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# Credit Organization Risk Assessment Technology

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***Abstract:*** ***Credit, market, operational, interest rate, currency risk of credit organizations, liquidity risk, legal regulation of such risks have been analyzed in the study. A risk assessment mechanism has been developed, which includes the following steps: assessing the reliability of financial statements, assessing the value of own funds (capital) of credit organizations, analyzing the financial condition of an investor, and assessing the value of assets. The problems of analyzing banking risks at each stage have been identified. A practical implementation of the developed methodology for analyzing the bank's risks has been carried out, which allowed the use of "adjustment schemes" by credit organizations. The most dangerous are the schemes for artificially "inflating" the capital base of credit organizations, overstating the quality of assets, and formally reducing the risks taken. The proposed methodology has been recommended to be used to improve the risk management system of credit organizations.***

***Key words: credit organization, investments, credit, interest rate risk, market risk, liquidity risk, bad practice, economically unjustified operations, adjustment schemes***.

## I. INTRODUCTION

Risk is a possible event, unexpected or expected, which could have a negative impact on the capital and (or) profit of a credit organization. The basic principle that should guide any credit organization in its lending activities is to maximize profits while minimizing risks.

The relevance of the chosen topic is explained by the fact that risk management should be carried out in such a way as to simultaneously reduce the existing risks and achieve the greatest return while adhering to all the requirements of the Bank of Russia. In order to do this, the bank should be armed with risk assessment methods, timely and reliably identify risk, as well as methods of regulation, due to which the bank has the ability to maintain risks at an acceptable level.

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The objective of this study is to analyze the methodology for assessing the risk of credit organizations and to develop recommendations for its enhancement. In accordance with the objective, the tasks are to study the following issues: the regulatory and legal framework for analyzing the risks of a credit organization; evaluation of the reliability criteria of financial statements; a study of the borrower's credit risk assessment models; assessment of key banking risks; assessment of the quality of management of a credit organization; improvement of the credit risk assessment mechanism.

## II. LITERATURE REVIEW

The theoretical and methodological basis of the study included normative and legislative acts, scientific, educational and methodological literature of domestic and foreign authors in the field of bank risk analysis and banking, as well as scientific and practical research of Russian and foreign banks on the evaluation of banking risks and creditworthiness of credit organizations borrowers, internal documents assessing the credit risk of banks (1,2,3,5). Most of the authors (Lavrushin O.I., Valentseva N.I., Lobanov A.A., Chugunov A.V., Beloglazova G.N., Korobova G.G.) introduce the concepts of credit, currency, interest rate, market, operational banking risks (4,6). The analysis of the literature substantiates the need to develop a comprehensive mechanism for assessing the main banking risks and the quality of management of credit organization under the conditions of digitalization.

## III. MATERIALS AND METHODS.

In the practice of banks operation, the analysis of banking risks is of great importance. Banking risk is the probability inherent to the banking activity of a credit organization's loss, loss or deterioration of liquidity due to adverse conditions or events related to internal factors (complexity of the organizational structure, organizational changes, qualifications of employees, staff turnover) and external factors (change in economic conditions of a credit organization, technologies applied (7,16).

External risks include risks that are not related to the activities of a bank or a specific client, political, economic, and others. These are losses and damages arising from the outbreak of a revolution, war, nationalization, a ban on payments abroad, debt consolidation, the introduction of an embargo, the aggravation of the economic crisis in the country, the abolition of import licenses, natural disasters.

Internal risks of the bank fall into risks in the core and auxiliary activities of the bank. The first group usually includes the risks arising from the implementation of various banking operations: credit risk, risk on settlement operations, deposit risk, etc.

The second group includes the risks arising from the implementation of off-balance-sheet operations by banks, as well as the risk of loss of bank reputation, risk of bank fraud, risk of lowering bank ratings, risk of losing bank positions in the market, etc. The peculiarity of the risks attributed to the second group is that they are expressed only in the opportunities for receiving income lost by the bank and do not have any quantitative assessment.

In practice, the main types of banking risks are the following: credit risk, market risk, interest rate risk, liquidity risk, currency risk (8,15).

Credit risk arising from the implementation of credit relations is central to the aggregate of all banking risks. Despite the widespread acceptance of credit risk, the existing multiplicity of its interpretations allows stating the absence of a unified theoretical concept of credit risk.

The approach reflected in the Basel Papers has also become widespread. Its essence lies in the fact that credit risk is defined as the risk of losses arising due to default, the lender or counterparty.

Credit risk is associated with financial resources management. It has specific features, the most important of which is that it is associated with the movement of credit, taking the form of a credit or a loan.

One of the essential characteristics of credit risk is non-compliance with the principle of credit recovery arising as a result of a break in the turnover of the loaned value.

Currency risk is the hazard of currency (exchange rate) losses associated with changes in foreign currencies rates against the national currency. This type of risk, caused by the instability of currencies, manifested itself especially in the Western economy in the 70-80s, especially during the transition to floating exchange rates. Currency risk is especially high for those banks that seek speculative income and arises from the mismatch of the rates of the same currencies in different currency markets or the difference in the exchange rate at different points in time (9,14).

Market risk is closely related to interest rate and currency risks. Market risk means possible losses, unforeseen expenses from changes in the market value of assets or liabilities, changes in the liquidity degree. Securities are particularly prone to this kind of risk. Market value is formed by the ratio of supply and demand, that is, it is quoted. The quotation of securities can also be affected by fluctuations in the rate of loan interest (an increase in interest rates leads to depreciation of securities), changes in the profitability and financial well-being of issuing companies, and inflationary depreciation.

Interest rate risk is the opportunity to incur losses due to adverse unforeseen changes in interest rates for the bank and a significant reduction in margin, reducing it to zero or to a negative indicator. Interest rate risk arises in cases when rates on active and passive operations are set in various ways (fixed rates versus floating and vice versa) or when the terms for the return of the borrowed funds do not coincide.

Risk of unbalanced liquidity is the risk of losses in the event of a bank's inability to cover its liabilities under liabilities with assets. Minimization of this risk is achieved by the ability to predict the possibility of the outflow of "unreliable" short-term deposits, as well as call deposits; increase in demand for credit from the clientele; changing economic conditions and so on.

The study has developed **a mechanism for assessing the totality of risks of a credit organization**, including the following steps:

*1st stage. Assessing the reliability of financial statements*

Criteria for the unreliability of statements are presented in many regulatory acts of the Bank of Russia. For example, according to Bank of the Russia Ordinance No. 2851-У dated July 16, 2012 On the Rules for Preparing and Submitting Reporting by Credit Institutions to the Central Bank of the Russian Federation (hereinafter referred to as Ordinance No. 2851-У), statements containing incorrect data as a result of a violation of the established procedure are recognized as unreliable accounting and (or) reporting, incl. unreliable information about the financial condition and property status of the credit organization (10,13).

In the Ordinance of the Bank of Russia No. 4336-У, dated April 3, 2017 On Assessing the Economic Situation of Banks (hereinafter referred to as the Ordinance 4336-У), unreliability of accounting (reporting) means such a violation (unreliability), the elimination of which leads to such a change in the value of at least one indicator from the groups of indicators for assessing capital, assets, profitability and liquidity, at which the generalizing result for the group is assigned a rating of “unsatisfactory”, and (or) non-compliance with at least one of the mandatory standards.

According to the Ordinance of the Bank of Russia No. 2293-У, dated September 17, 2009 On the Procedure for Revoking from a Credit Organization of a Banking License upon Establishing Significant Unreliability of Reporting Data (hereinafter referred to as the Ordinance 2293-У), facts of material unreliability of statements data are considered established if the statements submitted by the credit organization to the Bank of Russia, among other contains the following information:

- on reserves for possible losses on loans, loan and similar debts and (or) other losses in a different amount than established by the Bank of Russia, if the reflection of the credit organization in the statements of reserves in the amount established by the Bank of Russia, will be indicating a violation of mandatory standards and (or) the emergence of grounds for the implementation of measures to prevent insolvency (bankruptcy), and (or) revocation of a license for banking operations;
- on compliance by a credit organization with mandatory standards, while the Bank of Russia has established facts of non-compliance with mandatory standards;
- on the different amount of the required reserves to be deposited with the Bank of Russia calculated by the credit organization than established by regulatory acts of the Bank of Russia (1,12).

Despite certain differences, all the above definitions are similar in terms that reporting should give a qualified user the opportunity to form a correct picture of the financial condition of the entity that composed it.When analyzing and evaluating the accounting and reporting of a credit organization, it is necessary, first of all, to study the economic nature of the operations of a credit organization, basing on the principle of priority of the economic content of operations (transactions) over their legal form. At the same time, the legal form of operations (transactions) should not be ignored. It is necessary to consider operations and transactions concluded by a credit organization for the actuality of intentions to create economic consequences and benefits. It should be borne in mind that for various reasons, operations (transactions) carried out without such intentions are very widespread, i.e. various types of "feigned" (nominal, imaginary, fictitious) transactions.

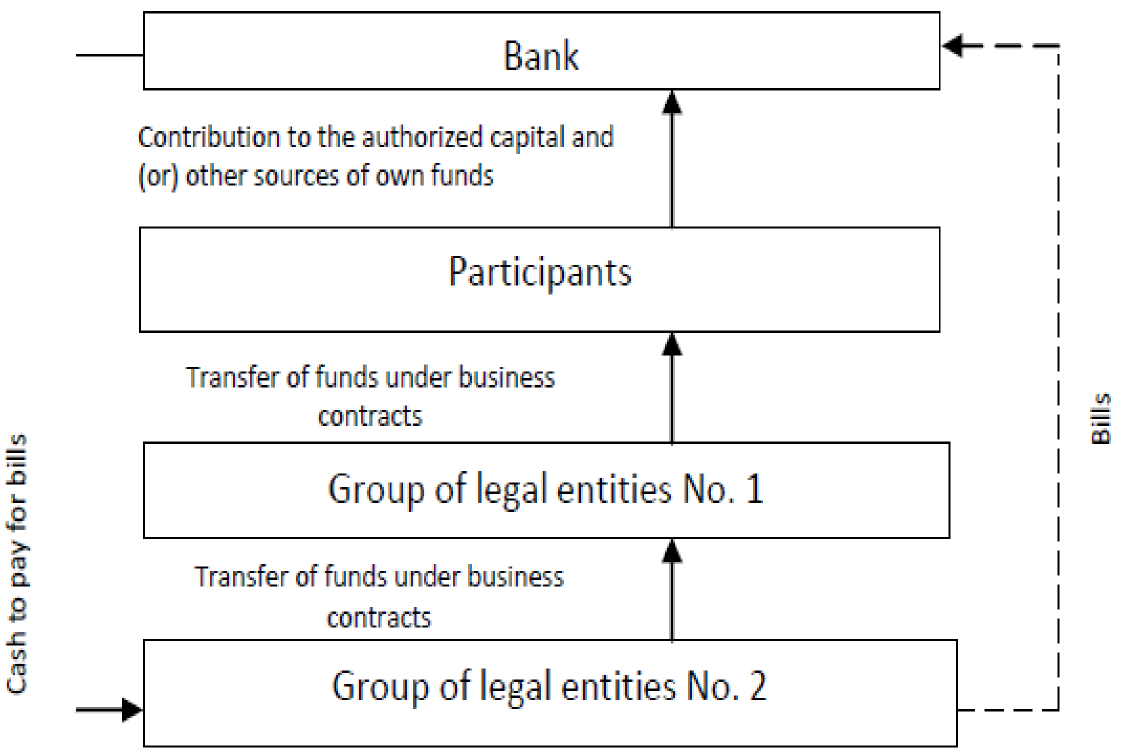
*2d stage. Assessment of the amount of own funds (capital) of credit organizations.*

The work on assessing the amount of own funds (capital) is carried out in accordance with the Regulation of the Bank of Russia dated July 4, 2018 No. 646-П On the Methodology for Determining Own Funds (Capital) of Credit Organizations" (BAZEL III) (hereinafter Regulation No. 646-П) and involves the identification during the ongoing surveillance, including based on the results of inspection checks, of facts (signs) of overstatement in the accounts of credit organizations of own funds (capital) in comparison with its actual (fair) value (2,11).

In the process of assessing the value of own funds (capital), it is recommended to analyze the movement of cash (property) from the investor to the bank (payment of the authorized capital, source of generation of additional paid-in capital). For this, as well as for other situations, where possible, it is advisable to draw up diagrams illustrating the movement of cash (property).

The most common schemes for paying authorized capital (generation of additional paid-in capital) are summarized in Figure 1.

Scheme 1




There are also frequent cases when investors use more complex schemes for channeling funds to pay the authorized capital (generation of additional paid-in capital) of a credit organization using:

a) bills, stocks, bonds and other financial instruments that are repeatedly resold within a certain circle of people, often with an unknown reputation as instruments for settlements;

b) rent paid at any one time under a building (bank premises) lease agreement concluded with a credit organization. At the same time, on the date of the transaction, the lessor may not have any other funds in the account except for the rental payment received in advance.

For example, a credit organization, in accordance with a lease agreement, makes a lump-sum advance payment and reflects this payment in accounts for income and expenses of future periods. Funds received from a credit organization as an advance rent payment were directed by the lessee (directly or through third parties) as a contribution to the charter capital of this credit organization and/or to increase other sources of own funds (capital) of the credit organization. At the same time, credit organizations purchased his own bills from the lessor for the amount of the rent payment received in advance by the lessor. Subsequently, such bills can be redeemed by third parties (13,14);

c) "friendly" counterparty banks, i.e. banks whose managers (participants (shareholders)) may be in trusting, friendly relations, as well as being permanent partners of a credit organization in operations with foreign currency, securities, and operations in the interbank market. Moreover, such banks may not conform to the generally accepted concept of "related parties", as well as IAS 24 Disclosure of Information about Related Parties.

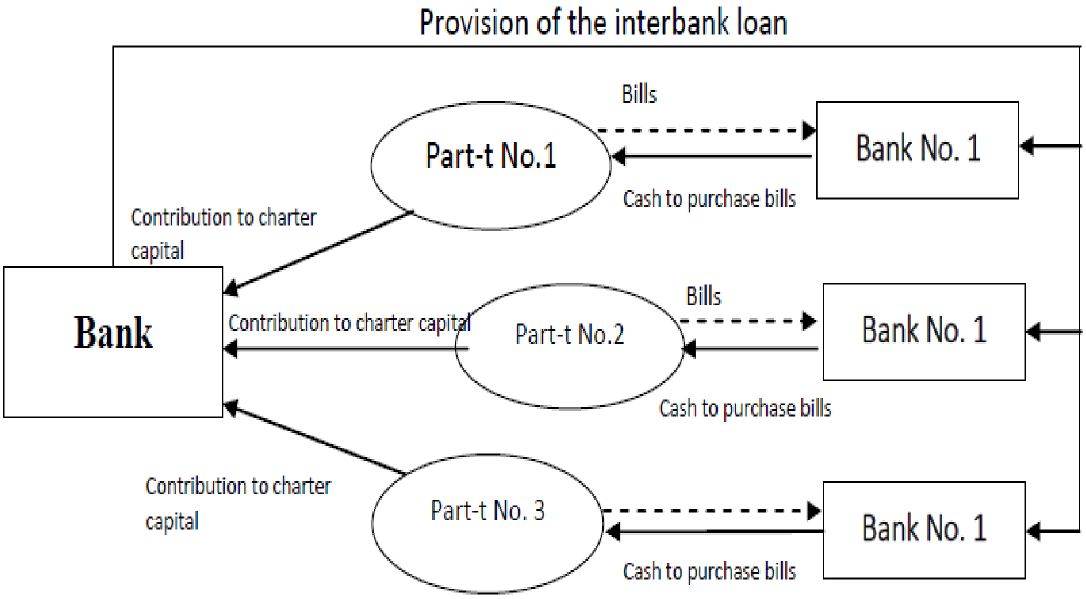
So, for example, when paying authorized capital, funds may be:

➢ provided by the credit organization itself by issuing an interbank loan to a counterparty credit organization, reflecting its bills or bills of third parties in the portfolio of the counterparty credit organization, maintaining the minimum balance of funds in the Nostro correspondent account opened with this counterparty credit organization and etc. (Scheme 2);

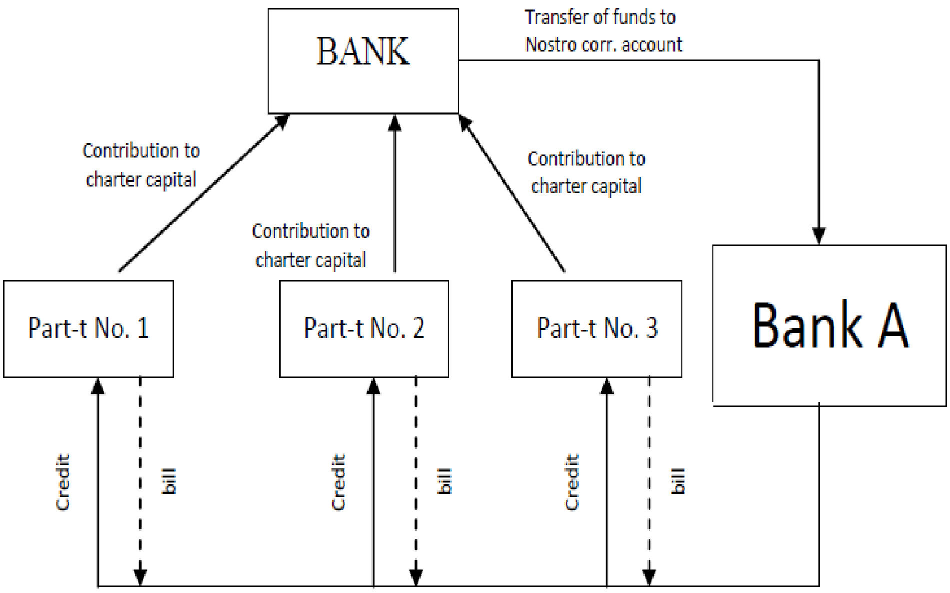
➢ transferred from the accounts of participants opened with a counterparty credit organization (Scheme 3).

In these cases, in order to confirm such facts, an inspection is required at the counterparty credit organization.

*Scheme 2 Provision of the interbank loan*




*Scheme 3*




*3d stage. Analysis of the financial condition of the investor*

Assessment of the financial condition of the investor is carried out in accordance with Bank of Russia Regulation No. 626-П dated December 28, 2017 On the Assessment of the Financial Condition, on the Requirements for the Financial Condition and on the Grounds for Recognizing the Financial Condition of the Founders (Participants) of the Credit Organization and Other Persons Failing.

In this case, special attention should be paid to the scope of activities of the investor, the reality of doing business by him, the investor's sufficiency of his own funds not only for making investments, but also for running his own business.
An obvious sign that the investor is not conducting real activities is the structure of his balance sheet. For instance, the passive part of the balance sheet consists mainly of the "Authorized capital" item, and net assets are comparable in size with the amount of funds invested in the bank. As practice shows, redemption of shares initially paid without using inappropriate assets by third parties at the expense of loans provided by the bank is quite widespread (4, 15).
When analyzing the activities of a new shareholder, it is essential to clarify whether there is a real interest on the part of the primary shareholder (participant) in owning shares. The lack of real interest allows us to assume with a high degree of probability that the transaction in the secondary market is part of a scheme that could be qualified as the formation of sources of own funds of a credit organization with inappropriate assets. Clarification of the situation may be facilitated by the study of possible connections (including through third parties) of the "primary" and "secondary" shareholders (participants) between themselves and with a credit organization.
One of the signs of transactions for the formation of the authorized capital using investors with improper assets in the secondary market is the insignificant time interval between the formation of the authorized capital (its primary payment) and the sale of shares in the secondary market.
In order to make sure that the quality of assets has not been improved only temporarily and does not have the nature of manipulation, you need to know the history of asset portfolios, the nature, and causes of their changes.
For instance, a credit organization may exchange assets with counterparties for a certain period of time, including with persons affiliated with a credit organization in such a way that really high-quality assets will temporarily appear on its balance sheet and low-quality assets will be transferred to the counterparties balance.
The write-off from the balance sheet of a credit organization of low-quality assets should be verified for the fairness (fair nature) of the relevant transactions, including their economic feasibility for both parties to the transaction. The lack of information necessary to analyze the fairness of the transaction requires consideration of the condition of the assets for a sufficiently long period of time (at least a year). The absence of assets of any significant size on the balance sheet during this period, the quality assessment of which is doubtful, can be regarded as evidence in favor of a real replacement of assets and a solution to the problem of generating sources of own funds with inappropriate assets.
When analyzing a bank's assets, particular attention should be paid to:
a) loan indebtedness of legal entities and individuals who directly or indirectly participated in the payment of the authorized capital (additional paid-in capital), carefully tracing the history of its occurrence and the direction of the use of the funds received for the loan.
For instance, in cases where a loan is provided for the purchase of securities of any of the direct or indirect participants to the scheme for generating sources of own funds. When assessing the quality of such a loan, it is necessary to determine the actual purpose of the loan, the availability of real sources of repayment by the borrower within the terms established by the agreement.
b) the securities of its investors reflected in the balance sheet of a credit organization.
At the same time, it is necessary to analyze the economic feasibility for the credit organization to keep these securities in its portfolio, and also to determine whether the issuer of the security has sources of funds for fulfilling obligations under them and if there are signs characterizing the issuer's lack of intention to fulfill obligations under them or grounds to believe that such intentions may arise (for example, the existence of objective financial restrictions on raising funds for the repurchase of securities arising from the nature and scale of business).
a) revenue generation transactions.
For these purposes, all transactions related to the formation of material amounts of revenues are analyzed, their conditions are carefully studied, including the timing of their conduct, the availability of economic feasibility of the transaction is determined both by the credit organization and the counterparty, as well as the availability with the latter of funds necessary for the transaction. If the above conditions (including at least one of them) are not fulfilled, income should be recognized as having signs of being formed using inappropriate assets and work should be carried out with a credit organization as provided for in the Ordinance No. 1656 - У.
b) "hidden" transaction for the acquisition of fixed assets.
When acquiring fixed assets (property) in amounts exceeding the available sources of own funds, in order to avoid reducing the size of own funds (capital), credit organizations often resort to providing loans to related legal entities, through which the latter acquire fixed assets for it, which it subsequently rents. For this purpose, the principle "the content of the transaction is more important than the legal form" should be applied, the terms of the lease agreement (size, frequency of payments, compliance with market conditions) should be analyzed and, if necessary, a request to the credit organization for the adjustment of own equity (capital) shall be initiated.

*4th stage. Valuation of assets (on the example of loan indebtedness)*

In assessing the value of assets, one should rely on an analysis of the economic nature of banking transaction and, in addition to following the principle of priority of economic content over the legal form, be guided by the principle of "value today is determined by the prospects for tomorrow". So, in accordance with Regulation No. 590-П, the quality of loans is determined, first of all, by the financial and economic situation of the borrower (counterparty) and its ability to service the debt in terms and in the volumes stipulated by the agreement on the basis of which the loan has been granted. The borrower must be engaged in meaningful economic activity that is capable of generating revenue and cash flows in volumes sufficient to service all its debt to all creditors (and not just to this particular credit organization, which is the subject of banking supervision).
At the same time, two main factors are of paramount importance for assessing the quality and fair value of a loan: the financial position of the borrower and the quality of servicing the debt under the loan in this and other credit organizations.

It is important to consider that good debt service yesterday and today does not guarantee good service tomorrow (5,16).

When assessing the quality of loans, it should be borne in mind that the foregoing applies only to credit transactions concluded by a credit organization with the aim of creating real economic consequences and benefits, for example: lending (including through the purchase of bills of exchange) to the production and trading activities of enterprises, entrepreneurs without establishment of legal entity, construction lending, consumer demand lending, etc.

Quite often, feigned credit transactions are accompanied by the signing of additional agreements between the parties, giving the borrower the right, at his discretion, not to pay interest on the loan or, conversely, to pay increased interest (these schemes are used to redistribute income between the bank and its affiliated organizations for the sake of "creative reporting")

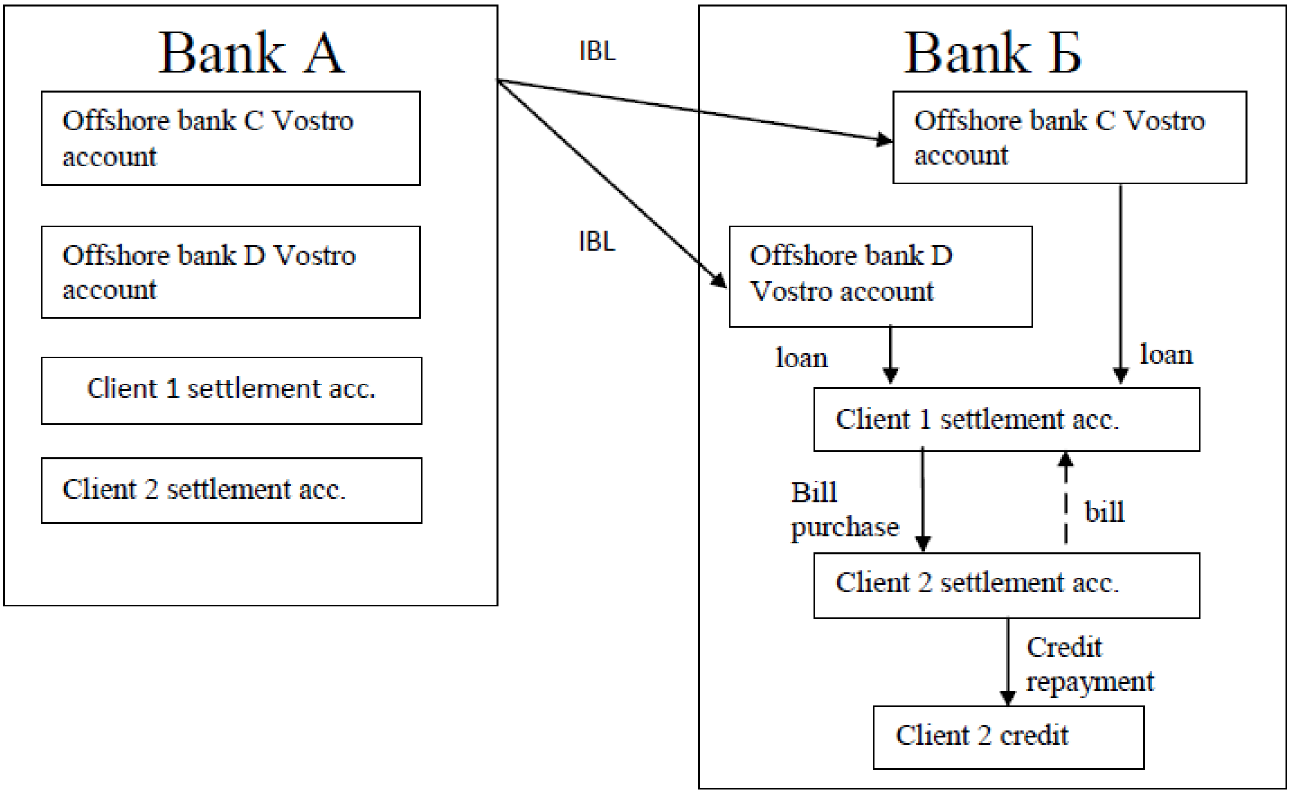
When assessing the value of loans, the question often arises of using available security. In resolving this issue, it is recommended to adhere to the conservative principle of "even good security does not make bad debt good." It is known from banking practice that if borrowers have financial difficulties and especially signs of insolvency and bankruptcy, the sale of collateral, which serves as security for loan debt, can be associated with certain operational difficulties and legal risks (the level of risk depends both on the type of security and on the degree of fairness of the borrower/lender). Therefore, a conservative approach to assessing the value of loans proceeds from the priority of the factor of assessing the financial situation and the fairness of the borrower over the factor of the security quality.

## IV. RESULTS

Practical implementation of the developed methodology for analyzing the bank's risks has allowed **revealing the use of "adjustment schemes" by credit organizations**. In order to conceal the true economic nature of transactions and deals, distortion of the real value of assets, liabilities, and own funds (capital), credit organizations often "resort" to the use of so-called "adjustment" schemes.

A and B, two credit organizations included in the group of persons, lend to one borrower (client 2), who is an affiliate towards them and who has settlement accounts in both credit organizations. At the same time, the borrower does not intend to repay the loan. In order to repay the debt by the borrower to credit organization B, credit organization A grants interbank loans to offshore banks C and D (that are also members of this banking group and maintain correspondent relations with both credit organizations) to their Vostro accounts in credit organization B. After that, offshore banks issue a loan to client 1, oat the expense of which the bill of client 2 is purchased last, which repays its credit to credit organization B at the expense of the received funds. This example is shown in Scheme 4.

*Scheme 4*




As a result of such and similar operations, credit organizations can maintain a portfolio of so-called "evergreen" loans (regularly renewable loans, or loans that are constantly in the portfolio of a credit organization) for a long time. A credit organization can refinance this portfolio until the size of the "healthy" part of its assets is sufficient for timely fulfillment of obligations to creditors and depositors, and the credit organization's reputation in the market allows it to attract a sufficient amount of funds.

## V. DISCUSSION

In the process of identifying adjustment schemes, it is necessary to verify the following:

- ✓ the reasonableness of decision taken by the authorized governing bodies of the credit organizations in accordance with clause 3.10 of Regulation No. 590-П in the process of debt restructuring (refinancing);
- ✓ compliance with the requirements of clause 4.4 of Regulation No. 590-П during the sale of financial assets, including loans with deferred payment;
- ✓ recommendations of the letter of the Bank of Russia dated 04.09.2009 No. 106-T "On the specifics of risk assessment of banks in relation to investments in shares of closed mutual investment funds" when implementing programs for managing overdue (problem) debt through the transfer of rights (claims) for overdue (problem) loans and assets (property) of closed mutual investment funds.

It should be noted that the deliberate misrepresentation of reporting by credit organizations is not a purely Russian phenomenon, but a global one. Nevertheless, due to specific historical reasons, the scale of falsification of statements by Russian credit organizations is significantly higher than the global average (including indicators of countries with developing and transitional economies).

## VI. CONCLUSION

The study has examined the credit, market, operational, interest rate, currency risks of credit institutions, liquidity risk, as well as law regulation of these risks. A risk assessment mechanism has been developed, which includes the following steps: assessing the reliability of financial statements, assessing the amount of own funds (capital) of credit organizations, analyzing the financial condition of an investor, assessing the value of assets. The problems of banking risk analysis at each stage have been identified. The main ones are: bad faith, banking transactions that do not have obvious economic meaning for the purpose of fraud, etc. Practical implementation of the developed methodology for analyzing bank risks has made it possible to identify the use of "adjustment schemes" by credit organizations. The above reporting misrepresentation schemes are not exhaustive, although they are among the most common in Russian banking practice. The most dangerous are schemes for artificial "inflation" of the capital base of credit organizations, overstating the quality of assets, and formally reducing accepted risks. It should be borne in mind that the use of any schemes, on the one hand, makes the situation in credit organizations not transparent, complicates the analysis of their financial situation, misleads market participants and regulatory authorities, and, on the other hand, exposes credit organizations to increased managerial, legal, and reputational risks.

## ACKNOWLEDGMENTS

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