespread.

At the first stage, a risk-neutral and risky loan portfolio is considered. The first among them is characterized by relatively low risk indicators, but at the same time, low profitability indicators. The second option reflects the riskiest loan portfolio, which, however, has an increased level of profitability.

At the second stage, the assessment analyzes the loan portfolio from the standpoint of its optimality and balance. The optimal loan portfolio corresponds in composition and structure to the bank's credit and marketing policies and its strategic development plan, and a balanced loan portfolio reflects the relationships at the point of the most effective solution to the risk-return dilemma. The optimal loan portfolio does not always correspond to a balanced loan portfolio, since at a certain stage of its activities a commercial bank may, to the detriment of the balance of the loan portfolio, carry out credit transactions with lower returns or with greater risk. This is usually done with the aim of strengthening a competitive position, conquering new lending niches, attracting new clients, etc. [1].

The optimal loan portfolio of a commercial bank should be formed taking into account the creation of an acceptable reserve of loan funds (reserve ratio, risk ratio, problem ratio) (Table 1).

Table 1

**Ensuring the security of a commercial bank's loan portfolio in the short term (case in point)**

The purpose of solving the problem	Meter	Formula modeling	The role of modeling	Estimation of the indicator as of date				Matching the optimal
				01.01	01.05	30.12	optimal	
Estimation of loan reserves for possible losses	Reserve ratio	$K_r = \frac{RPL_f}{CI} \cdot 100\%,$ <p><math>K_r</math> – reserve ratio, %;  <math>RPL_f</math> – the amount of the actually created reserve for possible losses, thousand rubles;  <math>CI</math> – credit investments, thousand rubles</p>	Allows you to set the degree of protection of your loan portfolio	10.7	12.0	9.6	$\leq 15$	+
Determining the degree of riskiness of the loan portfolio	Credit risk ratio	$K_{risk} = \frac{CI - RPL_f}{CI},$ <p><math>K_{risk}</math> – risk ratio, %; <math>RPL_f</math> – the amount of the actually created Reserve for Possible Losses, thousand rubles;  <math>CI</math> – credit investments, thousand rubles</p>	Allows you to assess the quality of the loan portfolio based on the degree of security	0.89	0.85	0.9	aims for 1	+
Analysis of non-repayment of loan funds	Problem Lending Ratio	$Kp = \frac{OD}{CI} \cdot 100\%,$ <p><math>Kp</math> – problem ratio, %;  <math>OD</math> – balance of overdue debt as of the reporting date, thousand rubles;  <math>CI</math> – credit investments, thousand rubles</p>	Indicates the share of problem loans in the total debt	4.8	4.5	5.3	$\leq 10$	+

Source : author's developed.

As follows from the data in Table 1, all ratios characterizing the security of the loan portfolio of a commercial bank are within acceptable limits for the analyzed period. The lowest reserve ratio was observed from September to the end of December, which indicates the greatest degree of protection of the bank from possible non-repayment. In terms of repayment, the quality of the loan portfolio is closer to optimal during the same period – this is shown by a risk coefficient of 0.9.

The lowest coefficient of problem loans is observed in the period from May to September, the highest at the end of the year, which indicates an increase in the share of problem loans in the total amount of debt. However, in general, the structure of the loan portfolio from the point of view of its protection does not exceed the permissible level of problems with the loan funds of the bank under study.

Next, we will consider the credit risk standards for the planning period, namely:

- maximum risk per borrower or group of related borrowers (H6);
- maximum size of large credit risks (H7);
- maximum amount of credit risk per shareholder (H9.1);
- the maximum amount of credits, loans provided by their insider, as well as guarantees and guarantees issued in their favor (H10.1).

Total calculations are summarized in Table 2.

Table 2

**Risk standards for the loan portfolio  
of a commercial bank for the short term**

Indicators	Values		Corresponds /doesn't correspond to optimal
	Actual	Optimal	
Bank's credit requirements to the borrower, thousand rubles	206 157		
Own funds, thousand rubles	2 147 471		
H6, %	9.6	≤ 25	corresponds
Large credit risk, thousand rubles	8 275 128		
Own funds, thousand rubles	2 147 471		
H7, %	385.3	≤ 80	corresponds
Credit requirements for participants, thousand rubles	0		
Own funds, thousand rubles	2 147 471		
H9.1%	0	≤ 50	corresponds
Credit requirements for insiders, thousand rubles	41073		
Own funds, thousand rubles	2 147 471		
H10.1%	1.9	≤ 3	corresponds

Source: author's developed.

As the data in Table 2 shows, all loan portfolio standards are within acceptable values, which indicates a low level of existing credit risk. The standard for the maximum amount of loans, bank guarantees and guarantees provided by the bank to its participants (S9.1) is equal to zero, since the bank does not provide loans, bank guarantees and surety to its shareholders; accordingly, credit risk does not apply to the bank's shareholders. The most significant in relation to the optimal value is the S10.1 standard, equal to 1.9 %. This meter indicates that the portfolio risk in relation to all insiders, which include individuals who can influence the decision to issue a loan by the bank, is quite high, but does not exceed the acceptable limit.

The probable losses of a commercial bank's loan portfolio make it possible to assess the total estimated risk to which the lender's activities are exposed. In order to determine probable loan losses, it is necessary to consider the migration of overdue debt over the last two periods of the bank's year of activity and calculate the loss ratio, that is, an indicator of potential losses for a group of similar courts. It is calculated by multi-



plying the debt overhang migration rate for all groups of homogeneous loans following this group. Based on the differences in credit procedures applied to certain credit products, the specifics of each product, and the availability of collateral, this methodological approach to predicting the amount of losses should be applied in the context of individual credit products (for a portfolio of individuals) and in the context of individual sectors of the economy (for a portfolio of legal entities). persons).

The migration coefficient is defined as the ratio of the amount of overdue loans included in a certain group of homogeneous loans on a certain date and for which the borrowers did not fulfill the terms of the loan agreement, to the total amount for this group of homogeneous loans. Based on the results of all periods under consideration, it is necessary to calculate the average annual value for each of the subgroups. To calculate the migration coefficient, the following groups of loans are considered:

- current (timely debt service);
- overdue by up to 30 days;
- overdue from 30 to 90 days;
- overdue from 90 to 180 days;
- overdue for a period from 180 days to 1 year;
- overdue for more than one year.

In the loan portfolio, borrowers must be distributed into groups taking into account the credit policy of a commercial bank. In the practice of Belarusian banks, a number of basic requirements for the borrower can be identified: financial condition, form of ownership, credit history, period of business activity, direction of production and economic activity in each quarter, etc.<sup>1</sup> [9]. According to the recommendations of the lender, almost every specific loan is insured directly by the borrower himself. Among the methods of self-insurance is the formation of reserves to record probable losses. The financial stability of a commercial bank depends on the sufficiency of this amount. If there are insufficient funds in the reserve account, the creditor may not have enough liquid assets to meet current obligations, even in situations where income exceeds expenses, that is, the bank is not unprofitable.

The organization of work of a commercial bank with overdue debt deserves special attention. The creditor has the right to provide a deferment and restructure credit flows. However, it is necessary to take into account the understanding of when and under what conditions the fulfillment of obligations will be successful. For a commercial bank, the emergence of risk situations and the manifestation of risk on a loan is dangerous. A risk factor may be direct deception on the part of the client: false certificates and unreliable documents may be presented.

A number of circumstances may interrupt the time period of the credit transaction:

- failure to take preventive measures to eliminate risk factors at the stage prior to credit transactions;
- costs when planning income and expected losses in the lending system;
- lack of a systematic approach to assessing and identifying credit risks;
- insufficient consideration of the importance of individual elements of credit risk or the establishment of limits on them;
- insufficient structuring of credit transactions;
- lack of sufficient controllability of collateral for credit transactions in financial markets;
- lack of constant monitoring of the progress of business processes of a credit transaction and insufficient control of the level of credit risk;
- unsystematic use of powers when implementing credit transactions and especially in conditions of high credit risk;
- creation of insufficient reserves to compensate for losses.

Of all the problems mentioned above in the implementation of credit transactions, the greatest difficulties are caused by the process of forming a loan portfolio from the «risk – profitability» position. The founder of portfolio theory, Harry Markowitz, defined profitability as the sum of the returns of individual assets, weighted by their specific share in the value structure. Based on these characteristics, the professor

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<sup>1</sup> Об утверждении Инструкции о порядке предоставления денежных средств в форме кредита и их возврата (погашения) : постановление Правления Национального Банка Респ. Беларусь, 26 дек. 2023 г., № 488 // Национальный правовой Интернет-портал Респ. Беларусь. URL: <https://pravo.by/document/?guid=3961&p0=B22440952> (дата обращения: 15.02.2024)

formed the concept of an optimal portfolio in which it is impossible to increase profitability without increasing the level of risk, or reduce risk without reducing profitability. To construct such a portfolio, Markowitz proposed the mean variance optimization method. Having set the expected parameters of profitability, volatility, and correlation for assets, he calculated the optimal portfolio structure [9].

Markowitz's model is impeccable from a mathematical point of view. However, when using it, it is impossible to assess the optimal portfolio structure for future growth. Therefore, the CAPM model (Capital Asset Pricing Model) [10], which evaluates the relationship between expected return on investment and risk. In Belarus, the construction of a Markov decision-making matrix has become widely used in creating an optimal debt structure for bank borrowers [8].

The study showed that credit risk assessments in Belarus and China are carried out as a whole for the bank and for individual loan portfolios, as well as in the context of individual credit risks of individual counterparties and groups of counterparties, countries, geographic regions, industries, business lines.

Taking into account the strategic priority of working with borrowers and expanding the client base, lenders publish information on their compliance with safe operation standards (Table 3).

Table 3

**Standards for the safe operation of Belarusbank,  
established by the National Bank of Belarus as of 01.07. 2021 (case in point)**

Name of the standard	Fact as of 07/01/2021	Minimum and maximum values	Standard size. established by the NBRB
Regulatory capital (million rubles)	3765.5	–	Minimum value 54.35
Leverage, %	10.7	–	$\geq 3$
Tier 1 fixed capital adequacy, %	13,198	–	$\geq 4.5$ (7, 125)
Tier I fixed capital adequacy, %	13,865	–	$\geq 6$
Regulatory capital adequacy	16.86	–	$\geq 10$ (11,875)
Liquidity Coverage Ratio (LCR), %	151.5	113.6–156.8	$\geq 100$
Net stable funding ratio ( NSFR ), %	118.8	118.2–120.6	$\geq 100$
Total amount of major risks	2		No more than six times the bank's regulatory capital
Total amount of risks of insiders – individuals and legal entities related to them, %	11.2		No more than 50% of the bank's regulatory capital

S o u r c e : author's developed on the basis of research.

The presented fragmentary example of a lender's work (Table 3) with potential borrowers is important to expand and deepen in commercial banks in Belarus and China. At the same time, special attention must be paid to their industry characteristics, the nature of their ownership, taking into account a number of financial and corporate governance variables, the proportion of non-performing loans, excessive lending to high-risk business areas, as well as those burdened with other local or national tasks.

### Conclusions

1. Credit operations must ensure the profitability of banking business rates. Through effective lending transactions, commercial banks focus their activities on obtaining added value and generate a significant amount of net profit.

2. The organization of effective decisions on the credit work of the lender should be closely related to the formation of a high-quality loan portfolio and its clear management.

3. Overdue debt of borrowers to a commercial bank should be considered when analyzing the loan portfolio with the corresponding types of credit risk for the repayment of borrowed funds. In particular, it is important to determine the degree of riskiness of a loan portfolio by the degree of its security, characterized by the presence of a balance of debt under a credit transaction carried out with clients with an unfavorable credit history. In this case, borrowers must be distributed into groups taking into account a number of criteria, the main of which is income.

4. The credit risk management system must include planned actions to ensure a safe lending system, including plans for restoring the normal implementation of the loan portfolio under various risk / return scenarios.

5. It is important to use in lending practice the complex indicator developed by the authors for assessing the quality of the loan portfolio, which allows you to convert the values of its main indicators into points and can be used to assess the quality of the loan portfolios of several commercial banks. The advantage of this methodological approach is that it takes into account the main assessments of the quality of the loan portfolio (profitability, credit risk, liquidity of assets).

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