Risk management of credit institutions as a factor of investment activity development

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Abstract. Bank risk can be described as a «special» type of risk reasonably. On the one hand, the risks of credit institutions are caused by the risks of activities of clients in different spheres of their activities. On the other hand, the crisis phenomena in the banking sector may be more significant and serious in terms of losses and the extent of spread, as they affect the financial interests and investment opportunities of many counterparties that are linked by monetary obligations. Assessment of market risks of credit institutions is a complex and complex task based on the application of various models taking into account international standards and Russian banking practice. The purpose of the work is to research the methodological and practical aspects of risk assessment of a credit institution. As a result, it is necessary to solve such basic tasks as: 1) to identify the essence and features of risk assessment of credit institutions, taking into account international standards to ensure their financial stability and development of investment activities; 2) to determine the most significant risks and methods of their management in the Russian banking practice; 3) to show the specifics of the process of integrated risk management at the level of a credit institution in modern conditions. In the scientific article it is proved that the need for an adequate assessment of risks and improving the quality of their management is an urgent task both at the level of «monetary authorities» and at the level of credit institutions for the development of investment activity. The paper studies the methods of risk assessment of credit institutions taking into account international standards and their practical application in risk management in Russian practice.

1.Introduction

In the context of economic instability investment risks are increasing which complicates the forecasting of investment processes in the regions of the country. On the one hand, there is a positive trend in the volume of capital investments in Russia, namely, almost 2 times there was an increase in investment volumes for the period from 2010 to 2016.

The increase in the volume of loans to the real sector in January-April 2018 amounted to more than 1600 billion rubles which is 2 times more than in the fourth quarter of 2017 [1].

On the other hand, there is still a «gap between regions with minimum and maximum levels of investment risk» In particular, the share of regions with a drop in investment at the end of 2018 was about 40%. This is due to the cyclical nature of economic development, the volatility of the situation on the export-import markets, the decline in household incomes and the fall in consumer demand. According to the static data, in 2017 the population’s income decreased by 1.7%, in 2016 – 5.8%, in 2015 – 3.2%, in 2014 – 0.7%, only in 2018 there was a slight increase (about 1.5%) year-on-year. The share of long-term financial investments in the total volume of investments is about 11%. The coefficient of
renewal of fixed assets (3.7%) and commissioning of buildings (278.3 thousand units) remain stable at a low level [1].

At the same time, in the top ten leading regions in the rating on investment potential, only 7 regions of Russia are experiencing a reduction or stabilization of risks. This is due to the fact that in recent years the investment activity of the Russian regions has been influenced by such components of the investment picture as financial (7.25%), economic (4.6%), managerial (3.1%), criminal (2.8%) and social (1.9%) risks [2].

The quality of the credit portfolio of the banking sector provided to non-financial organizations is characterized by a high share of loans of IV and V quality categories (12.4%). In 2018 the downward trend in interest rates stopped, however, with an increase in the value of long-term assets and short-term liabilities in the structure of assets and liabilities of banks gradually planned dis-balance on the maturity of assets and liabilities of credit institutions which increases the interest rate risks [3].

Despite the high investment risks, for the implementation of the strategy of innovative development of Russia the increase of investments in terms of volumes and terms [4]. The need to manage the risks of credit institutions is dictated by the regulator’s desire to support investment opportunities and at the same time to ensure the financial stability of credit institutions by reducing risks in the context of macroeconomical instability.

2.Materials and Methods

The issues of cyclical economic development in the market and their impact on investment activity were studied in the works of well-known economists [5,6]. Consideration of investment risks in the context of modern conditions, many authors are inextricably linked with the introduction of innovation and lending to investment projects [7, 8].

Sufficient attention has always been paid to the study of the risks of credit institutions in the economic literature and regulatory documents on the regulation of banking activities. Initially, the essence of bank risks was considered in terms of the causes of their occurrence.

In banking, credit risk plays a key role, as a risk inherent in traditional banking operations, so its consideration is devoted to the work of many authors. For example, Bernard I. V. and Collie J. K. interpret credit risks as «unforeseen circumstances that may arise before the end of repayment of the loan» [9]. Ong M. K. believes that credit risk is «the risk of exposure to losses if the counterparty does not fulfill its obligations in due time» [10].

In the documents of the Basel Committee on banking supervision credit risk is interpreted as «the risk of non-fulfillment of obligations by the counterparty» [11].

The requirements of the Basel Committee on banking supervision (Basel I, Basel II, Basel III) contain methodological aspects of the calculation of key indicators for risk assessment and other recommendations to credit institutions to improve their financial stability (table 1).

| The purpose of introducing indicators | Indicators |
|--------------------------------------|------------|
| Improving the financial stability of credit institutions (Basel I, 1988) | – capital adequacy ratio (ratio of capital to risk-weighted assets of the credit institution). |
| Improving the efficiency of risk management of credit institutions (Basel II, 2004) | – minimum capital requirements for credit, market and operational risks; |
| – calculation of risks on the basis of two approaches: standardized and IRB (Internal Rated Based Approach). |
| Minimizing the negative impact of market conditions on the world | – short-term liquidity ratios (LCR) (ratio of liquid assets to «net cash flow» (liabilities) of the credit institution); |
banking system (Basel III, 2010).) – net stable funding ratio (NSFR) (ratio of available stable funding sources to required funding).

They form the basis of national legislation on banking regulation and supervision in many countries. In our opinion, the most significant provisions of international standards in the field of risk assessment and management of credit institutions which are partially or fully applied in the Russian banking practice, are:

- limiting credit risks by introducing a capital adequacy ratio weighted by the risk and asset quality of credit institutions [12];
- management of market risks of credit institutions through the establishment of minimum capital requirements for credit, market and operational risks, as well as risk assessment based on the division of the portfolio into categories and types of risks depending on the financial instruments or the model taking into account the risk measure [13];
- smoothing the negative effects of economic cycles through assessing the sustainability of credit institutions and optimizing financing in the case of «outflow» of attracted bank resources in crises [14].

The risk management system entered the Russian practice in the 90’s. At the same time, credit organizations carefully and very effectively use this management system in the practice of their activity now.

3. Results

For the purposes of risk assessment and management of the credit institution carried out their classification on the substantial (credit risk, liquidity risk, market risk, operational risk) and minor risk (tax risk, risk of changes in legislation, etc.), determine the most appropriate methods for managing each of them. Table 2 shows the methods of management of significant risks of credit institutions.

| Kind of risk | Methods of risk management |
|-------------|-----------------------------|
| credit risk | – warning of risk by identification, analysis and assessment of potential risks to operations; |
|             | – risk level planning and calculation of expected losses; |
|             | – standardization of risk assessment and identification; |
|             | – limiting risk by setting limits; |
|             | – formation of reserves to cover possible loan losses; |
|             | – structuring and managing collateral for transactions; |
|             | – delegation of authority in decision-making; |
|             | – risk monitoring and control; |
|             | – audit of credit risk management system. |
| liquidity risk | – evaluation of a sufficient level of funds; |
| market risk | – separation of functions (execution and recording of transactions in the financial markets, risk management), along the lines of «independent» subordination (as the administrative, and functional) with the aim of eliminating conflict of interest; |
|             | – delegation of responsibility for the allocation of «risk appetite» by units, participants, etc.; |
|             | – collective decision-making on market risk management with the participation of units responsible for operations in financial markets and units responsible for market risk management (including control of market risk). |
| operational risk | – identification and assessment of operational risk; |
– analysis of problem areas, development and decision-making to optimize processes to reduce risks;
– monitoring, control and reduction of operational risk;
– control and reduction of operational risk.

Each credit institution independently establishes the mechanism for risk management using a common and individual approaches to the analysis of risks of all kinds. For example, in domestic banking practice a standardized model of market risk assessment is used which is based on a three-step algorithm according to Basel II (figure 1).

**Figure 1. Algorithm of estimation of market risk using the standardized model.**

At the first stage of market risk assessment all financial instruments are divided into categories which in turn are divided into classes by types of risks (credit, interest, currency, commodity, stock). All types of categories are determined by regulators.

The calculation of the required amount of capital to «cover» market risk for each category of financial instruments is made according to the formula:

\[
K_b = \sqrt{\sum_{i=1}^{l} RW_i^2 MV_i^2 + \sum_{i \neq j}^{l} \rho_{ij} RW_i MV_i RW_j MV_j}, \tag{1}
\]

where
- \(i=1, 2, 3\ldots, l\) – ordinal number of instruments included in this category;
- \(MV_i\) – current market value of the instrument;
- \(RW_i\) – instrument risk weight as determined by the regulatory body;
- \(\rho_{ij}\) – indicator of correlation between changes in the value of instruments \(i\) and \(j\).

The aggregate amount of capital required to cover market risk for all categories of financial instruments of a credit institution is calculated according to the formula:

\[
\text{capital} = \sqrt{\sum_{b=1}^{B} K_b^2 + \sum_{b=1}^{B} \sum_{c \neq b}^{B} \gamma_{bc} S_b S_c}, \tag{2}
\]

where
- \(B\) – number of categories into which the portfolio was divided;
- \(S_b = \sum_{i \in b} RW_i MV_i\) – amount for all financial instruments in this category;
- \(\gamma_{bc}\) – correlation between categories of financial instruments as determined by the regulator.
4. Findings

Credit institutions as financial intermediaries accumulate savings of some economic agents and redistribute them in the form of investments in the securities market, the credit market to other business entities, thereby having a direct impact on the development of investment activities. Cyclical development of economic systems generates increased risks, and the risks of the banking sector create a multiplier effect.

Russian banks usually use the decision-making algorithm based on integrated management for all significant risks (figure 2).

![Figure 2. Algorithm of integrated risk management in a credit institution.](image-url)

Thus, this algorithm is based on the following provisions:
- identification of significant and insignificant types of risks;
- determination of the maximum level of aggregate risk («risk appetite») taking into account acceptable profitability indicators.

In turn, the credit institution establishes a system of estimates to determine the «appetite» for risk, taking into account the requirements of the Bank of Russia and regulators of the countries of «presence»:
- key «risk indicators» (target rating, capital adequacy, loan portfolio quality and liquidity);
- limits of economic capital in business areas and types of risk;
- other indicators.

Other indicators include the formation of «risk culture» in the credit institution. This process is implemented through a personal example of management, installation of «risk-prudent behavior» and training of personnel. This practice is already widespread in the systemically important credit institutions, for example, Sberbank in 2017 under the programme risk management has trained about 80% of the employees of its group, VTB bank – about 50%.
5. Discussion

In order to manage risks, credit institutions identify the most significant types of risks (credit and market risks, liquidity risk, operational risk) and develop assessment models that have specific features in modern Russian conditions:

First of all, the creditworthiness of corporate borrowers is usually assessed on the basis of the rating method and the expert evaluation method (for forecasting «cash flows» and other existing indicators). Scoring models are used to determine the solvency of individuals and small businesses. Individual «risk strategies» built on the basis of mathematical models and with the use of software products for the calculation of proposals for debt restructuring are actively used to develop an algorithm for the management of problem debt.

Secondly, the VaR (Value-at-Risk) model recommended by the Basel Committee on banking supervision is used to determine market risk. For this purpose, the maximum losses during a given period of time are estimated with a given probability (level of «trust») in the «normal» market to minimize the systemic crisis or negative trends in the economy and the banking sector.

In the process of operational risk management a key role is played by the analysis of possible losses that arise, as a rule, due to problems in the organization of business processes and internal control.

In the process of liquidity risk management the following should be assessed:

- first of all, the risk of «physical» liquidity (the risk of a credit institution failing to fulfill its obligations to customers or counterparties due to insufficient funds and inability to make payments);
- secondly, the risk of «normative» liquidity, in particular, violation of mandatory liquidity ratios of the Bank of Russia;
- thirdly, the risk of «structural» liquidity, namely, a significant deterioration in «physical» or «regulatory» liquidity due to an imbalance in the structure of claims (assets) and liabilities (liabilities).

In order to improve the quality of liquidity risk assessment, credit institutions may additionally determine:

- the value of the «liquidity buffer», that is, the maximum number of days during which the bank will be able to fulfill its obligations in the event of the «stress scenario»;
- loans to deposits ratio – Loan to Deposit Ratio (LDR);
- standard of short-term liquidity of the banking group [13].

6. Conclusion

The effectiveness of risk management of a credit institution is to choose the best methods of minimization and risk management and is of practical importance for solving strategic problems in the field of investment development of the country, reducing investment risks of business entities.

Generalizing the materials of the study we can focus on the main stages of the integrated risk management process of the credit institution:

- identification of risks affecting the activities of the credit institution and determination of their materiality;
- calculation of the target risk level by taking into account risk metrics in the business plan;
- establishment of the maximum permissible level of risks and formation of a system of limits and restrictions;
- compliance risk level and target values.

Risk management methods in credit institutions are constantly being improved, procedures, technologies and information systems are being improved taking into account strategic objectives, external and internal factors, requirements of international banking supervision standards. «Risk culture» complements the existing tools used for risk assessment and becomes an integral part of the integrated risk management system in the credit institution.
We believe that the minimization of investment risks in the formation of financial resources through evidence-based risk management of the credit institution contributes to the efficiency of investment activities and investment attractiveness of entities at different levels of economy.

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