A Comprehensive Assessment of the Financial Security of Banking System

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Abstract: This study discusses the current approaches to the analysis and assessment of financial security of the Russian banking sector. A system of indicators for which threshold values have been determined safe functioning of the banking system. Deviation of actual indicator values from their threshold values indicates that an threats in activities of credit organizations and the need to take measures to prevent or eliminate. Assess the security state of the banking sector in Russia for 2005-2014 years. On the basis of a set of indicators of financial security and the justified proposal for its stabilization.

Key words: The banking system, security, monitoring, indicators, the real economy

INTRODUCTON

The national banking system occupies a central place in the economic system, providing ongoing transactions between the main economic agents, accumulation of savings economic actors promoting investment activity and functioning in the mode to ensure expanded reproduction of the economy.

Securing the banking sector involves monitoring its status with a view to detecting and preventing potential threats. It seems relevant to analyse existing approaches to monitoring the condition of financial security of the Russian banking sector on the basis of a system of indicators for which threshold values have been determined safe functioning of the banking system. Inconsistency indicators actual values of the thresholds is indicative of the occurrence of financial threats and the need to take measures to prevent or eliminate. Threshold values must become approved (approved) at the state level, quantitative parameters which should be an essential element of economic programmes.

MATERIALS AND METHODS

Theory: For an objective assessment of the degree of deviation of actual values from the security threshold, use the method of regulation indicators which is taken as a unit and calculate the actual ratio and threshold values (Artamonova and Ajupov, 2015). This approach allows you to define critical points to identify threats to financial security. Analysis of the level of deviation of actual values financial security beyond acceptable thresholds as well as the nature of these indicators (major or minor), to assess the status of the functioning and development of the system as normal, precritical, crisis or critical. The highest level of security is achieved, provided that the entire complex the indicators of financial security is within acceptable limits and thresholds for some indicators are achieved without detriment to other (Safiullin *et al.*, 2012, 2013).

Among the many indicators of financial security allocate Group banking safety indicators, thresholds which are presented in Table 1. Consider the figures banking security and draw their justification threshold values:

- The relation of total assets to gross domestic product, characterized by the optimum level for developing countries with positive economic dynamics of 80-100%, for developed countries 100% and more (Kurilov *et al.*, 2014)
- The relation of the total equity of the banking system to GDP is characterized by the optimum level for developing countries with positive economic dynamics 10-15%, for developed countries 15% or more
- The share of equity in the total assets of the banking system also has an optimum level for developing countries with positive economic dynamics 10-15%, for developed countries15% or more
- The capital adequacy ratio, defined as the ratio of shareholders' equity of the banking system assets weighted by risk. Threshold indicator corresponds to the level of 12%

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Table 1: Threshold security indicators of banking activities

Indicators	Threshold value (%)
Relation of total assets to GDP	100
Relation of equity to GDP	12
Share of equity in total assets	12
Capital adequacy ratio	12
Total assets concentration level	80/20
Equity concentration level	80/20
Relation of dynamics of total assets of the banking system to the monetization level of the economy (M2)	100
Share of the international bank position in total equity of the banking system	20
Share of the credit portfolio in the assets	45
Share of troubled and bad loans in the credit portfolio	10
Share of interbank credits in the liabil	20
Temporary structure of the private deposits	
<1 year	30
>1 year	70
Return on equity	15
Return on total assets	2
Share of the private deposits in the liabilities of the banking system	50

Total assets concentration level is estimated on the basis of using the Pareto principle 80/20, meaning 20-80% of the assets of the banks account for the banking system as a whole. If this ratio is adhered or approaching it, it defines the normal level of concentration. When excess concentrations likely indicator of the magnitude of the risks and the emergence of banking crises. With the lack of concentration of assets the banking system is not able to finance important projects and actively influence economic development.

Shareholder's equity concentration level. When you define this criterion is also used by the Pareto principle 80/20. Relation of dynamics of total assets of the banking system to the monetization level of the economy is calculated according to the formula:

$$\frac{(A_1/A_0) \times 100}{(M2X_1/M2X_0)}$$

Where:
A_1 = Total assets of the banking system of the reporting year
A_0 = Total assets of the banking system of the base year
$M2X_1$ = Money supply M_2 reporting period
$M2X_0$ = Money supply M_2 base period

The threshold violation (100%) a drop of the capitalization of the banking sector, leading to lower its resistance and credit facilities. The share of the international bank position in total equity of the banking system is determined by the formula:

$$\frac{(EA-EL)}{(EK)} < 20\%$$

Where:
EA = External assets
EL = External liabilities
EK = Equity capital

The share of the credit portfolio of the banking system (Loans-L) in the assets with the L/A≥45%. The lesser value of the criteria testifies the shift in preferrings in commercial banks' activities to the profiteering with stock instruments. The share of troubled and bad loans in the credit portfolio with L/A the threshold value ≤10%. The excess of the value testifies the high probability of bank system crisis development.

The share of interbank credits in the liabilities testifies the degree of dependence on interbank credits. If the share of interbank credits in the banking system resources exceed 25%, this is dangerous as credit activities are executed by transformation from short interbank credits into long credits to the economy.

Temporary structure of the private deposits: the optimal level for 1 year deposits ≤30%, for more than a year ≥70%. Under a considerable proportion of short term deposits the investment opportunities of the banking sector in business loans decrease. The return On Equity (ROE) is calculated according to the formula: ROW = p_r/EK >15% where p_r is post-tax profit. This criterion is considered together with the banking sector capital adequacy according to BIS (Basel Institute of Settlements) and characterizes trends in profitability and soundness of banking system in general and certain banks-representatives of TOP-30.

The Return On Assets (ROA) is calculated according to the formula: ROA = p_r/A>2%, it corresponds with the average indicator from TOP-1000 banks in "The Banker" ranking and determines the optimal capital leverage for the banking sector. The share of the private deposits in the liabilities of the banking system. The optimal level for the private deposits ≤50%.

RESULTS AND DISCUSSION

On the basis of indicators of safety of the banking system, presented in a Table 1, will conduct the analysis

Table 2: Actual values of indexes of safety of bank activity in Russia for 2005-2014 years

Threshold value	01.01.2006	01.01.2007	01.01.2008	01.01.2009	01.01.2010	01.01.2011	01.01.2012	01.01.2013	01.01.2014	01.01.2015
100	45.10	52.20	60.50	67.90	75.90	75.20	74.40	79.60	86.80	108.70
12	5.70	6.30	8.00	9.20	11.90	10.20	9.40	9.80	10.70	11.10
12	12.74	12.05	13.30	13.60	15.70	14.00	12.59	12.35	12.37	10.17
12	16.00	14.90	15.50	16.80	20.90	18.10	14.70	13.70	13.50	12.50
80	89.60	90.67	91.55	93.85	93.80	93.89	94.10	94.33	94.90	96.50
20	16.00	16.82	17.61	18.05	18.90	19.76	20.45	20.92	21.67	23.98
80	83.80	85.98	88.76	90.87	92.03	92.01	91.69	92.80	93.40	96.50
20	16.00	16.82	17.61	18.05	18.90	19.76	20.45	20.92	21.67	23.98
100	98.61	96.86	100.45	137.30	89.26	87.63	100.70	106.30	109.00	128.76
20	9.30	12.70	15.70	17.30	23.80	19.10	17.60	19.30	17.30	17.20
45	43.80	42.50	44.70	44.60	42.60	67.50	65.60	68.70	58.60	54.30
10	-	-	-	3.60	9.70	8.20	6.60	6.00	7.00	8.60
20	11.10	12.30	13.90	13.00	10.60	8.60	9.50	8.50	8.40	8.50
30	-	21.21	19.07	17.89	19.88	17.70	20.13	22.23	19.50	27.81
70	59.50	60.75	62.40	65.15	63.75	64.73	60.76	58.87	61.82	55.05
15	24.20	26.30	22.70	13.30	4.90	12.50	17.60	18.20	15.20	7.90
2	3.20	3.20	3.00	1.80	0.70	1.90	2.40	2.30	1.90	0.90
50	28.23	27.12	25.49	21.08	25.43	29.04	28.50	28.80	29.50	23.90

Table 3: Correlation of actual and threshold values of indexes of safety of bank activity in Russia for 2005-2014 years

01.01.2006	01.01.2007	01.01.2008	01.01.2009	01.01.2010	01.01.2011	01.01.2012	01.01.2013	01.01.2014	01.01.2015
0.45	0.52	0.61	0.68	0.76	0.75	0.74	0.80	0.87	1.09
0.48	0.53	0.67	0.77	0.99	0.85	0.78	0.82	0.89	0.93
1.06	1.00	1.11	1.13	1.31	1.17	1.05	1.03	1.03	0.85
1.33	1.24	1.29	1.40	1.74	1.51	1.23	1.14	1.13	1.04
1.12	1.13	1.14	1.17	1.17	1.17	1.18	1.18	1.19	1.21
0.80	0.84	0.88	0.90	0.95	0.99	1.02	1.05	1.08	1.20
1.05	1.07	1.11	1.14	1.15	1.15	1.15	1.16	1.17	1.21
0.80	0.84	0.88	0.90	0.95	0.99	1.02	1.05	1.08	1.20
0.99	0.97	1.00	1.37	0.89	0.88	1.01	1.06	1.09	1.29
0.47	0.64	0.79	0.87	1.19	0.96	0.88	0.97	0.87	0.86
0.97	0.94	0.99	0.99	0.95	1.50	1.46	1.53	1.30	1.21
-	-	-	0.36	0.97	0.82	0.66	0.60	0.70	0.86
0.56	0.62	0.70	0.65	0.53	0.43	0.48	0.43	0.42	0.43
-	0.71	0.64	0.60	0.66	0.59	0.67	0.74	0.65	0.93
0.85	0.87	0.89	0.93	0.91	0.92	0.87	0.84	0.88	0.79
1.61	1.75	1.51	0.89	0.33	0.83	1.17	1.21	1.01	0.53
1.60	1.60	1.50	0.90	0.35	0.95	1.20	1.15	0.95	0.45
0.56	0.54	0.51	0.42	0.51	0.58	0.57	0.58	0.59	0.48

of safety of the Russian banking system after 2005-2014 years. For the calculation of indexes statistical information of report of Bank of Russia was used about development of bank sector and bank supervision. The actual values of indexes are presented in a Table 2. The analysis of the presented data testifies that for period 2005-2014 row of indexes of safety of the Russian banking system were at level below than threshold values (Table 3).

The share of total assets of the banking system in GDP for the period under review has scaled up from 45.1 (to 01.01.2006) to 108.7% (to 01.01.2013), exceeding the threshold value for the developing countries. The relation of banking system's equity to GDP at the beginning of 2015 fell within the acceptable limits of the threshold values of the safety indicator of banking activities with a positive dynamics in general over the research period. However, the correlation between the actual and the

threshold value equaled 0.78 at the beginning of 2012. The share of equity in total assets at the beginning of 2015 is characterized by 10.17 (the correlation between the actual and the threshold value equaled 0.85). The reason of the sharp decrease was the aggravation of the downturn in the economy of Russian Federation in 2014 and also political and economic sanctions of the Western countries. The capital adequacy ratio has not fallen outside the acceptable limit. The maximum value of 20.9% was noted at the beginning of 2010. Then the gradual decline of this indicator was observed (the correlation between the actual and the threshold value decreased from 1.74-1.04) that caused the decrease in financial strength of the banking system. The capitalization of Russian banking system at this point remains on a very low level. The level of integration of total assets and equity of the banking system has remained on the level higher than the threshold value and

gradually increased, equaling 96.5% of assets and 96.5% of equity of the whole banking sector at the beginning of 2015 (the correlation between the actual and the threshold value equaled 1.21 for the both indicators).

The correlation between dynamics of total assets of the banking system and the monetization level of the economy over the research period has grown up on 30%, however, it had a tendency to decline in 2009-2010 as a result of financial crisis of 2008. The maximum value of the given indicator 137.30% fell on 2008.

The share of the international bank position in total equity of the banking sector has not fallen outside the threshold value, apart from 2009, when the correlation between the actual and the threshold value equaled 1.19. The share of the credit portfolio of the banking system in 2005-2009 was less than the threshold value (the correlation between the actual and the threshold value varied within 0.94-0.99), then it has essentially increased and equaled 1.53 at the beginning of 2013. However, in the last 2 years the tendency to decline has appeared despite the excess of the actual over the threshold value (at the beginning of 2015-1.21).

The share of troubled and bad loans in the credit portfolio of the banking system has not exceeded the threshold value. Furthermore, the minimum value (3.6%) fell on the beginning of 2009 and the maximum value (9.7) fell on the beginning of 2010. From 2013-2014 , the share of troubled and bad loans in the credit portfolio of the banking system has increased and equaled 8.6%. The share of interbank credits in the liabilities of the banking system has not exceed the threshold value, equaling 8.5% at the beginning of 2015.

The share of long-term private deposits (maturity from one year and more) in 2005-2014 was less than the acceptable threshold value. Moreover, from 2010 the tendency to its gradual decrease has appeared (the correlation between the actual and the threshold value decreased from 0.92-0.79). The share of private deposits with the maturity of less than a year, if not approached to the critical value, equaled 27.51 at the beginning of 2015 with the threshold value ≤30%. The evaluated dynamics of the changes in the temporary structure of the private deposits can decrease the efficiency of the banking system. It is known that the banking system of the country disposing mainly short-term money cannot fulfill its central function of consolidation of savings and their transformation into investments, greatly facilitating investment and economic growth, particularly under the low level of equity. The return on equity and total assets of the banking system during the research period has decreased from 24.2-7.9% and from 3.2-0.9% relatively. Nonetheless, the indicators' values not once have fallen

outside the acceptable threshold values. From 2008 to the present day the return on equity shows the negative dynamics which indicates the worsening condition of Russian banking sector.

The analysis of the deviation of the actual values from the threshold values of the economic security indicators shows that the condition of Russian banking system functioning and development can be defined like deflationary as the actual values of 6 from 15 given economic security indicators are less than the threshold value that indicates the increase in danger. The correlation between the actual and the threshold value of a certain security of banking activities indicators during the period of 2011-2015 compose >1, that indicates that Russian banking system remains in the risk zone during a long time. This is proved by low capitalization of the banking system (11.1% to GDP; 10.17% to total assets), low percent of long-term private deposits (55.05%), low return on equity and total assets of the banking system (ROE-7.9 % and ROA-0.9 %).

To determine the total level of banking security the indicator K_a was calculated as arithmetic average of values of the correlation between the actual and the threshold value of all considered security indicators. The dynamics of the indicator K_a is set in Table 4 and Fig. 1.

To calculate the aggregate indicator K_a the banking security indicators with the actual values >2 were used. Analyzing the dynamics of fluctuation of the indicator K_a, it ought to be noted that none of the banking security indicators has exceed 2.

Thus, the indicators K_a and K_a coincide during the research period. To estimate the level of potential threat to the economic security in the banking sector the critical indicator K_k was used. It was calculated as the arithmetic average of the actual values to the threshold value of those security indicators that fell outside the acceptable l threshold values (the correlation between the actual and the threshold value is >1). The dynamics of the indicator K_k testifies that during the period of 2007-2010 the threat

Table 4: The dynamics of fluctuation of the arithmetic mean aggregate and critical security indicators of Russian banking system

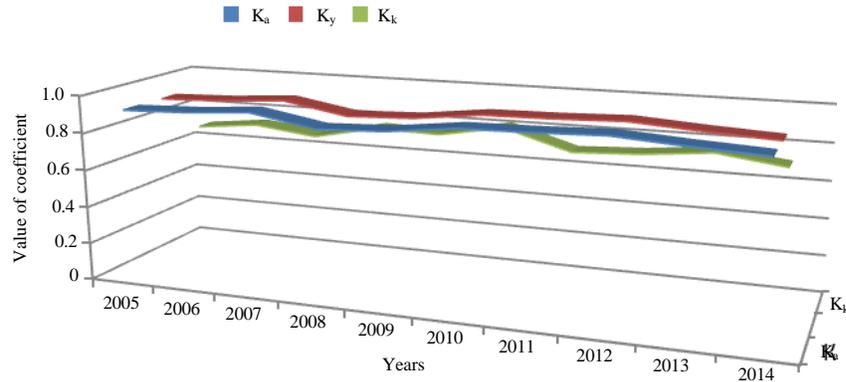| Years	Indicators		
	K_a	K_y	K_k
2005	0.919	0.919	0.693
2006	0.930	0.930	0.729
2007	0.954	0.954	0.687
2008	0.893	0.893	0.758
2009	0.906	0.906	0.750
2010	0.947	0.947	0.811
2011	0.952	0.952	0.706
2012	0.963	0.963	0.723
2013	0.939	0.939	0.758
2014	0.920	0.920	0.711

Fig. 1: The dynamics of fluctuation of the arithmetic mean, aggregate and critical security indicators of Russian banking system

level in Russian banking sector has gradually decreased as the value of the indicator K_k has increased from 0.687-0.811. At the beginning of 2015, the threat level of the banking security has essentially increased (the indicator K_k has decreased to 0.711).

CONCLUSION

The conducted research of safety status of Russian banking sector with the use of security multiples showed that at the present time the security level of banking system is in the critical situation and it cannot get out of the condition without support from the government. Therefore, the banking sector does not entirely provide the national economy's demand in investments. The created situation is characterized by ineffective monetary policy executed by The Bank of Russia, inability of Russian banking system to resist independently to threats of financial and economic type caused by as of external condition, banks' restraint in business loans. Thus, for this purpose the national banking system is inefficient in

assistance to progressive advance of the real sector, the resistance to external shocks and also in the provision of adequate investment services to Russian economy.

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