

# “Retraction: Assessment of Russian banking system performance and sustainability”

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Evgeniy Lopatin (Russia)

# ASSESSMENT OF RUSSIAN BANKING SYSTEM PERFORMANCE AND SUSTAINABILITY

## Abstract

The paper estimates the problem of trust in the banking system, which remains significant in the context of development of Russian banking system. Data used in this article had been collected from Thomson Reuters as of July 2019. The paper reveals the major problem of banking system, which is the lack of long money coming into the financial system of Russian Federation. It comes, first, from the household sector, and secondly, from pension savings. The paper investigates most important internal and external factors, which influence both individual commercial banks and the whole banking system. The analysis of the institutional aspect of the regional banking sector development proves that multidivisional and differentiated structure of credit institutions has been set up in Russia, which, in the whole, meets the needs of customers. Also, the current stage of Russian banking system development can be characterized by serious influence of the global economic crisis. Under these conditions, the revocation of licenses from inefficiently functioning credit organizations is a positive fact that contributes to strengthening the stability of the banking system.

## Keywords

banking system, capital formation, inefficient risk transformation, non-banking financial sector, asset allocation, market efficiency, Russian Federation

**JEL Classification** G20, G21, G28

## INTRODUCTION

The banking system is, first of all, a system of commercial banks. Therefore, the indicators of financial stability of each bank should be considered in order to assess the stability of the whole banking system, in which the banks are its generic elements. This approach is commonly used within the framework of stability of the banking system. The essence of this approach is that the combined indicators of all banks can be considered as a sufficient characteristic of the whole banking system.

The article considers the basis of this approach and the apparent identity of signs of economic sustainability and factors that influence it. Signs of banks' stability are the expansion of their activities, the appearance of new products and services in the list of bank products, the sustainability and balance of activity areas, etc. One can say that these signs are also the characteristic of the banking system stability. Of course, this is not accidental, because it is not the essential difference between two subjects – the bank and the banking system, – but their development. Characterizing their development, one can really find a lot of common, although their manifestation in each bank may not coincide.

There are many similarities in external factors that affect the stability of both an individual bank and the whole banking system. However, it should be also noted that each factor for one particular bank may have

different values. Moreover, this factor can manifest itself differently in relation to the system as a whole and in relation to each specific bank. For example, trust in the banking system can remain significant, but this factor could not be so relevant in particular bank's activity, because if it is preserved as a fundamental factor, it will not fully manifest itself. On the contrary, it can happen that confidence in the banking system as a whole has been dropped, but it had nothing to do with a particular bank, because it still remains a stable and highly trustful bank.

Considering the relationships between the stability of banks and the whole banking system, one should not forget about another important feature: commercial banks operate at the micro-level, providing the needs of concrete customers; banking system operates at the macro-level, serving the needs of the whole economy.

## 1. LITERATURE REVIEW

Each part (level) of the system, being part of the whole, however, works on the vital activity (stability) of the general system. However, they are unlikely to be the same in full. Therefore, it is more correct, and using summary data on the activities of commercial banks and their sustainability, the article will correlate them with the sustainable development of the banking sector as a combination of credit organizations (Hunjra et al., 2011).

It should not be forgotten that the central bank and the commercial bank are two different types of banks. Central bank performs both operations inherent in the bank as such and operations to issue cash means of payment that commercial banks do not do. These operations are a monopoly of the central bank; due to the operational difference, the factors affecting its stability may be different, have a greater macroeconomic nature, relate primarily to money circulation, the payment system, settlements, and generally to the regulation of money turnover (Alkassim, 2005).

The stability of the banking sector can be judged more by the share of troubled banks in their total number, the share of overdue loans. It is unlikely that the stability of the central bank as a state institution can be judged by the size of the profitability of its activities, while the profit of a commercial bank is one of the elements of its stability (Abdul-Majid et al., 2010).

It can be assumed that indicators of sustainable development of the banking system are a combination of indicators of two types of banks: issuing and commercial ones (Agarwal & Taffler, 2008).

Due to the different nature of the functioning of types of banks as part of the banking system elements, the intensity of the impact of heterogeneous factors may also differ. So, according to American studies, the reasons for the decline in stability and the subsequent emergence of banking crises were:

- poor asset quality (98%);
- poor planning and management (90%);
- abuse of collectors (35%);
- unfavorable external economic environment (35%);
- lack of internal audit and control (25%);
- fraudulent reporting data (11%);
- unsecured expenses (9%) (Ahmad & Ariff, 2007).

Different accents in the decline in stability and the subsequent transition to the crisis can be observed at the banking system level. The most typical reasons here were a decline in production, inflation, a high proportion of non-performing assets, etc. The stability of credit organizations directly depends on the stability of the banking system, the policy of the central bank. While attracting additional financial resources through refinancing, including in the face of lower interest rates, a credit institution is able to expand its resource base. In the event of bank insolvency at the expense of reserve funds guaranteeing deposits of citizens, their losses can be covered, and as a result, the confidence of individuals in the banking system will be maintained (Denisova et al., 2019; Nyangarika et al., 2019b).

Factors and indicators of the stability of credit organizations and the banking system may vary. The preservation of integrity and the achievement of the interaction of elements as signs of consistency

are the most important task of the banking system. Assessing it through the prism of these signs, the company receives additional information about the stability of both the banking system and individual credit organizations (Johansen, 1991).

It can be assumed that the sustainable development of the banking system is such a form of movement that is associated with positive development and growth. This movement expresses a comprehensive, positive development of both quantitative and qualitative parameters of activity – both the banking system as a whole and the activity of its individual elements in interaction with the interests of the economy (Abedifar et al., 2013).

The criterion for the sustainable development of the banking system as a measure of evaluation is the judgment on the preservation of its signs or properties. With this approach, the criteria for the banking system stability can be considered the circumstances in which it demonstrates the invariability of its image as a socially significant institution and ability to fulfill obligations arising from its functions (Singer, 2007).

In the most general sense, it can be assumed that the banking system can be considered as stable when it meets the following requirements:

1. There are no crises.
2. Individual banks may become bankrupt, but the general trend towards positive development continues.
3. Effective distribution of accumulated capital.
4. The circulation of capital is ensured.
5. Persistence (balance) is maintained even with increased imbalances or negative external shocks.
6. It is possible to assess and manage risks.
7. The ability to self-correct, limit and eliminate imbalances has formed.

The formulated criteria make it possible to reach the indicators for assessing the development of the

banking system at the macro level. Based on the functions of the banking system defined above, its development can be assessed using the following indicators:

1. The ratio of assets (liabilities) of the banking system to GDP.
2. The ratio of the total profit of the banking system to GDP.
3. The ratio of banking system capital to GDP.
4. The share of loans granted to the real sector of the economy in GDP and total banking assets.
5. The ratio of the amount of securities purchased by banks to GDP.
6. Profitability of the banking system, including in comparison with profitability indicators of other economy sectors.
7. The ratio of the monetary funds of the population as part of the resources of the banking system to GDP and monetary incomes of the population.
8. The ratio of cash of enterprises and organizations as part of the resources of the banking system to GDP.
9. The level of concentration in the banking system.

The presented indicators make it possible to identify the strengths and weaknesses of the development of the country's banking system, as well as some systemic risks in its functioning. In the dynamics, these factors may indicate negative phenomena in the banking sector, a decrease in sustainable development (Lopatin, 2019; Meynkhard, 2019).

If the first concept is addressed to a combination of banks and banking infrastructure, then the second characterizes the functioning of only one of the elements of the banking system; the functions of the banking system, thus, express broader processes, characterize the activities of both individual banks and the system as a whole (Mikhaylov, 2018a, 2018b).

## 2. DATA AND METHODS

It can be assumed that the indicators characterizing the performance of the banking system can be considered as, namely:

1. Currency stability.
2. Cash flow stability.
3. Monetization level of GDP.
4. Inflation rate.
5. The effectiveness of monetary regulation of the economy.

In order to assess the banking system development, one can use macroeconomic indicators that reflect the characteristics of the banking sector development. It is known that, within the framework of a departmental approach, the Bank of Russia analyzes (based on reports submitted by banks during prudential supervision and during inspections) indicators of the banking sector stability using information on compliance with mandatory economic standards for credit institutions.

The banking sector structure includes:

1. **Capital adequacy:** the ratio of equity (capital) to risk weighted assets, the ratio of fixed capital to risk weighted assets, the ratio of assets weighted by credit risk to total assets.
2. **Credit risk assessment:** the share of bad loans in the total loans, the formed reserve for possible losses on loans as a percentage of the total amount of loans issued, the ratio of the total size of large credit risks to capital, the structure of the debt on loans granted by credit organizations by industry, geographical distribution of granted interbank loans and placed deposits.
3. **Liquidity assessment:** the ratio of highly liquid assets to total assets, the ratio of liquid assets to total assets, the ratio of highly liquid assets to demand liabilities, the ratio of liquid assets to short-term liabilities, the ratio of customer funds to total loans.

4. **Market risk:** currency risk, interest rate risk, stock risk.
5. **The financial result of banks for the reporting period:** as a percentage of banking assets, as a percentage of banking capital.

It is advisable to compare the degree of the banking system stability based on the noted indicators (where possible) with their regulatory levels established by the Bank of Russia. It should be taken in mind that these indicators themselves, despite their importance for assessment, are limited to a certain extent. From the standpoint of sustainability assessment, they should be analyzed in dynamics, taking into account the influence of a number of factors, comparing the achieved values with similar indicators in other countries, using the estimates of both domestic and foreign experts.

The crisis factors in the banking sector are shown in Table 1.

**Table 1.** Factors of crises in the banking sector

Source: Author's generalization based on Thomson Reuters.

Factors	Structure shifts in the national economy
Macroeconomic	Sharp fluctuations in interest rates, commodity prices, prices for financial assets
	Foreign economic factors
	The consequences of the stabilization policy
	Market reforms
Microeconomic	Fixed exchange rate
	Bank management quality
	Excessive credit expansion
Institutional and infrastructural	Off-market motivation for granting loans
	Low level of supervision and regulation of banking systems
	Incomplete regulatory framework
	Limited banking
	Underdeveloped segments of the financial market
	Untimely and inadequate response to the solvency of banks by regulatory authorities
	Ineffective insurance system and bank deposits organization

The above-mentioned factors of crisis phenomena in the banking sector are interconnected and multiple, which greatly complicates but does not

underestimate the task of developing indicators of the banking system pre-crisis state.

Finally, it should be noted that in the framework of the macroeconomic analysis of the banking system, it will also be useful to assess the indicators of the banking market development and the formation of equilibrium in the banking market.

Macroeconomic equilibrium in the banking market can be defined as the balance between supply and demand for banking products and services, the number of credit institutions and the degree to which the needs of economic entities in banking services are satisfied, etc.

In terms of the general economic (macroeconomic) approach to assessing the banking system stability, it is important to identify the interconnections of the banking system with other economic systems, and above all, with the monetary and financial ones. This will allow adequately determining the current state of the banking system and identifying the factors which affect the achievement of its sustainable development, including identifying threats that could reveal the approaching banking crisis.

### 3. RESULTS

First of all, the article presents macroeconomic indicators of the Russian banking sector for recent years. In general, the main macroeconomic indicators of the Russian banking sector are close to the guidelines set by the Development Strategy of the banking sector of the Russian Federation or exceed these guidelines (Table 2).

Despite the slowdown of the Russian economy, the banking sector as a whole developed quite rapidly in 2018, the assets of credit institutions grew by 35.2% (adjusted for exchange rate dynamics – by 18.3%), to RUR 77.7 trln (for 2016 – by 16.0%).

Growth dynamics of total assets (liabilities) of the banking sector of Russian Federation is shown in Figure 1.

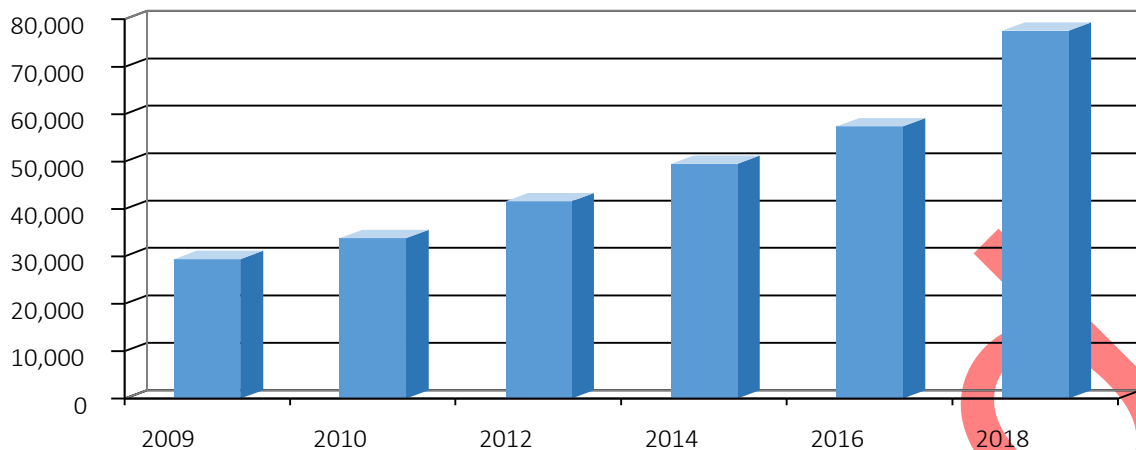
Figure 2 shows the growth dynamics of total assets (liabilities) of the banking sector in % of GDP. In 2018, banks continued to increase their loan portfolio, while significant changes took place in the dynamics and structure of lending.

**Table 2.** Macroeconomic indicators of the banking sector performance of the Russian Federation

Source: Author's calculations, Thomson Reuters.

Indicators	2009	2010	2012	2014	2016	2018
Total assets (liabilities) of banking sectors (RUR bln), including:	29,430.0	33,804.6	41,627.5	49,509.6	57,423.1	77,653.0
• % to GDP	75.8	73.0	74.4	79.6	86.8	108.7
• Total funds (capital) of banking sectors (RUR bln)	4,620.6	4,732.3	5,242.1	6,112.9	7,064.3	7,928.4
• % to GDP	11.9	10.2	9.4	9.8	10.7	11.1
% of banking sector assets	15.7	14.0	12.6	12.3	12.3	10.2
Loans and other placed funds provided by non-financial organizations and individuals, including overdue debt (RUR bln), including:	16,115.5	18,147.7	23,266.2	27,708.5	32,456.3	40,865.5
• % to GDP	41.5	39.2	41.6	44.6	49.0	57.2
• % of banking sector assets	54.8	53.7	55.9	56.0	56.5	52.6
Securities purchased by credit organizations (RUR bln), including:	4,309.4	5,829.0	6,211.7	7,034.9	7,822.3	9,724.0
• % to GDP	11.1	12.6	11.1	11.3	11.8	13.6
• % of banking sector assets	14.6	17.2	14.9	14.2	13.6	12.5
Deposits of individuals (RUR bln), including:	7,485.0	9,818.0	1,871.4	14,251.0	16,957.5	18,552.7
• % to GDP	19.3	21.2	21.2	22.9	25.6	26.0
• In % to liabilities of the banking sector	25.4	29.0	28.5	28.8	29.5	23.9
• In % of the cash income of the population	26.1	30.2	33.3	35.7	38.0	38.9
Funds raised from organizations (RUR bln), including:	9,557.2	11,126.9	13,995.7	15,648.2	17,787.0	25,008.1
• % to GDP	24.6	24.0	25.0	25.2	29.6	35.0
• In % to liabilities of the banking sector	32.5	32.9	33.6	31.6	31.0	32.2

Source: Author's calculations, Thomson Reuters.



**Figure 1.** Growth dynamics of total assets (liabilities) of the banking sector, RUR bln

The total volume of loans to the economy (non-financial organizations and individuals) grew by 25.9% in 2018 (by 17.1% in 2016) and reached RUR 40.9 trln, excluding exchange rate factor, the growth of these loans for the reporting year amounted to 12.9%. The share of these loans in banking sector assets decreased from 56.5 to 52.6%. At the same time, the ratio of the total loan portfolio to GDP increased significantly, from 49.0 to 57.2%.

The volume of loans and other placed funds provided by banks to non-financial organizations during the reporting period increased by 31.3% (in 2016 – by 12.7%); excluding the exchange rate (foreign currency) factor, the increase was 13.0% (Figure 3).

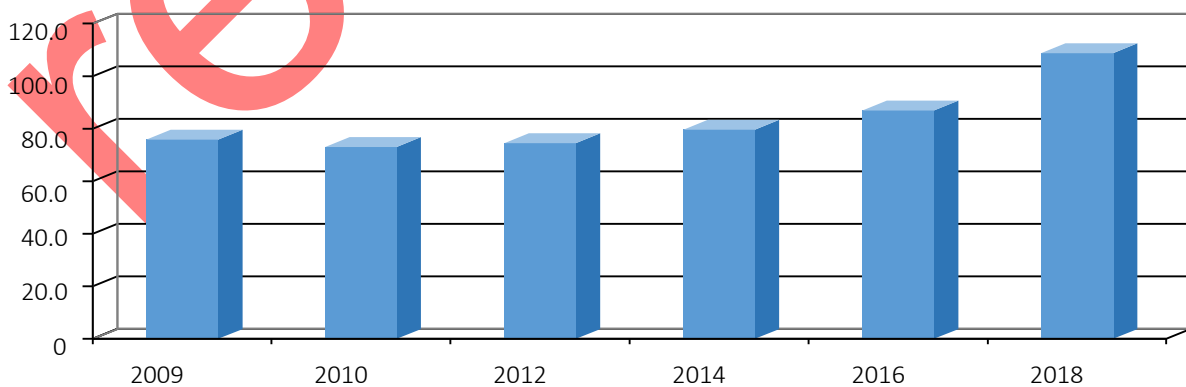
Corporate loan portfolio reached RUR 29.5 trln, and its share in banking sector assets as of January 1, 2018 amounted to 38.0% (at the begin-

ning of 2017, it was 39.2%). Despite the increased needs of enterprises for refinancing external debt, the demand for loans at the end of the year was constrained by the increased cost of borrowing. Of the total corporate lending, more than half come from state-controlled banks.

Until now (many experts noted that the recession is over), the Russian economy was in a recession stage due to several factors, which are as follows:

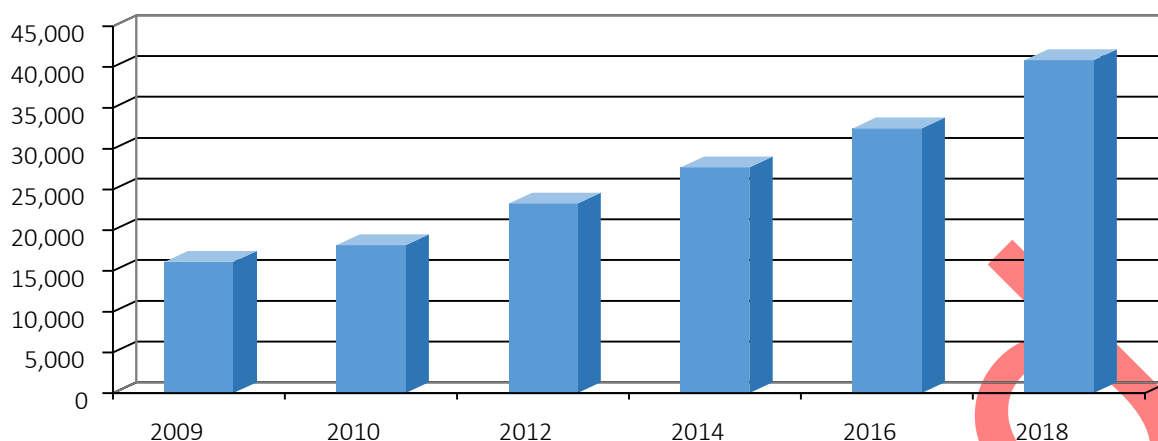
1. Lower oil prices, which led to a significant reduction in exports and lower budget revenues.
2. Lack of effectiveness in terms of structural reforms, limiting growth prospects. In particular, increased diversification of the Russian economy and reducing its dependence on oil and gas, as well as other raw materials, increased com-

Source: Author's calculations, Thomson Reuters



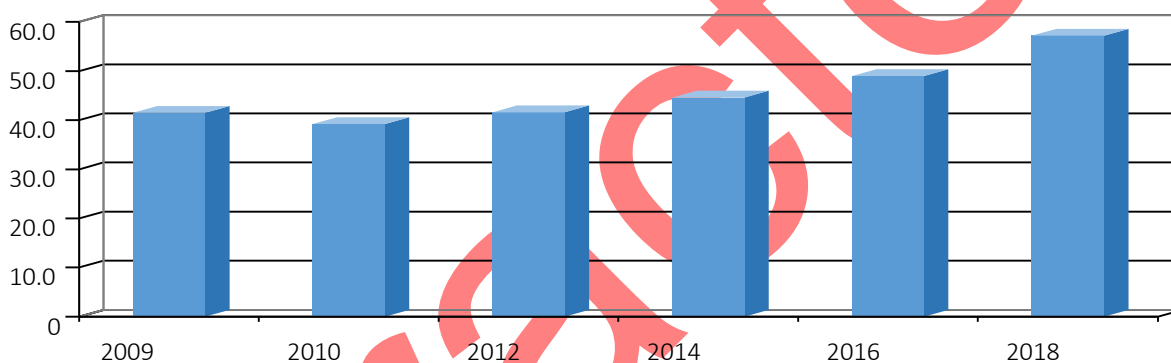
**Figure 2.** Growth dynamics of total assets (liabilities) of the banking sector, % of GDP

Source: Author's calculations, Thomson Reuters



**Figure 3.** Loans and other placed funds provided to non-financial organizations and individuals, including overdue debts (RUR bln)

Source: Author's calculations, Thomson Reuters



**Figure 4.** Loans and other placed funds provided to non-financial organizations and individuals, including arrears, % of GDP

petitiveness of non-oil sectors and a more favorable business and investment climate in the country could become important factors that can support future economic growth.

3. Limited access of Russian borrowers to foreign capital markets due to economic sanctions imposed by Western countries.
4. Extremely high exchange rate volatility.

The weakening of confidence of internal and external investors in Russia lead to a significant capital outflow.

Naturally, these factors predetermined the development of banks in 2018. The latest and most complete data on the current situation in the banking sector refer to September 2018. In recent months, the banking system has been showing good performance, as confirmed by statistics for August and September.

## DISCUSSION AND CONCLUSION

The banking system includes not only banks and their organizational foundations, but also awareness about the essence of its constituent elements. In general, in this case, the banking system as a holistic entity can be represented in the form of the blocks and their elements. The abovementioned blocks and elements of the banking system form a unity while expressing the specifics of the whole; they are carri-

ers of its properties. The search for its most effective model (as a kind of model, a standard of development) continued throughout the history of banking.

The features of current state of the Russian banking sector are influenced by the global financial and economic crisis and still have an impact, caused by the sanctions of Western countries as well as by oil prices. All this determines the quantitative parameters and trends of the Russian banking sector.

The worsening of economic conditions (recession in business activity in the economy, rising unemployment, tightening of external borrowing conditions, volatility of prices for financial assets) resulted in a decrease in the relative and absolute values of banking sector performance, stagnation in loan performance, loss of quality and growth in problem assets, and decrease in financial results. These challenges directly influenced key performance indicators of the banking sector and its investment attractiveness. In particular, the rate of return on assets fell to the lowest level.

At the same time, there is a tendency of reducing in the number of profitable credit organizations and the growth of unprofitable banks, respectively.

This indicates a steady trend and is associated with the sources of banks incomes, their stability, and profitability of assets in the market and the level of costs. Obviously, the structure of income and expenses of the banking sector and other credit organizations is associated with the structure of assets and liabilities. The main source of bank's profit remains net interest income, the value of which in the structure of profit factors is about 60%. However, the structure of this source is undergoing changes due to an increase in net income from operations with securities. A negative factor is a decrease in the net fee and commission income by 3.8 %, as well as an increase in the influence of unstable sources of income, such as net income from the sale of securities, from the revaluation of accounts in foreign currency. Unfortunately, a number of these sources embellish the financial result, distorting its real value.

The highest level in the banking system of Russia is occupied by the Central Bank of the Russian Federation, which is the country's main bank. The Bank of Russia has a comprehensive legal status due to the variety of functions that it performs. The regional banking system is a two-tier set of banks and non-bank credit organizations, as well as the regional infrastructure serving it.

Elements of the regional banking system are structural divisions of the Bank of Russia, regional credit organizations (banks and non-bank credit organizations registered in the region, branches and representative offices of foreign banks operating in this territory, branches and representative offices of foreign banks). The combination of regional banking systems forms a national banking system. The banking system of Russia, considering its large territorial extent, functions in a single legal field, solves common tasks through common tools, and implements the tasks set considering the peculiarities of the regional development. The stability of the whole banking system cannot be achieved without its regional components.

The regional banking system of Russia is a combination of interconnected and interacting divisions of the Bank of Russia, banking and non-bank credit organizations, branches, and representative offices of foreign banks. The development of the regional banking system should meet the following principles: the adequacy of the banking system development to the region's economy, self-development through use of internal sources, the optimal combination of large, medium and small banks.

The level of development can be judged on the basis of indicators characterizing institutional development, the role of the regional banking system in the regional economy, financial and economic aspects of activity, profitability.

The current stage of Russian banking system development is characterized by serious influence of the global economic crisis that affected Russia and exacerbated the problems that have occurred in the development of the regional banking system.

An analysis of the institutional aspect of the regional banking sector by region shows that Russia has developed a ramified and differentiated structure of credit institutions, which, in the whole, meets customers' needs. Almost all federal districts have local banks, branches of local and foreign regional banks, offices, cash desks, cash centers. In a number of regions, banks operate with foreign capital takeovers.

Based on the above-mentioned, a fundamentally important conclusion can be made to assess the state of the Russian banking system. The economic crisis revealed a number of problems that have been accumulating among banks over the years. Such problems are the high exposure of a number of banks to risks and the lack of necessary sources to cover them, which include the adequacy of equity. Under these conditions, the revocation of licenses from inefficiently functioning credit organizations is a positive fact that contributes to strengthening the stability of the banking system in the region. The economic crisis has shown the overall viability of the regional banking system.

## REFERENCES

1. Abdul-Majid, M., Saal, D. S., & Battisti, G. (2010). Efficiency in Islamic and conventional banking: an international comparison. *Journal of Productivity Analysis*, 34(1), 25-43. <https://doi.org/10.1007/s11123-009-0165-3>
2. Abedifar, P., Molyneux, P., & Tarazi, A. (2013). Risk in Islamic banking. *Review of Finance*, 17(6), 2035-2096. <https://doi.org/10.1093/rof/rfs041>
3. Agarwal, V., & Taffler, R. (2008). Comparing the performance of market-based and accounting-based bankruptcy prediction models. *Journal of Banking and Finance*, 32(8), 1541-1551. <https://doi.org/10.1016/j.jbankfin.2007.07.014>
4. Ahmad, N. H., & Ariff, M. (2007). Multi-country study of bank credit risk determinants. *International Journal of Banking and Finance*, 5(1), 135-152. Retrieved from <http://www.ijbf.uum.edu.my/images/ijbfvol5no12008/6-MULTI-COUNTRY.pdf>
5. Alkassim, F. A. (2005). The profitability of Islamic and conventional banking in the GCC countries: A comparative study. *Journal of Review of Islamic Economics*, 13(1), 5-30. Retrieved from [http://blog.uny.ac.id/sukirno/files/2011/09/Profitability\\_Islamic\\_and-Conventional-Banking.pdf](http://blog.uny.ac.id/sukirno/files/2011/09/Profitability_Islamic_and-Conventional-Banking.pdf)
6. Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance*, 23(4), 589-609. <https://doi.org/10.1111/j.1540-6261.1968.tb00843.x>
7. Altman, E. I., & Saunders, A. (1997). Credit risk measurement: Developments over the last 20 years. *Journal of Banking and Finance*, 21(11), 1721-1742. [https://doi.org/10.1016/S0378-4266\(97\)00036-8](https://doi.org/10.1016/S0378-4266(97)00036-8)
8. Denisova, V. (2019). Energy efficiency as a way to ecological safety: evidence from Russia. *International Journal of Energy Economics and Policy*, 9(5), 32-37. <https://doi.org/10.32479/ijeeep.7903>
9. Denisova, V., Mikhaylov, A., & Lopatin, E. (2019). Blockchain Infrastructure and Growth of Global Power Consumption. *International Journal of Energy Economics and Policy*, 9(4), 22-29. <https://doi.org/10.32479/ijeeep.7685>
10. Hunjra, A. I., Niazi, A., Akbar, S. W., & Rehman, K. (2011). Application of Finance Techniques: An Empirical Analysis of Pakistani Corporate Sector. *Actual Problems of Economics*, 9, 394-404. Retrieved from <https://ssrn.com/abstract=1944686>
11. Johansen, S. (1991). Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models. *Econometrica*, 59(6), 1551-1580. Retrieved from <https://www.econometricsociety.org/publications/econometrica/1991/11/01/estimation-and-hypothesis-testing-cointegration-vectors>
12. Lopatin, E. (2019). Methodological Approaches to Research Resource Saving Industrial Enterprises. *International Journal of Energy Economics and Policy*, 9(4), 181-187. <https://doi.org/10.32479/ijeeep.7740>
13. Meynkhard, A. (2019). Energy Efficient Development Model for Regions of the Russian Federation: Evidence of Crypto Mining. *International Journal of Energy Economics and Policy*, 9(4), 16-21. <https://doi.org/10.32479/ijeeep.7759>
14. Mikhaylov, A. (2018a). Pricing in Oil Market and Using Probit Model for Analysis of Stock Market Effects. *International Journal of Energy Economics and Policy*, 8(2), 69-73. Retrieved from <https://www.econjournals.com/index.php/ijeeep/article/view/5846>
15. Mikhaylov, A. (2018b). Volatility Spillover Effect between Stock and Exchange Rate in Oil Exporting

- Countries. *International Journal of Energy Economics and Policy*, 8(3), 321-326. Retrieved from <https://www.econjournals.com/index.php/ijeep/article/view/6307>
16. Mikhaylov, A. (2019). Oil and Gas Budget Revenues in Russia after Crisis in 2015. *International Journal of Energy Economics and Policy*, 9(2), 375-380. <https://doi.org/10.32479/ijeep.6635>
  17. Nyangarika, A., Mikhaylov, A., & Richter, U. (2019a). Influence Oil Price towards Economic Indicators in Russia. *International Journal of Energy Economics and Policy*, 9(1), 123-130. <https://doi.org/10.32479/ijeep.6807>
  18. Nyangarika, A., Mikhaylov, A., & Richter, U. (2019b). Oil Price Factors: Forecasting on the Base of Modified Auto-regressive Integrated Moving Average Model. *International Journal of Energy Economics and Policy*, 9(1), 149-160. <https://doi.org/10.32479/ijeep.6812>
  19. Nyangarika, A., Mikhaylov, A., & Tang, B.-J. (2018). Correlation of Oil Prices and Gross Domestic Product in Oil Producing Countries. *International Journal of Energy Economics and Policy*, 8(5), 42-48. Retrieved from <https://www.econjournals.com/index.php/ijeep/article/view/6802>
  20. Singer, E. (2007). *Oil Price Volatility and the US Macroeconomy: 1983–2006* (Working paper). Minnesota of USA: Carleton College.