The problems of investment activity of entrepreneurship and methodological aspects of credit risks assessment

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Abstract. The purpose of the scientific article is to identify the features of entrepreneurial activity in the conditions of economic instability and assessment of credit risks of the borrower in order to attract investment resources. The object of research is the entrepreneurial activity. The subject of research is the analysis and methods of credit risk minimization. The following tasks of the research are set to achieve the goal: 1) to identify the features, problems and trends in the development of entrepreneurship in Russia; 2) systematization of factors affecting the investment activity of small business; 3) definition of indicators for the analysis of credit risk of the borrower; 4) development of recommendations for credit risk management in a commercial bank in terms of providing investment resources in modern conditions. The conceptual positions revealing the essence of entrepreneurship and its characteristic features in the market conditions are analyzed. The authors prove the necessity of financial stimulation of entrepreneurial activity in the sphere of formation of investment resources at the expense of credit. The causes of critical risk in the conditions of market volatility and socio-political instability are determined. The process of credit risk management at the stage of credit issuance is considered. The possibilities of using different models of risk assessment in order to make a decision on the issuance of credit resources of investment nature for small business.

1. Introduction

An important factor in the state’s competitiveness is to increase the level of investment potential for the development of entrepreneurship in Russia. Recently, a key motive that stimulates the investment activity of Russian enterprises is the need to modernize the technical base (vehicles, complexes and technological installations) in order to increase the quality and, accordingly, the demand for domestic products.

The main reasons hindering the investment activity of economic entities in the regions of the country are the lack of own financial resources, uncertainty of the economic situation and inflation policy, a high percentage of commercial credit and the economic situation in the world markets [1], [10].

In Russian Federation entrepreneurship, operating in conditions of instability, has its own specific features that affect the formation of investment resources, namely:

- the high level of diversity of activities of small and medium-sized enterprises due to the need to search for sources of income;
- desire of businessmen to maximize independence;
high share of the «shadow» business sector (according to various estimates, from 30 to 50% of the real turnover of small business subjects are not involved in solving national problems);
low technological and management level of entrepreneurs.

2. Materials and Methods

The results of the assessment of trends in the development of entrepreneurship in the regions of Russia indicate that most of the existing entrepreneurs represented in the Russian Federation on 01.01.19. About 6041, 2 thousand legal entities and individual entrepreneurs considers the prospects for the functioning of small and medium-sized businesses limited [3], [11], [16].

According to entrepreneurs, the reasons of the cessation of business and problematic situations are, in the first place, lack of financial resources, the second place - highest tax rate, the third place - competition with the informal sector. In addition, the following obstacles faced by entrepreneurs are identified: the weakening of the ruble and inflation, the decline in demand for products, low access of personnel to the required skills of the labor market, tighter conditions and non-payment by buyers and others [4]. Entrepreneurs who failed to start their own business note that this is due primarily to factors such as the lack of initial capital and the necessary knowledge and skills (44.2% and 24.8 %, respectively), as well as 14% of respondents distinguish the complexity of the business registration procedure. The lack of own financial resources, state support, including in the form of preferential taxation for starting a business, leads to the spread of shadow business. In this regard, about 40 % of the surveyed persons noted the presence of entrepreneurs engaged in activities without registration or hiding real income from the tax authorities [13]. Thus, the main difficulties in the development of entrepreneurial activity in Russia are associated with the formation of investment sources of its financing. In turn, the problems of attracting credit resources for doing business depend on the specifics of entrepreneurship.

There are various concepts that reveal the essence of entrepreneurial activity in the foreign and domestic economic literature. Thus, Adam Smith gave impetus to the development of entrepreneurship, highlighting it both in terms of labor, sources of income and capital [2]. Dahl V. I. focused on innovative qualities, namely «entrepreneur» – «undertaken» anything, including new [15].

Weber M. characterizes entrepreneurial activity as «the embodiment of rationality – functional efficiency aimed at obtaining the maximum benefit from the use of invested funds and efforts» [7]. Joseph Schumpeter draws attention to the entrepreneur’s ability to «implement innovations» [6]. Cantillon R. defined risk as the main functional characteristic of entrepreneurial activity [8]. Investment risks were considered by Drucker P., Keynes J. M. [5], [12].

Entrepreneurial risk is «the risk of losses from entrepreneurial activity due to circumstances beyond the control of the entrepreneur, including the risk of non-receipt of expected income» in modern legal literature [14, article 929]. We agree with the opinion of experts that the most important signs of entrepreneurship are:
creativity in making innovative solutions for business;
incentives to introduce new modes of production and innovations;
the presence of high risk and responsibility [17].

Thus, the main task of risk management is to minimize them in the range that allows the current situation and the need to maintain the market position of the entrepreneur.

3. Results
Risk management is the main content of the bank’s work in the process of lending to business entities and covers all stages of this work from the initial consideration of the loan application to the completion of calculations and consideration of the resumption (continuation) of lending.

Each bank uses its own methods of credit risk analysis and assessment.

Credit risk may be due to a possible reduction in production or supply of services, as well as demand for products or services of a particular industry (market risk), non-compliance with contractual relations (marketing and legal risks), transformation of financial resources (financial risk) and force majeure.

From the point of view of a commercial bank, the process of credit risk analysis includes three stages, which it is usually guided by. We propose to consider credit risk as a set of financial, risk, market and regional risks, marketing risk, legal risk. The content of the credit risk analysis stages is presented in table 1.

Table 1. The main stages of risk analysis in the lending process.

| № | Stage                        | Content of the risks analysis                                      |
|---|------------------------------|--------------------------------------------------------------------|
| 1 | Preliminary risk analysis    | - the financial risk (analysis of financial and economic indicators of the borrower (profitability, solvency, probability of bankruptcy); - the market risk (analysis of the economic situation in the industry, region, market situation, socio-political situation); - the marketing risk (assessment of contractual obligations with solvent buyers, stable relations with suppliers); - the legal risk (assessment of legislation and regulations in the field of financial law). |
| 2 | Quantitative assessment of credit risk | - scoring method; - expert evaluation method. |
| 3 | Making a decision on granting a loan and calculating the interest rate | - decisions to authorize a transaction bearing credit risk and to determine the dependence of the interest rate on the level of credit risk. |

In the practice of Russian banks to assess the degree of risk of the organization and its financial insolvency, methods of assessing financial risks are used among which a significant place is occupied by the models of Altman E., Beaver W., Taffler R., Zaitseva O.

These models assess the risk of insolvency of a specific borrower in the future period on the basis of indicators characterizing the activities of the organization in the current period.

Simplicity, speed, visibility of the two-factor Altman model allows to diagnose the probability of bankruptcy with a given accuracy [9].

Two financial ratio are calculated in the two-factor Altman model:

- coverage ratio characterizing the ability of the organization to meet short-term liabilities through current assets;
- the coefficient of financial dependence which determines the degree of dependence of the organization on external sources of financing and the ability of the enterprise to repay accounts payable with its own assets.

The two-factor Altman model \( Z_1 \) can be represented as:

\[
Z_1 = -0.3877 K_{cover} - 0.0579 K_{fin.dep.} \tag{1}
\]

where \( Z_1 \) - the final indicator of assessing the probability of insolvency;
\( K_{cover} \) - cover ratio, calculated as the ratio of current assets to current liabilities;
\( K_{fin.dep.} \) - the coefficient of financial dependence is determined by the division of borrowed funds into the balance sheet currency.

At the same time, according to the Altman method, the results determine the following options for insolvency: the probability of insolvency is 50% for enterprises with \( Z_1 = 0 \). The probability of insolvency is less than 50%, with \( Z_1 > 0 \). At \( Z_1 < 0 \), the probability of insolvency is greater than 50% and tends to increase in the value of \( Z_1 \).
Five-factors Altman model of forecasting financial insolvency of enterprises allows predicting insolvency for up to five years with an accuracy of 70%.

Five-factors Altman model \((Z_2)\) is determined by the formula:

\[
Z_2 = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5
\]

where \(Z_2\) - an integral indicator of assessing the degree of insolvency;

\(X_1\) - working capital/total assets of the company (liquidity assessment);

\(X_2\) - retained earnings/average amount of assets used/total capital (level of profit formation of the enterprise);

\(X_3\) - profit before tax/total value of assets (degree of income assessment from the position of sufficiency for reimbursement of current costs and profit formation);

\(X_4\) - equity/accounting (balance) value of all liabilities. As the data of foreign practice show equity is estimated at the market value of the company’s shares;

\(X_5\) - sales volume/average value of assets or total capital used (estimated turnover of assets or capital).

The assessment of the probability of insolvency of the borrower is determined on the basis of the following indicators calculated by Altman: at \(Z_2 < 1.81\) - the highest probability of insolvency from 80-100%, \(2.77\leq Z_2 < 1.81\) - average from 35 to 50%, \(2.99\leq Z_2 < 2.77\) - not more than 15 to 20% and the risk of insolvency in the next few years minimum at \(Z_2 \leq 2.99\).

The modified five-factors Altman model \((Z_3)\) was applied in banking practice:

\[
Z_3 = 0.717X_1 + 0.847X_2 + 3.107X_3 + 0.42X_4 + 0.995X_5
\]

In the modified version of the model \(X_4\) - is defined as the ratio of the carrying value of equity to borrowed capital (liabilities). At the same time milestones are defined:

\(Z_3<1.23\) - the company is declared bankrupt;

\(Z_3\) in the range of 1.23 to 2.89 - the situation is uncertain;

\(Z_3 >2.9\) - solvent and financially stable company.

Quantitative assessment of financial risk (bankruptcy) is carried out by the method of point estimates for the totality of these features with the assignment of points (method of point estimates), for example:

- low risk - 1 point;
- average risk - 2 points;
- high risk - 3 points.

Other types of risks (market, marketing, legal) are determined by the method of expert assessments when on the basis of a preliminary analysis of all risks, experts make their judgment about the probability that this type of risk will affect the repayment of the loan on time.

4. Findings

The identification of risks involves the analysis and search for ways to minimize them in the process of carrying out business activities, including in order to attract investment. Due to the lack of own resources the majority of Russian enterprises use external financing. Large companies can attract foreign borrowings and use the instruments of the stock market as financing, use the credit products of banks. Small and medium business is less likely to use borrowed funds as apply to the most risky category of borrowers and has high risks.

We assume that credit risk is the most significant and equally inherent to both lenders and borrowers (entrepreneurs). The main concern of the commercial bank is the lack of confidence that the borrower will be able to fulfill its obligations to the bank in terms of the terms and conditions of the contract.

The level of credit risk of commercial banks when working with small enterprises has a gradual tendency to increase due to the fact that these enterprises are difficult to interact with the financial market, in particular, with financial credit institutions to attract their financial resources.
The decision to authorize a transaction bearing credit risk and to determine the dependence of the interest rate on the level of credit risk is possible on the basis of the calculation of the mathematical expectation of the bank on the provision of credit.  

The model for calculating the interest rate depending on the assessment of the probability of non-repayment of the loan is as follows:

\[ \tilde{r}_p = \frac{i + p}{q} \]

where \( \tilde{r}_p \) – interest rate on the loan taking into account the risk;  
\( i \) – the risk-free rate;  
\( p \) – the probability that the loan will not be returned;  
\( q \) - the probability that the loan will be returned in time and in full.

The values of \( p \) and \( q \) are determined on the basis of the method of point estimates or the method of expert estimates.

Using the method of expert evaluation, taking into account that the risk-free rate is equal to 12 %, it is possible to calculate the interest rate on the loan depending on the probability that the loan will not be returned. The dependence of the interest rate on the probability of credit risk is shown in figure 1.

Using the interest rate calculation model, depending on the assessment of the probability of non-repayment of the loan, it is possible to determine the limits of credit risk within which the interest rate on the loan is acceptable.

5. Discussion

Thus, direct risk management at the stage of issuing a loan is to determine the amount of credit risk and decide on the authorization of the operation bearing credit risk.

The main methods aimed at reducing, increasing or maintaining a certain level of risk include: the risk entails the rejection of the provision of credit services; risk acceptance means making a positive decision on the provision of credit services in case of reaching an acceptable level of risk.

The interest rate is a potentially effective risk management tool. Today the banking practice is replete with examples of small and medium-sized businesses lending at higher interest rates than first-class borrowers. This practice is not always beneficial for both borrowers and commercial banks: for small
businesses, obtaining «expensive» credit resources may not be an acceptable financing option; operations to reduce credit risk by raising the interest rate or regulating it depending on the type of security are labor-intensive and unprofitable for commercial banks.

6. Conclusion

As the world experience of interaction of commercial banks with small enterprises shows, the instrument of credit risk reduction due to the increased interest rate is ineffective and the mechanisms of state support of entrepreneurship are actively used.

In the Russian context the actual method of credit risk management can be a division of risk between several investors including the borrower, but to a greater extent this tool is used for expensive projects and large companies. Due to the limited amount of credit requested the operating costs of risk sharing and co-investor control may exceed the potential savings in reducing the risks of bank lending to small and medium-sized businesses. The high level of business risks inevitably determines the high «price» of such a specific product as a bank guarantee. The price of the warranty is usually from 50% and above of project cost and 75-80% of the cost of the loan which is not comparable with the average rate of profitability of commercial activities in the implementation of long-term investment projects in the real sector of the economy.

For small business financing mechanisms are effectively used by institutions that are directly focused on these borrowers and have well-established procedures, personnel, etc. (credit unions of small enterprises, regional small business support funds, leasing companies). Essentially, the provision of credit within the framework of measures of assistance or financial support of small business is the most important factor in significantly reducing the risk of bank lending (especially investment lending). It is not by chance that the most promising schemes for providing state guarantees are the ones that operate most widely and effectively in the regions that are able to implement such financial support for small business.

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