

Improving the methodological approach to identifying financial risks in the context of macroeconomic instability of the economy

Mejorar el enfoque metodológico para la identificación de riesgos financieros en el contexto de inestabilidad macroeconómica de la economía

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Abstract

The relevance of the research topic is due to the fact that any area of commercial activity is subject to different types of financial risks, which humanity had to observe in difficult epidemiological conditions associated with the spread of coronavirus infection. The lightning-fast spread of Covid-19 around the world led to significant volatility in the stock market, which in a short time collapsed to the level of twenty years ago. It follows that the study of financial risks is the most relevant topic in modern times.

Keywords: Financial Sector; Commercial Organization; Financial Risk; Inflation; Margin; Costs

Resumen

La relevancia del tema de investigación se debe a que cualquier área de actividad comercial está sujeta a diferentes tipos de riesgos financieros, que la humanidad tuvo que observar en difíciles condiciones epidemiológicas asociadas a la propagación de la infección por coronavirus. La rápida propagación de Covid-19 en todo el mundo provocó una volatilidad significativa en el mercado de valores, que en poco tiempo colapsó al nivel de hace veinte años. De ello se desprende que el estudio de los riesgos financieros es el tema más relevante en los tiempos modernos.

Palabras clave: Sector financiero; Organización comercial; Riesgo financiero; Inflación; Margen; Costos



Introduction

The existence of an organization in the financial services market and obtaining a positive result from its financial and economic activities depends primarily on the effective and correct management of financial risks. Financial risk management is based on the use of certain specific and nonspecific measures, which allow one to predict the occurrence of risk situations as accurately as possible and apply appropriate measures to reduce the degree of risk [Poltarykhin, et al.2020].

Any business activity is subject to financial risks. Due to the fact that the existence of an organization in the financial services market and obtaining a positive result of its financial and economic activities depends on the effective and correct management of financial risks, the work with financial risks, as it once was, is relevant in today's complex epidemiological conditions. In addition, at present, banking risks are an integral part of the economic, political [Palamarchuk, et al. 2019], social [Frolova, et al. 2020] and financial life of society, which accompanies the spheres of activity and directions of any organization operating in market conditions [Sotnikova, 2017].

Methods

As the goal of the study, the team of authors sets itself the task of defining the theoretical foundations of financial risks and developing measures to improve the banking sector, taking into account financial risks. The object of observation is a commercial financial organization. The object of research is financial risks. The subject of the research is the assessment and management of financial risks carried out by a credit institution.

The work used monographic, graphic, abstract-logical, computational-constructive, horizontal, vertical, coefficient, comparative research methods.

The information base of the scientific publication was the constituent documents: financial statements of a commercial organization; statutory documents of a credit institution, as well as analytical tables. The practical significance lies in the fact that the measures proposed by the authors for managing banking risks can be of an applied nature and can be used by banking organizations to increase economic efficiency.

Results

Financial risks are most often caused by the instability of the economy and finance in general. Thus, one of the main tasks of a commercial bank is to develop a risk map, which reflects the specifics of a particular credit institution, a holistic view of the entire set of risks, as well as characteristic signs of risk that are the sources of their occurrence. Commercial banks in the course of their activities attract temporarily free funds and place them in assets, this makes the bank

dependent on the financial situation of their clients. Thus, the financial risks assumed by the bank are most often obtained from their clients [Saenko, et al. 2019].

After analyzing the scientific works of various authors, one can come to the conclusion that there is no single definition of financial risk [Yuzvovich, et al. 2017; Kuznetsova, et al. 2020; Akhmadeev, et al. 2019a; Akhmadeev, et al. 2019b; Akhmadeev, et al. 2019b; Monni, & Palumbo, Tvaronavičienė, (2017)]. This suggests that the concept of risk is too broad. Thus, after analyzing these definitions, we can give its approximate form: financial risk is the possibility of financial losses in a situation of uncertainty in economic and financial activities.

It is worth noting that financial risk has the following features: firstly, it is uncertainty and the inability to predict possible events and the impact of risk, and, secondly, the difficulty of determining the probability of making a profit or loss.

In accordance with the publication described in F.F. Khismatullin, operational risk management consists of three components.

1. Calculating minimum capital requirements. This component presents the calculation of the overall minimum capital requirements for credit, market and operational risks. This component mainly considers methods for assessing operational risk (BIA, TSA, ASA, AMA) [5].

2. Supervisory process. This section discusses the core principles of the supervisory process, risk management, and transparency and reporting to banking supervisors, developed by the Committee as applied to banking risks, including proposals regarding, inter alia, operational risk.

3. Market discipline. The Committee seeks to stimulate market discipline by developing a set of disclosure requirements that will allow market participants to assess basic data on scope, capital, risk exposure, risk assessment processes [Khismatullin, 2016].

In order to determine the likelihood of a risk, it is necessary to correctly determine the cause of its occurrence in order to prevent it further. It has long been proven the existence of such a phenomenon as the cyclical development of the economy, therefore, the crisis periods of functioning are repeated with a certain frequency [Khismatullin, 2016].

The bank's performance depends on the ratio of risks and revenues. Financial risks affect all operations, both active and passive, they can adversely affect the financial position of the bank's activities and the activities of the bank as a whole. Thus, when planning the future activities of a commercial bank, it is necessary to clearly define active and passive operations that will be carried out in the short and long term, and also to compare the benefits and costs in the context of economic instability.



There are many classifications of financial risks. presented by V.E. Zaborovskiy. in table 1. Consider one of the classifications of financial risks

| Classification attribute | Banking risk type |
|-----------------------------------|---|
| By calculation method (by scale) | Complex (cumulative) Private (individual) |
| By bank type | Specialized bank risk Industry bank risk Universal |
| By sphere of influence | External Internal |
| By scope | Country risk Bank transaction type risk |
| By the possibility of regulation | Open (the bank is unable to localize this type of risk) Closed risks |
| By the composition of clients | Retail customer service risk Risk of servicing corporate clients |
| By the main factors of occurrence | Economic Political |
| By the time of occurrence | Retrospective Current Promising |
| By level | Low Moderate Full (Paida, 2016) |

Source: [Zaborovsky, 2015; Paida, 2016]

Table 1: Classification of the bank's financial risks

Other types of financial risks are also distinguished, but the ones we have discussed above are more significant.

All the variety of financial risks reflect the specifics of the bank's activities arising from a certain operation, inaction, delay or erroneousness of its actions. The successful conduct of banking activities largely depends on the correctly selected financial risk management system.

The process of financial risk management also includes methods associated with the adoption of specific steps, stages for the application of a particular method [Yemelyanov, et al. 2018; Yemelyanov, et al. 2019a; Yemelyanov, et al. 2019b; Rahman, et al. 2018; Prodanova, et al. 2020].

The correct choice of measures to prevent and minimize risk plays an important role in risk management. They consist of risk mitigation and risk mitigation techniques.

Figure 1 presents the main tools of risk mitigation.

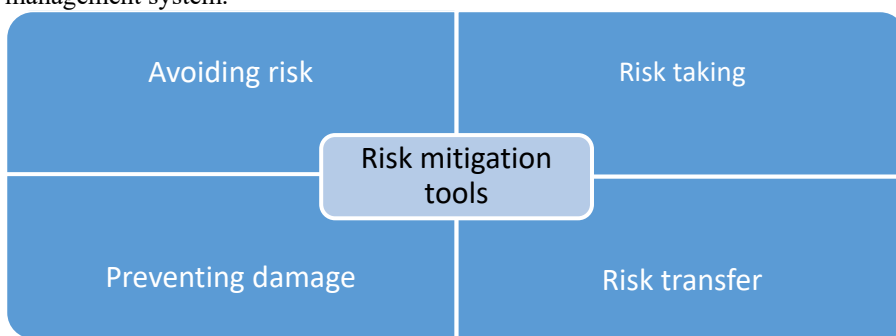


Figure 1: Risk mitigation tools

Risk avoidance is a set of actions to take precautions against a risk.

Prevention of damage is a set of actions aimed at reducing the likelihood of losses and to minimize their consequences. Risk taking is the act of covering losses from your own resources.

Since the main purpose of the research work is to assess the financial risks of a commercial organization, the group of authors identified one of the

largest commercial banks in Russia, VTB Bank (PJSC), as an object of observation.

VTB Bank (PJSC) is the head of the VTB banking group, which includes more than thirty banks and financial companies in more than twenty countries.

VTB Bank (PJSC) was registered in 1990 as Vneshtorgbank and only in 2006 was renamed VTB. In 2007, he held an IPO (initial public offering) in London and on the Moscow stock exchanges, as a result of which \$ 8 billion was raised, and over 120 thousand Russians became the bank's shareholders. In 2015, it was transformed from an open joint stock company into a public one.



The financial activity of a commercial bank is carried out on the territory of the Russian Federation. The main goals implemented by VTB Bank (PJSC) in the current conditions are the implementation of a system-forming function in the Russian economy, which manifests itself in ensuring financial stability, work on asset quality, and ensuring liquidity.

The main strategic objective of VTB Bank (PJSC) is the implementation of measures to manage liquidity,

which will allow the bank to gain competitiveness with the world's leading financial institutions and reach a completely new level. Among other things, the key task is to constantly increase market share and increase profitability, through a significant customer focus, carried out on the basis of the proposal of new financial products and services. Consider the main financial and economic indicators in table 2.

| Index | 2015 | 2016 | 2017 | 2018 | 2019 | Absolute change in 2019 compared to 2015 | Growth (decline) rate in 2019 compared to 2015,% |
|---------------------------|---------|---------|---------|---------|---------|--|--|
| Net interest income | 289,100 | 415,000 | 460,200 | 468,600 | 440,600 | 151,500 | 152,404 |
| Fee and commission income | 76,200 | 81,800 | 95,300 | 90,000 | 108,500 | 32,300 | 142,388 |
| Interest expenses | 803,100 | 680,800 | 581,300 | 542,600 | 636,500 | -166,600 | 79,255 |
| Net profit | 30,300 | 43,900 | 120,100 | 181,500 | 201,200 | 170,900 | 664,026 |

Source: based on data [Yuzvovich, et al. 2017].

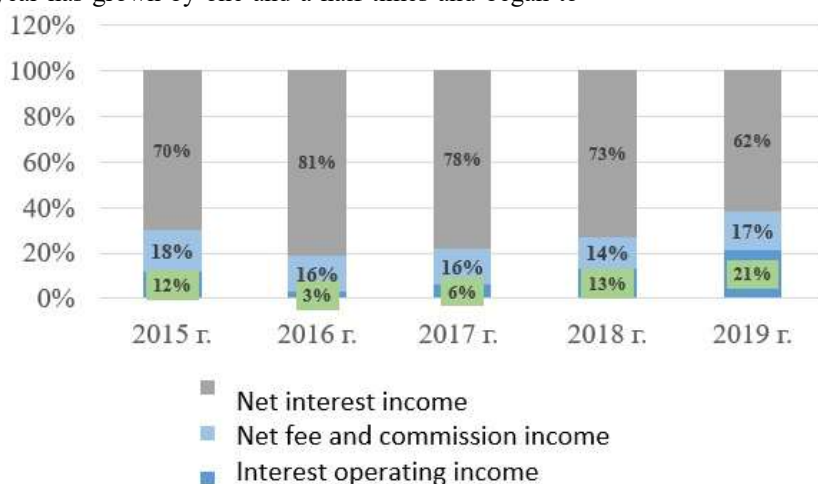
Table 2: Key financial and economic indicators of VTB Bank (PJSC) for 2015-2019, in billion rubles.

Net interest income in dynamics has grown by 1.52 times compared to 2015. The bank's main income is income from consumer loans granted to individuals and legal entities. Analysis of Table 1 shows that the amount of fee and commission income in the current year has grown by one and a half times and began to

amount to 108.5 billion rubles. The amount of interest expenses in 2019 decreased by 20.745% compared to 2015 and amounted to 636.5 billion rubles.

Net profit for 2019 amounted to 201.2 billion rubles, compared to the result for 2015 - 30.3 billion rubles, which is 6.64 times less.

Consider the structure of net operating income shown in Figure 2.



Source: based on data [The official website of VTB Bank (PJSC) [Electronic resource].

Figure 2: Net operating income of VTB Group, RUB billion

Figure 2 shows that net interest income prevails in the structure of net operating income. In 2019, there is an increase in interest operating income.

The greatest influence on the change in the financial result of VTB Bank (PJSC) for 2019 was exerted by: operations with foreign exchange, lending, as well as operations with securities.

Let's calculate the main indicators of the financial activity of VTB Bank (PJSC) and present them in Table 3.

| Index | 2015 | 2016 | 2017 | 2018 | 2019 | Absolute change in 2019 compared to 2015 | Growth (decline) rate in 2019 compared to 2015,% |
|---------------------------|-------|-------|-------|--------|--------|--|--|
| Return on equity (ROE), % | 3,830 | 5,089 | 7,131 | 14,702 | 14,121 | 10,270 | 368,146 |
| Return on assets (ROA), % | 0,523 | 0,733 | 1,050 | 1,69 | 1,431 | 0,907 | 273,422 |



| | | | | | | | |
|---------------------------|-------|-------|-------|-------|-------|-------|---------|
| Net interest margin,% [7] | 1,080 | 1,900 | 2,000 | 3,000 | 3,000 | 0,019 | 277,778 |
|---------------------------|-------|-------|-------|-------|-------|-------|---------|

Source: based on data [3; 22; 7].

Table 3: Key indicators of financial activity of VTB Bank (PJSC) for 2015-2019, in%

In 2019, each rub. own funds brings the bank 14.1 kopecks of profit, which is 10.27 kopecks more than the profit of 2015.

Return on assets shows the effectiveness of cash management at the enterprise. In 2019, 1.43 rubles. falls on 1 unit. bank assets, which is 0.907 rubles. more than 2015

The net interest margin for the entire analyzed period has a positive value, which indicates that the amount of return on investment exceeds interest expenses.

In general, there is a positive trend in all indicators, which indicates the effective operation of the bank.

Let's assess the liquidity risk of VTB Bank (PJSC) using the financial ratios method. In table 4, we consider the data on liquidity ratios for the period from 01/01/2015 to 01/01/2020.

| Liquidity ratios | The limit value set by the Bank of Russia, % | Actual value at the reporting date, % | | | | | Absolute change in 2019 compared to 2017 | Growth (decline) rate in 2019 compared to 2015, % |
|--|--|---------------------------------------|-------|--------|--------|--------|--|---|
| | | 2015 | 2016 | 2017 | 2018 | 2019 | | |
| Bank instant liquidity ratio (H2) | min 15 | 61,40 | 34,50 | 137,50 | 107,60 | 138,95 | 77,55 | 226,31 |
| Bank current liquidity ratio (H3) | min 50 | 98,87 | 81,60 | 144,90 | 133,90 | 157,93 | 59,06 | 159,73 |
| Bank's long-term liquidity ratio (N4) (Litvinenko, 2018) | max 120 | 58,00 | 61,20 | 63,00 | 69,90 | 62,11 | 4,11 | 107,08 |

Source: based on data [3; 22; 7].

Table 4: Indicators of liquidity of VTB Bank (PJSC) for 2015-2019, in thousand rubles

According to the table, it can be concluded that the liquidity ratio has been met throughout the entire period under review. Over the past three years, the N2 instant liquidity ratio has been met with a large margin and in 2019 it is 138.95%, with a rate of at least 15% [The official website of VTB Bank (PJSC) [Solovieva, 2018].

Let us highlight the main methods of financial risk management of VTB Bank (PJSC) and present them in Figure 3.

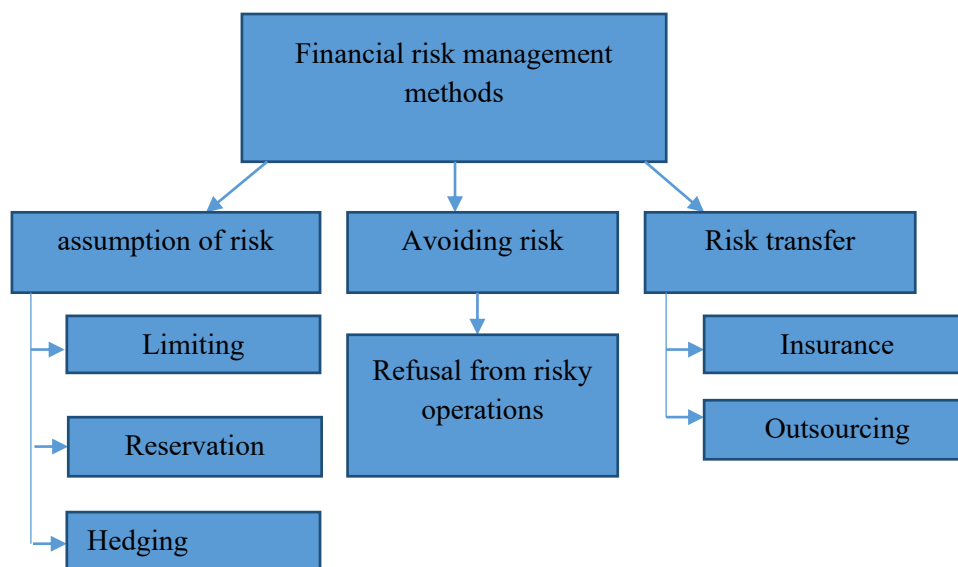


Figure 3: Main methods of financial risk management of VTB Bank (PJSC)

The financial activities of VTB Bank (PJSC) are subject to a variety of financial risks, but credit risk has the greatest negative impact on its activities. Credit risk management is the most important part of the activities of bank employees.

Credit risk management is a key factor that determines how effectively a bank performs its business. A credit risk management system must be effective, especially in a highly competitive environment of many banking products and many lending institutions.

Over the past 5 years of the bank's activity, there has been an increase in credit risk, which may be associated with many factors. One of the reasons for the growth of credit risk and overdue debt is the insufficient quality assessment of the borrower's creditworthiness. The main factors affecting the level of the bank's risk are violations of the repayment schedule for the principal loan and interest on it.

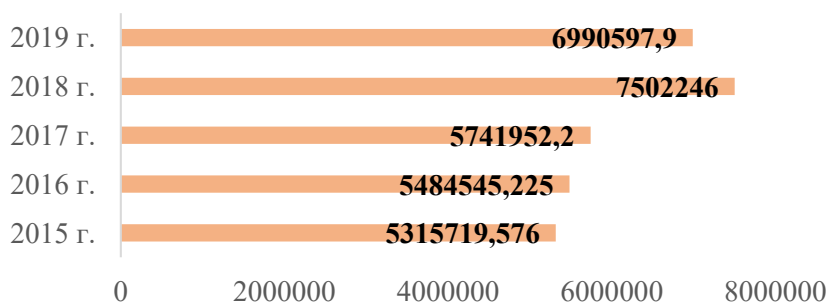
The main measure to mitigate risk is to assess the creditworthiness of borrowers. Therefore, the study of methods and procedures for assessing the creditworthiness of a bank is a rather urgent issue. Carrying out a correct and complete assessment of the borrower's creditworthiness affects the result of the credit transaction and further on the results of banks' lending activities [Romashchenko, 2018].

The creditworthiness of the borrower includes many factors, both financial condition and his personal qualities. These factors are ambiguous and that is why the bank uses complex expert and unique methods to assess them. Most often, banks use the following methods for assessing borrowers, scoring and expert assessment methods.

VTB Bank (PJSC) assesses the borrower's creditworthiness using a comprehensive analysis, as well as assigning a credit rating to each borrower. Comprehensive analysis is an assessment of the financial performance of the borrower. The Bank analyzes the financial statements of the client, its main financial indicators and the values of financial ratios.

Also, when assessing the creditworthiness of the borrower, the bank studies the credit history and uses a scoring model for assessing the creditworthiness of the client. The scoring model is designed to assess creditworthiness based on a database of borrowers. The database uses information about the bank's clients, obtained from questionnaires filled in by the borrower, as well as additional information. All data is entered into a special program, which makes an expert decision on lending to the client. All this information is contained in his credit history.

Consider the dynamics of loans issued to legal entities and present it in Figure 4.

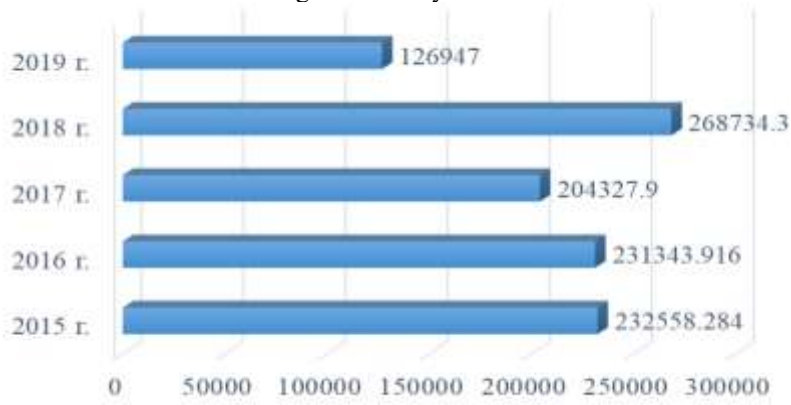




Source: based on data [The official website of VTB Bank (PJSC) [Electronic resource]. - Access mode: <https://www.vtb.ru> (date of access: 10.07.2020)].

Figure 4: Dynamics of loans issued to legal entities in 2015-2019

Thus, the dynamics of the growth of loans issued to legal entities is observed. But in 2019, there is a decrease in loans issued to legal entities by 7%.



Source: based on data [The official website of VTB Bank (PJSC) [Electronic resource]. - Access mode: <https://www.vtb.ru> (date of access: 10.07.2020)].

Figure 5: - Dynamics of overdue loans for 2015-2019

According to the figure for 2015-2017, there is a stable decrease in overdue debt, but in 2018 there is a significant increase in overdue debt by 31% compared to the previous year, which is primarily due to insufficient credit assessment of borrowers. Despite the decrease in overdue debt in 2019, compared to 2015, the bank still has problems with assessing the creditworthiness of borrowers, since this decrease was primarily due to a decrease in the volume of loans issued to legal entities in 2019.

Thus, despite the fact that, at first glance, the volume of overdue loans issued to legal entities is decreasing, which is a positive trend primarily due to a decrease in

$$Z = 1,2 \times K1 + 1,4 \times K2 + 3,3 \times K3 + 0,6 \times K4 + 0,999 \times K5 \quad (1)$$

the volume of loans issued. This confirms the need to improve the bank's methodology for assessing the creditworthiness of borrowers.

The authors of the article propose to supplement the methodology of VTB Bank (PJSC) in order to obtain more accurate data when assessing the creditworthiness of a borrower and to minimize the risk of a loan default.

The methodology for assessing the creditworthiness of the borrower by VTB Bank (PJSC) is based on an analysis of the financial condition of the borrower, which is insufficient for a complete assessment of the creditworthiness of the borrower; an additional assessment of the creditworthiness of the borrower is

required. With the increase in the volume of loans issued to legal entities, the risk of the bank also begins to increase, in order to avoid this, it is necessary to toughen the assessment of borrowers in order to avoid delinquent loans.

Next, consider the dynamics of overdue debt on loans to legal entities in Figure 5.

To obtain more accurate data on assessing the creditworthiness of a borrower, a combination of methods is required.

Consider the proposed methodology for assessing the borrower's creditworthiness. The Altman Z-analysis method is used by banks to assess the borrower's creditworthiness, financial stability and the likelihood of bankruptcy [Shapkin & Shapkin 2018].

The Altman indicator is built using the method of multiplicative discriminant analysis and allows you to divide borrowers into several groups who successfully carry out their business activities and potential bankrupts [Shapkin & Shapkin 2018]. It is worth noting that the use of this technique allows us to predict the likelihood of bankruptcy of the borrower in the next year. If this methodological approach is used together with the banking methodology, their combination will give more accurate results of the bankruptcy of a potential borrower.

The final bankruptcy probability coefficient consists of five indicators with their own weights.

Altman's Z-Analysis model looks like this:

where K1 is the share of own circulating assets in assets;

K2 - return on assets;

K3 is the return on assets calculated on the basis of profit before tax;

K4 - the ratio of the authorized capital, the ratio of the market value of the company's shares (the amount of the authorized capital) to the value of all assets;

K5 is the asset turnover ratio [11].

In table 5, we present the criteria for assessing the possible bankruptcy of the borrower and, accordingly, the creditworthiness of the borrowers.



| Possibility of bankruptcy | Z value |
|---------------------------|---------|
| Extremely small | > 3 |
| Small | 2,7-3 |
| Average | 1,8-2,7 |
| High | < 1,8 |

Sources: [Marchuk2018; Paida, 2016]

Table 5: Criteria for assessing the possible bankruptcy of the borrower

The optimal value for the borrower is a value not exceeding 1.8. If the obtained indicator exceeds 3, then the borrower is insolvent and his probability of

bankruptcy is high. Thus, the optimal Z value for loan approval is a value greater than 3.

Let's assess the creditworthiness of the borrowers under consideration using the "Z-analysis" method. The obtained data are presented in Table 6.

| Index | Borrower 1 | Borrower 2 | Borrower 3 |
|-------|------------|------------|------------|
| K1 | 0,78255 | 0,2829001 | 0,8260975 |
| K2 | 0,030878 | 0,4957599 | 0,2623946 |
| K3 | 0,038036 | 0,5311024 | 0,3261633 |
| K4 | 0,000104 | 0,0012695 | 0,0011995 |
| K5 | 0,619521 | 1,1557264 | 2,0572059 |
| Z | 1,727 | 3,942 | 4,491 |

Table 6: Assessment of the creditworthiness of borrowers using the Altman Z-analysis method

According to table 6, the Altman indicator of Borrower 1 has a value of more than three (3.942), which indicates the least probability of bankruptcy, and therefore the borrower is creditworthy. Borrower 2 is creditworthy and the likelihood of bankruptcy is extremely low. Enterprise 3 has a high probability of bankruptcy, since the value of the Altman indicator exceeds the allowable value, therefore, this borrower is not creditworthy.

Thus, according to the data obtained, it can be concluded that the introduction of this methodology helps to most accurately determine the borrower's creditworthiness. The methodology of VTB Bank (PJSC) must be supplemented with an analysis in which a relationship is established between the financial ratios obtained on the basis of accounting data and the probability of the borrower's default.

When improving the methodology used by VTB Bank (PJSC), the creditworthiness and financial position of the borrower is most fully assessed. The introduction of an additional methodology enables the bank to minimize credit risk and avoid financial losses due to the borrower's insolvency.

Conclusion

The proposed methodology for improving the assessment of the creditworthiness of a legal entity allows VTB Bank (PJSC) to obtain more accurate information about the borrower and its creditworthiness.

Thus, according to the analysis carried out, the problem of insufficient assessment of the creditworthiness of VTB Bank (PJSC) borrowers was identified, which may entail financial losses and an increase in credit risk. The main solution to this

problem is the introduction into the existing methodology of an additional methodology "Z-analysis" by Altman, which will allow obtaining more accurate data on borrowers and minimizing the credit risks of a commercial bank.

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