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INTEGRAL ASSESSMENT OF FINANCIAL STABILITY OF BANKS

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Abstract

The continuity of activity of any banking institution is the most important principle of its functioning. It implies that it will continue its activities in the nearest future, and it has no intentions and need to liquidate or significantly reduce its activity. The main criterion for ensuring the continuity of bank activity is to maintain its financial stability. The relevance of the research topic is reasoned by the absence of complete and unambiguous definition has not yet been presented in the literature, despite the fact that this term is often used in scientific works and official documents regulating the activities of commercial banks. The more stable the state of a bank will be, the less it will depend on changes in the external environment and crises that occur in Russia quite often. The article gives an integrated assessment of the financial condition of a credit institution using the Fishburn technique. Profitability, liquidity and reliability indicators are calculated; as well as integral coefficients. The results of ranking the coefficients and their weight values are determined. Therefore, in order to assess the financial stability of a bank, a lot of absolute and relative indicators were used that characterize the degree of coverage of stocks with own and equivalent working capital, the ratio of borrowed and own funds, the ratio of receivables and payables, the balance sheet liquidity and solvency of a bank.

Keywords: Bank, assessment, stability, method, analysis, coefficient.

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1. Introduction

Recently, the crisis in the Russian economy and the tightening of the supervisory policy of the Central Bank of the Russian Federation has attracted more attention to the problem of financial stability of commercial banks.

Ensuring financial stability of both individual banks in particular and the banking system of Russia as a whole is one of the fundamental tasks of the Bank of Russia and state authorities**.** The financial system of Russia needs a unified development strategy. It also needs a centralized system for the assessment of key indicators of the financial condition of credit institutions, transparent and determinate methods for the analysis of the financial stability of commercial banks, as well as openness and accessibility for end users (individuals and legal entities – bank customers) of information on activities and financial state of banks. The financial stability of a commercial bank is one of the main qualitative characteristics of its financial condition (Bisultanova, 2015).

2. Problem Statement

The analysis of financial stability and liquidity of a number of banks, the consequences of the global economic crisis and many other factors makes the problem of the improvement of assessing financial stability particular important.

3. Research Questions

The subject of the study is to assess the financial stability of a commercial organization by calculating profitability and liquidity ratios.

4. Purpose of the Study

The purpose of the study is to analyze the financial stability of a banking institution and develop ways to increase it using a specific example.

5. Research Methods

The recommendation to use the “expert” assessment method (Bisultanova, Zemlyakova, Razzhivin, Udovik, & Adamenko, 2018), which consists in the determination of the most and least priority indicators of companies, is due to the lack of a developed mechanism for differentiating indicators based on scientific justification.

Under the conditions of the absence of a specific quantitative assessment of the significance of indicators, it makes sense to use the tools used in other scientific studies. One of which is the ranking of criteria according to the Fishburn rule (Klaas, 2012a; Kretova, 2014).

The main provisions state that the only known information about the ratio of the significance of indicators is the following expression:

$r_i > r_{i+1} > r_{i+2}$, where r_i –the significance of each criterion or the degree of its manifestation.

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This provision allows identifying the sequence of relations of the considered indicators in relation to each other. The quantitative characteristic of the i[th] criterion is determined by the following formula (Kolmakov et al., 2018):

$$r_i = \frac{2(N-i+1)}{(N+1)N} \quad (1)$$

where i – coefficient rank or serial number after ranking;

ri – specific weight of the i[th] coefficient;

N – total number of ranks.

A necessary condition for rationing specific weight is as follows (Gogol & Anikina, 2012):

$$\sum_{i=1}^{n} ri = 1$$

6. Findings

In order to develop the methods for integrated assessment of the state of companies, three groups of indicators are proposed for consideration. This system, on the one hand, answers the question of what is the current financial potential, on the other hand, it includes the most significant financial indicators of the state, which together allows the comprehensiveness and completeness of the assessment of the financial condition at a certain point in time.

For the integrated assessment of the financial condition of a bank, we made calculations of profitability, liquidity and reliability. Each rating of indicators was assigned a rank, in accordance with the significance level of the coefficients in the final integrated assessment for this type of enterprise. Each rank was assigned a specific weight in accordance with the Fishburn methodology.

Applying the relation (1) using the identified indicators as an example, the results of ranking the coefficients and their weight values are determined and presented in Table 1.

Table 01. Calculation of Sberbank integral indicators based on the use of specific weight according to the Fishburn rule

Sberbank	Rank	Weight	2016	Indicator*Weight	2017	Indicator*Weight
ROS	3	0.17	0.23	0.04	0.32	0.05
ROA	1	0.50	0.02	0.01	0.029	0.015
ROE	2	0.33	0.21	0.07	0.24	0.08
Profitability				0.12		0.15
C1	2	0.33	1.140	0.376	0.920	0.304
C2	1	0.5	1.300	0.650	1.120	0.500
C3	3	0.17	0.270	0.046	0.240	0.041
Liquidity				1.072		0.844
Cca (capital adequacy)	1	0.5	0.113	0.057	0.129	0.065
Cs (security)	3	0.17	0.661	0.112	0.608	0.103
Cr (reliability)	2	0.33	1.260	0.416	1.240	0.409
Security				0.585		0.577
Profitability	3	0.17	0.117	0.020	0.149	0.025
Liquidity	1	0.5	1.072	0.536	0.844	0.422
Security	2	0.33	0.585	0.193	0.577	0.190
Integral financial soundness indicator				0.749		0.638

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According to the financial reports of Sberbank, profitability and liquidity ratios were calculated, where C1 is instant liquidity, C2 is current liquidity, C3 is the ratio of highly liquid assets to all assets, as well as reliability indicators. Each coefficient was assigned a rank and, accordingly, a specific weight according to the Fishburn method. As a result of the calculations, a positive change in the dynamics showed only the integrated profitability ratio. The remaining ratios decreased over the reporting period. The overall coefficient, calculated as the sum of three integral indicators of profitability, liquidity and reliability, respectively, showed a decrease (Table 02).

Table 02. Calculation of Alfa-Bank integral indicators based on the use of specific weight according to Fishburn

Alfa-Bank	Rank	Weight	2016	Indicator*Weight	2017	Indicator*Weight
ROS	3	0.17	0.04	0.006	0.29	0.05
ROA	1	0.50	0.03	0.013	0.022	0.011
ROE	2	0.33	0.01	0.003	0.13	0.04
Profitability				0.02		0.10
C1	2	0.33	1.110	0.366	1.150	0.380
C2	1	0.5	1.380	0.690	1.540	0.500
C3	3	0.17	0.410	0.070	0.450	0.077
Liquidity				1.126		0.956
Cca (capital adequacy)	1	0.5	0.132	0.066	0.136	0.068
Cs (security)	3	0.17	0.990	0.168	0.810	0.138
Cr (reliability)	2	0.33	0.142	0.047	0.116	0.038
Security				0.281		0.244
Profitability	3	0.17	0.022	0.004	0.102	0.017
Liquidity	1	0.5	1.126	0.563	0.956	0.478
Security	2	0.33	0.281	0.093	0.244	0.081
Integral financial soundness indicator				0.659		0.576

According to Alfa-Bank, as well as according to other banks, the integral coefficients were calculated. The dynamics of changes in the bank indicators turned out to be the same as that of Sberbank. The integral indicator of the assessment of the financial stability of the bank decreased over two years (Table 03).

Table 03. Calculation of VTB integral indicators based on the use of specific weight according to Fishburn

VTB	Rank	Weight	2016	Indicator*Weight	2017	Indicator*Weight
ROS	3	0.17	0.05	0.01	0.11	0.02
ROA	1	0.5	0.01	0.00	0.01	0.01
ROE	2	0.33	0.05	0.02	0.11	0.04
Profitability				0.03		0.06
C1	2	0.33	0.05	0.02	0.07	0.02
C2	1	0.5	1.00	0.50	1.01	0.51
C3	3	0.17	1.13	0.19	2.39	0.41
Liquidity				0.709		0.934

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Cr (reliability)	2	0.33	0.32	0.10	0.40	0.13
Cs (security)	3	0.17	0.42	0.14	0.38	0.12
Cca (capital adequacy)	1	0.5	0.11	0.06	0.11	0.06
Security				0.298		0.315
Profitability	3	0.17	0.03	0.00	0.06	0.01
Liquidity	1	0.5	0.71	0.35	0.93	0.47
Security	2	0.33	0.30	0.10	0.32	0.10
Integral financial soundness indicator				0.457		0.582

As a result of the calculation of the integral indicators of VTB, the reverse situation was revealed. All indicators showed growth for the investigated period. The integral coefficient of financial stability of VTB increased by 27.35 % from 0.457 to 0.582 (Table 04).

Table 04. Calculation of Tinkoff integral indicators based on the use of specific weight according to Fishburn

Tinkoff	Rank	Weight	2016	Indicator*Weight	2017	Indicator*Weight
ROS	3	0.17	0.22	0.04	0.30	0.05
ROA	1	0.5	0.07	0.04	0.07	0.04
ROE	2	0.33	0.37	0.12	0.45	0.15
Profitability				0.20		0.24
C1	2	0.33	0.32	0.11	0.48	0.16
C2	1	0.5	1.53	0.77	1.59	0.80
C3	3	0.17	0.42	0.07	0.45	0.08
Liquidity				0.942		1.030
Cr (reliability)	2	0.33	0.65	0.21	0.77	0.25
Cs (security)	3	0.17	1.60	0.53	1.47	0.49
Cca (capital adequacy)	1	0.5	0.11	0.06	0.16	0.08
Security				0.798		0.819
Profitability	3	0.17	0.20	0.03	0.24	0.04
Liquidity	1	0.5	0.94	0.47	1.03	0.51
Security	2	0.33	0.80	0.26	0.82	0.27
Integral financial soundness indicator				0.768		0.826

According to the results of the calculations of Tinkoff Bank a similar dynamics was revealed. The integral coefficient of financial stability of Tinkoff Bank increased by 7.55% from 0.768 to 0.826. All calculated data on banks were presented in Table 5.

Table 05. Dynamics of an integral indicator of financial stability of banks taking into account weights

Year / Bank	Sberbank	Alfa-Bank	VTB	Tinkoff
2016	0.749	0.659	0.457	0.768
2017	0.638	0.576	0.582	0.826

As a result of the calculations, the values of the integral indicator were determined taking into account the weights according to the Fishburn method. In order to display graphically the assessment of the financial condition of a company, a Cartesian coordinate system was selected. On the abscissa axis, the data obtained by integral assessment was determined; on the ordinate axis – an estimate obtained without taking into account weights (Table 06).

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In order to create a model, the values are calculated according to the groups of indicators without taking into account the relative ratio according to the Fishburn method.

Table 06. Calculation of generalized indicators without weighting factors

Indicator / Bank	Sberbank		Alfa-Bank		VTB		Tinkoff	
Year	2016	2017	2016	2017	2016	2017	2016	2017
Financial profitability	0.15	0.20	0.02	0.15	0.03	0.08	0.22	0.28
Financial liquidity	0.68	0.66	0.97	1.05	0.73	1.16	0.76	0.84
Financial security	0.59	0.52	0.48	0.35	0.28	0.30	0.79	0.80
Total value	0.47	0.46	0.49	0.52	0.35	0.51	0.59	0.64

7. Conclusion

In order to determine the areas characterizing the financial condition, it is necessary to assess the standard values (Magomadova, Khominich, Savvina, Asyaeva, & Chelukhina, 2019) taking into account the relative ratio and without considering it (Table 07). The standard of profitability is all values more than zero, for reliability indicators the maximum value is not applied.

Table 07. Standard values of the integral indicator taking into account weights

	Rank	Weight	Min	Value	Max	Value
C1	2	0.33	0.2	0.05	0.5	0.165
C2	1	0.5	0.5	0.25	1	0.500
C3	3	0.17	0.2	0.034	0.8	0.136
Total value				0.334		0.801
Cr (reliability)	2	0.33	0.04	0.013	maximum value is not applied	
Cs (security)	3	0.17	0.15	0.0255		
Cca (capital adequacy)	1	0.5	0.08	0.04		
Total value				0.079		

The ratios of coefficients were assigned in accordance with the instruction of the Bank of Russia dated 03.12.2012 No. 139-I “On Mandatory Ratios of Banks”.

In the future, these indicators are used to determine the zone of optimality of the financial stability of a bank. The boundaries are set straight, perpendicular to the ordinate axis. The profitability indicator coincides with the Oy axis, since it is enough for a bank to make a profit (Table 08).

Table 08. Standard values of an indicator without taking into account weights

Indicators	Min	Max
Financial liquidity	0.3	0.77
Financial security	0.09	Not limited
Profitability coefficient	0	Not limited

These values were also used in order to determine the optimality zone. Horizontal boundaries were drawn parallel to the abscissa axis according to the values. Thus, the optimal zone of liquidity is limited by $y = 0.3$ and $y = 0.77$, reliability is by $y = 0.09$ and higher, the direct margin of profitability coincides with the axis Ox.

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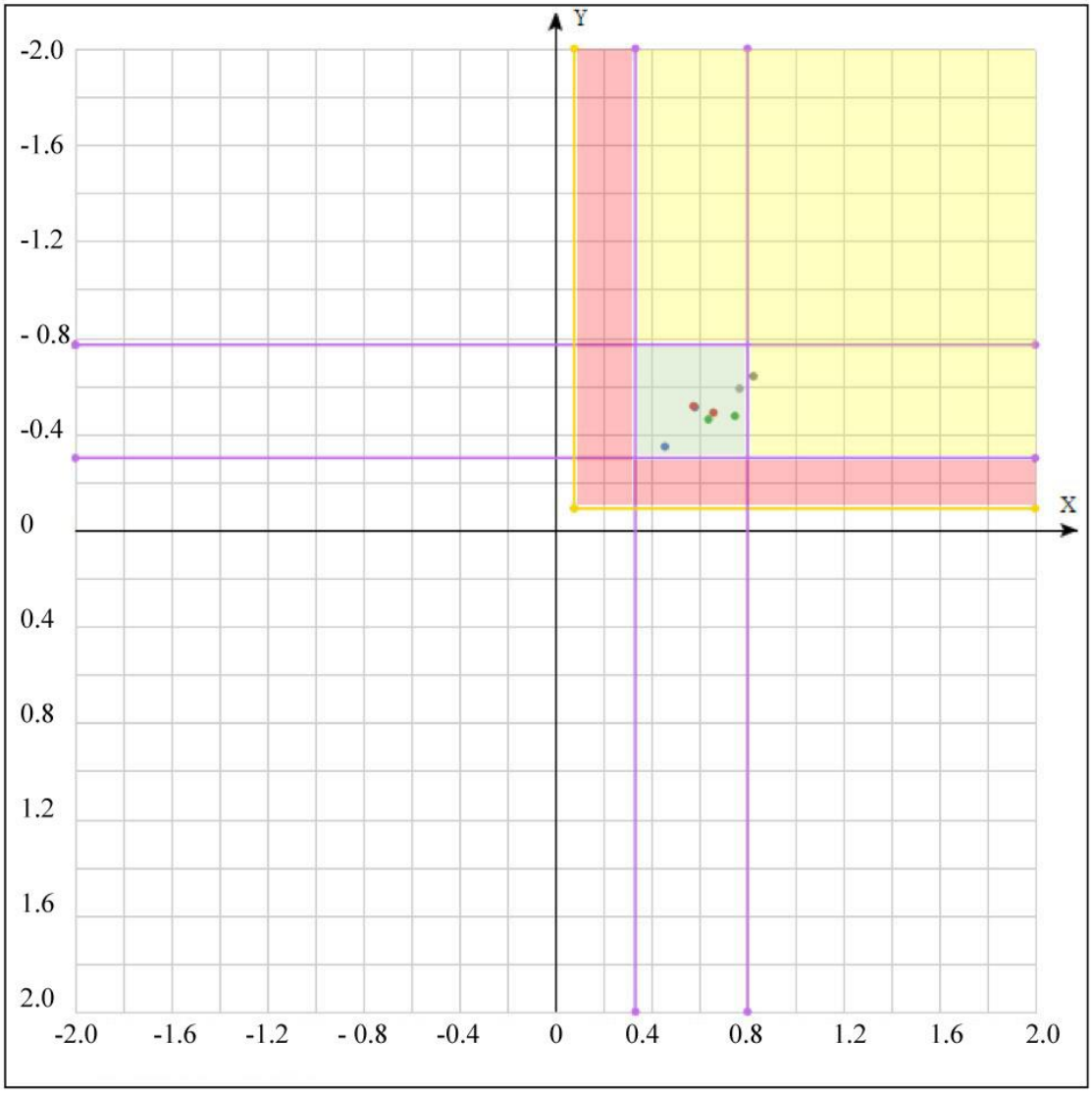

Figure 01. Zones of financial stability of a company

The intersection of direct liquidity formed the optimal liquidity zone characteristic of a banking sector (Klaas, 2012b; Rats, 2013). The optimal reliability zone is to the right and above the point (0.079; 0.09). The zone of optimal profitability coincides with the first plane of the coordinate system, since the rate of return should be more than zero.

Thus, the study of the financial stability of financial and credit institutions made it possible to determine the optimal zone within which the activities of this kind of institutions meet all the standards of control bodies. The following four coordinates limit the optimal zone: x = 0.334; x = 0.801; y = 0.3; y = 0.77 (Figure 01). They act as guidelines for commercial financial and credit institutions and allow organizing their activities in such a way as not to violate the effectiveness of financial activities.

In the framework of the formation of zones of financial stability, a red zone has been defined, which is unacceptable for financial and credit institutions. If financial institutions enter this zone, they risk losing their license to conduct financial activities. The yellow zone is not recommended. Financial and credit institutions falling into it are characterized by irrational management.

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The proposed methodology will be useful for commercial enterprises in terms of attracting additional financing. The evaluation using this technique will give a clear idea of the effectiveness of financial and credit institutions, the image and quality of management. This methodology will allow commercial banks controlling their activities taking into account existing restrictions by the central bank and correcting them in a timely manner.

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