

“Retraction: Confidence level and credit risk analysis in Russian banks”

AUTHORS

Oleg Lavrushin  <http://orcid.org/0000-0002-8392-2064>

Natalia Sokolinskaya  <http://orcid.org/0000-0002-4731-722X>

ARTICLE INFO

Oleg Lavrushin and Natalia Sokolinskaya (2020). Retraction: Confidence level and credit risk analysis in Russian banks. *Banks and Bank Systems*, 15(2), 38-46. doi:[10.21511/bbs.15\(2\).2020.04](https://doi.org/10.21511/bbs.15(2).2020.04)

DOI

[http://dx.doi.org/10.21511/bbs.15\(2\).2020.04](http://dx.doi.org/10.21511/bbs.15(2).2020.04)

RELEASED ON

Thursday, 16 April 2020

RECEIVED ON

Monday, 12 August 2019

ACCEPTED ON

Sunday, 29 March 2020

LICENSE



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

JOURNAL

"Banks and Bank Systems"

ISSN PRINT

1816-7403

ISSN ONLINE

1991-7074

PUBLISHER

LLC “Consulting Publishing Company “Business Perspectives”

FOUNDER

LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

39



NUMBER OF FIGURES

1



NUMBER OF TABLES

3

© The author(s) 2022. This publication is an open access article.



BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Received on: 12th of August, 2019
Accepted on: 29th of March, 2020
Published on: 16th of April, 2020

© Oleg Lavrushin, Natalia Sokolinskaya, 2020

Oleg Lavrushin, Doctor of Economics, Professor, Department of Financial Markets and Banks, Financial University under the Government of the Russian Federation, Russian Federation.

Natalia Sokolinskaya, Ph.D., Professor, Department of Financial Markets and Banks, Financial University under the Government of the Russian Federation, Russian Federation. (Corresponding author)



This is an Open Access article, distributed under the terms of the [Creative Commons Attribution 4.0 International license](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted re-use, distribution, and reproduction in any medium, provided the original work is properly cited.

Conflict of interest statement:
Author(s) reported no conflict of interest

Oleg Lavrushin (Russian Federation), Natalia Sokolinskaya (Russian Federation)

CONFIDENCE LEVEL AND CREDIT RISK ANALYSIS IN RUSSIAN BANKS

Abstract

The aim of the paper is to analyze the confidence level and credit risks in Russian banks after the 2014 sanction in terms of the economic behavior theory. The paper describes the banking system of Russia using analytical methods according to the polled data of the Financial University and the Bank of Russia. The survey included 106 responses of professors and researchers of the Financial University ranged by level of influence: 7 – very high; 6 – high; 5 – little higher, 4 – middle, 3 – little low, 2 – low, and 1 – very low. Statistics on Distance to Default and Probability of Default are used from Thomson Reuters. The survey proves that the problem of credit risk management in the Russian banking system is not so strong. It is confirmed that the confidence level is the solution to the problem of low level of institutional investors' (mutual funds, pension institutions, insurance companies) capacity due to the lack of money coming into the financial system. The main conclusion is that in Russia there are no proper incentives for potential recipients of investment to attract investment resources in the domestic stock market, and the number of banks is steady decreasing. The results showed that the credit risk of Russian banks is higher than one year ago.

Keywords

distance to default, banking system, confidence level, assets

JEL Classification

G20, G21, G28

INTRODUCTION

Banks operate in the interaction of three main groups of participants: investors, investment recipients and financial intermediaries in a broad sense, including infrastructure institutions. At different times, the market may be in short supply in one of the three areas.

The low level of access to financial services and markets for most potential investors and recipients of investment (first of all, net sales of financial products and financial advisory services, retail financial supermarkets; instead, it is extremely disadvantageous for investors to practice financial products for sale, which preserves blocking interests within banks and large financial groups) is due to:

- incomplete correspondence of the structure of instruments traded in the market of investment preferences of the population;
- the investors' lack of information about investment instruments and their key characteristics, as well as ways to protect their interests, etc.;
- insufficient investor awareness of the reliability of intermediaries, transaction costs, the results of asset management (mutual funds and pension savings), which does not allow them to get all the necessary information about choosing a financial intermediary.

1. LITERATURE REVIEW

First of all, this concerns the difference in the principles of banking supervision and stock market regulation in terms of protecting investors (Alwaelya, Yousif, & Mikhaylov, 2020; Abdul-Majid, Saal, & Battisti, 2010; Lisin, 2020a, 2020b).

The principles of regulation and supervision in the insurance market are also focused primarily on protecting the interests of customers (Alkassim, 2005; Dayong, Mikhaylov, Bratanovsky, Shaikh, & Stepanova, 2020).

Potential investment recipients that can attract investments in a bank have sharply limited incentives for such attraction:

- qualitative parameters of capital formed in the financial market do not fully meet the needs of enterprises in the real sector as the main group of recipients of long-term investments;
- raising capital to the bank is associated with certain conditions that lead to modern Russian conditions of a significant increase in transaction costs to attract capital in this market. The quality of capital raised to the non-banking financial market does not fully meet the needs of enterprises in the real sector, following the blowing parameters;
- due to the low level of investment, financial systems are redistributed into the real sector of the economy, which determines the treatment of significant part of mid-sized companies to foreign markets, and in terms of their closeness, an increased demand for bank loans, posing a threat to the stability of the banking system;
- high cost of borrowing and low duration of attracted long-term investment for most recipients;
- low share of equity investment, leading to a shortage of equity in the real sector, restraining credit expansion in the real sector and distorting forms of financing (construction).

Even if the structural problem, which was described in more detail above, is somehow solved,

and the resources accumulated by the largest exporters and individual financial and non-financial quasi-state corporations are fully utilized, their volume is sufficient only for simple reproduction, and favorable foreign economic conditions are for expanded reproduction with low GDP growth (up to 2-3% per year) (Lokshina, 2016; Agarwal & Taffler, 2008).

These two goals of financial regulation, partially coinciding in their subject area and functionality, are nevertheless solved in different ways. The task of preventing systemic threats is, in essence, financial and economic, and economic mechanisms are involved in its solution, while investor protection is understood in a legal sense and is carried out mainly by legal means (Hunjra, Niazi, Akbar, & Rehman, 2011).

From the theoretical point of view, the difference between the two most important goals of financial regulation lies in the basis for the formation of more and more popular twin peaks model in the modern world, which provides for fixing each of these goals for different regularization of banks (Ahmad & Ariff, 2007). In Russia, it was decided to follow the path of forming a single body of financial regulation and supervision – a mega-regulator (Denisova, 2020, Lopatin, 2020).

As Russian practice shows, within the framework of a single body it is difficult to combine the implementation of two different goals of financial regulation (Denisova, 2019).

In order to combine two different goals of financial regulation, it is advisable for the Bank of Russia to more precisely define the characteristics of a particular regulatory problem and solve it using appropriate means (Hunjra, Niazi, Akbar, & Rehman, 2011; Johansen, 1991).

Although this was not achieved, the number of non-bank financial intermediaries sharply decreased, and their supervisory capacity increased, but there was no increase in investor protection or quality of activities of non-banking financial intermediaries or line services they offered (Abedifar, Molyneux, & Tarazi, 2013; Schoors, 2003; Speranskaya, 2009; Meynkhart, 2020b).

2. DATA AND METHODOLOGY

Data was obtained from Thomson Reuters as of July 2019. Hunjra, Niazi, Akbar, and Rehman (2011) suggested using the z-score parameter for credit risk.

Credit risk management described as the problem of inefficient and insufficient risk management carried out by the non-banking financial sector as a whole and its individual segments within the national economy, is a direct reflection of unsatisfactory performance of risk transformation (distribution, redistribution and diversifying), including investment activities, by the financial sector (Karagiannis, 2014; Klinova & Sidorova, 2014).

The Z-score formula is as follows:

$$Z = (k + \mu) / \sigma, \quad (1)$$

where k is equity and reserves, μ is the average net income to total assets, and σ is the standard deviation of return on assets (Tatuev, Shash, & Borodin, 2014).

The Altman Z-score is a popular parameter for the bankruptcy risk evaluation (Altman, 1968; Altman & Saunders, 1997). Altman Z-score formula is as follows:

$$Z - score = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E, \quad (2)$$

where A is the ratio of equity to total assets, B is the ratio of earnings equity to total assets, C is the ratio of earnings before payment loan interest and taxes to assets, D is the ratio of market value to liabilities, and E is the ratio of total sales to total assets.

The credit risk was found by the following equation:

$$(CR)_{i,t} = \alpha + \beta_1(Size)_{i,t} + \beta_1(LNT)_{i,t} + \beta_1(GRW)_{i,t} + \beta_4(ROA)_{i,t}, \quad (3)$$

where $Size$ is a natural log of total assets, LNT is the loan to total assets ratio, GRW is a growth of total assets, ROA is the return on assets. α and β are

dependent variables are credit risk (CR) (Z-score, Altman Z-score, non-performing loans, distance to default and probability of default) for a bank in country j at time t , and independent variables are bank-specific ones (Karminsky, Hainswort, & Solodkov, 2013; Karas & Vernikov, 2016; Fungáčová, Solanko, & Weill, 2010, Yumashev & Mikhaylov, 2020).

3. RESULTS

It is necessary to indicate three problems of the following level, which determine the problem of risk management by the financial sector:

- insufficient market capacity of derivatives;
- limited opportunities for risk diversification in the securities market and in the second tier of asset management services;
- the level of development of the insurance market that does not meet the modern market economy requirements (Lopatin, 2019).

Many of the instruments that are traditionally used to hedge risks in the modern world are not represented in the market of derivative financial instruments in sufficient volumes: commodity futures and options; interest-bearing derivatives; credit derivatives and others. In the formal market, the presence in the structure of certain derivatives of their low level of liquidity is an insurmountable barrier to their use for hedging large market names (Singer, 2007; Sprenger, 2010).

In the last 50 years, in the financial sector the reduction of investment risks by diversifying assets has been extremely time-consuming. However, the extremely low liquid instruments in the Russian equity and bond markets, the high concentration of turnover in these markets do not allow diversification of large investors in Russian securities (Table 1).

Market efficiency depends on the investment behavior of Russian banks. The concept of market efficiency comes down to information (or price) on efficiency, but was subsequently identified

Table 1. Asset concentration in the banking sector of Russia, %

Source: Author calculations, Thomson Reuters.

Banks ranging by asset size, place	January 1, 2018	January 1, 2019	April 1, 2019	May 1, 2019	June 1, 2019
5	55.8	60.4	61.4	61.5	61.3
6-20	23.5	21.2	21.1	21.1	21.2
21-50	10.8	9.8	9.3	9.4	9.5
51-200	8.4	7.6	7.3	7.2	7.2
From 201	1.5	1.0	0.9	0.8	0.8
Total	100.0	100.0	100.0	100.0	100.0

as other aspects of it, especially the operators of the diet market efficiency and performance evaluation by the transistor automatic computer costs (primarily in terms of the non-market risk impact). Russian banks are characterized by low efficiency, a kind of “market curvature”, which implies the inadequate display of information in price voltage (An & Dorofeev, 2019; An, Mikhaylov, & Moiseev, 2019).

Inequality arises among market participants, with the exception of the following violations of risk-management mechanisms in the financial market (see Table 2):

- prevalence of unfair practices (insider trading and market manipulation);
- preservation of numerous conflicts of interest (first of all, the regulator’s participation in the capital of supervised organizations);
- non-market benefits by commercial banks to non-banking financial organizations (taxation, specific supervisory capacity; access to a lender of last resort, etc.).

Unfortunately, the Russian version of the combination of regulatory standards cannot be con-

sidered successful (Rock & Solodkov, 2001; An, Mikhaylov, & Sokolinskaya, 2019b) (Table 3).

Low efficiency of Russian banks predetermines many qualitative problems:

- low share of market transactions in financial asset markets, efficient pricing;
- low liquidity of certain segments of a bank;
- low free float (share in free float) of the stock market, which is a consequence, first of all, of an excessively high share of the state in the economy and the largest corporations, as well as the formation of an extremely high level of concentration of corporate property as a form of protection against acquisitions;
- inequality of market participants;
- low financialization of assets and services, an obstacle to most economic agents for debt investments;
- main structural imbalances in the financial sector (a set of problems that are a quantitative consequence of the above-mentioned qualitative imbalances).

Table 2. Market risk structure of the banking sector, %

Source: Bank of Russia, Thomson Reuters.

Risk type	January 1, 2018		January 1, 2019		April 1, 2019		May 1, 2019		June 1, 2019	
	% to bank equity	% to market risk	% to bank equity	% to market risk	% to bank equity	% to market risk	% to bank equity	% to market risk	% to bank equity	% to market risk
Interest rate risk	31.9	75.0	24.5	64.6	24.1	65.6	23.9	65.6	23.5	65.9
Stock risk	3.6	8.4	3.5	9.2	3.8	10.3	4.1	11.1	3.7	10.3
Currency risk	4.6	10.7	3.8	10.1	5.3	14.5	4.8	13.1	4.9	13.7
Commodity risk	2.5	5.9	6.1	16.0	3.5	9.6	3.7	10.2	3.6	10.0

Table 3. Data summary

Source: Author calculations, Thomson Reuters.

Z-Score	LTA	72.745 (0.84)	240.996 (-1.6978)	-89.1006 (-2.5934)	-456.8142 (-3.0907)
	LNT	-0.0265 (-0.01)	30.7509 (2.0074)	-24.7271 (-3.5946)	76.4778 (5.3285)
	GRW	25.354 (0.25)	12.3001 (0.1634)	-27.3129 (-0.9012)	-365.4903 (-1.7580)
	ROA	505.84 (03441)	-17205.91 (-2.837)	1337.961 (5.0425)	10306.88 (3.7416)
	C	23.023 (0.2297)	-204.1065 (-0.6726)	555.8153 (3.7802)	-1441.641 (-4.9087)
	R ²	0.085	0.494	0.551	0.739
	F-stat	0.536	5.627	7.060	4.834***
	P-value of the likelihood test	0.6120	0.9681	0.1543	0.0206
	P-value of the Hausman test	-	-	-	0.004
	Altman Z-Score	LTA	-1.2547 (-0.7964)	0.0752 (0.4120)	-0.1650 (-2.9559)
LNT		-0.2343 (-3.811)	0.0552 (2.8058)	-0.7746 (-2.7782)	-0.1624 (-4.0549)
GRW		0.1317 (0.0720)	0.0310 (0.3202)	13.6438 (6.3362)	-0.7339 (-1.2651)
ROA		-52.8583 (-1.9767)	25.0727 (3.217)	-0.3084 (-1.2539)	5.0668 (0.6592)
C		7.4218 (4.0701)	-1.3711 (-3.515)	3.8457 (3.2229)	3.8469 (4.6946)
R ²		0.602	0.721	0.662	0.847
F-stat		8.703	14.88	11.281	9.479
P-value of the likelihood test		0.3195	0.0504	0.4728	0.000
P-value of the Hausman test		-	-	-	0.000
Non-performing loans		LTA	-0.1450 (-4.684)	0.0056 (0.8379)	0.0518 (1.8609)
	LNT	-0.0063 (-5.185)	0.0001 (0.1799)	0.0024 (0.4269)	-0.0046 (-4.1715)
	GRW	0.0311 (0.8671)	-0.0026 (-0.7496)	0.0249 (1.0142)	0.0208 (2.1485)
	ROA	-0.9483 (-1.8044)	-0.4392 (1.5460)	-0.6446 (-3.0001)	-0.9924 (-5.0283)
	C	0.2266 (6.3225)	-0.0113 (-0.7924)	-0.0514 (-0.4317)	0.0912 (3.8177)
	R ²	0.723	0.312	0.430	0.613
	F-stat	15.080	2.615	4.351	9.117
	P-value of the likelihood test	0.4749	0.7994	0.8554	0.2101
	P-value of the Hausman test	-	-	-	-
	Distance to default	LTA	0.0521 (1.0481)	-0.0739 (-1.9060)	0.3277 (0.7037)
LNT		1.1523 (0.8866)	-0.9143 (-2.5464)	0.1832 (1.9648)	-1.4879 (-4.8320)
GRW		0.1036 (0.0687)	-0.1182 (-0.6208)	-0.2003 (-0.4876)	-0.3756 (-0.8672)
ROA		-10.3204 (-0.4678)	62.6446 (4.0834)	1.9047 (0.5296)	11.9157 (2.0762)
C		0.4942 (0.3285)	3.1218 (4.0669)	-2.3659 (-1.1872)	-0.5396 (-0.8819)
R ²		0.049	0.466	0.257	0.768
F-stat		0.299	5.018	1.992	5.646
P-value of the likelihood test		0.875	0.1104	0.8809	0.0035
P-value of the Hausman test		-	-	-	0.000
Probability of default		LTA	-0.001 (-0.1557)	0.0081 (2.1851)	-0.0408 (-0.6918)
	LNT	-0.0202 (-0.8707)	0.0723 (2.1135)	-0.0245 (-2.0696)	0.3663 (4.6320)
	GRW	-0.0128 (-0.4738)	0.0065 (0.3585)	0.0302 (0.5802)	0.1178 (1.0590)
	ROA	-0.3535 (-0.8967)	-5.7565 (-3.9379)	-0.2689 (-0.5897)	-3.1479 (-2.1360)
	C	0.0457 (1.6997)	-0.1035 (-1.4156)	0.5849 (2.3145)	0.5211 (3.3168)
	R ²	0.133	0.433	0.284	0.747
	F-stat	0.889	4.408	2.286	5.042
	P-value of the likelihood test	0.5775	0.1243	0.8934	0.0044
	P-value of the Hausman test	-	-	-	0.000

Note: all indicators are calculated on the base of data from Thomson Reuters Datastream.

Source: Financial University Poll, 2020.

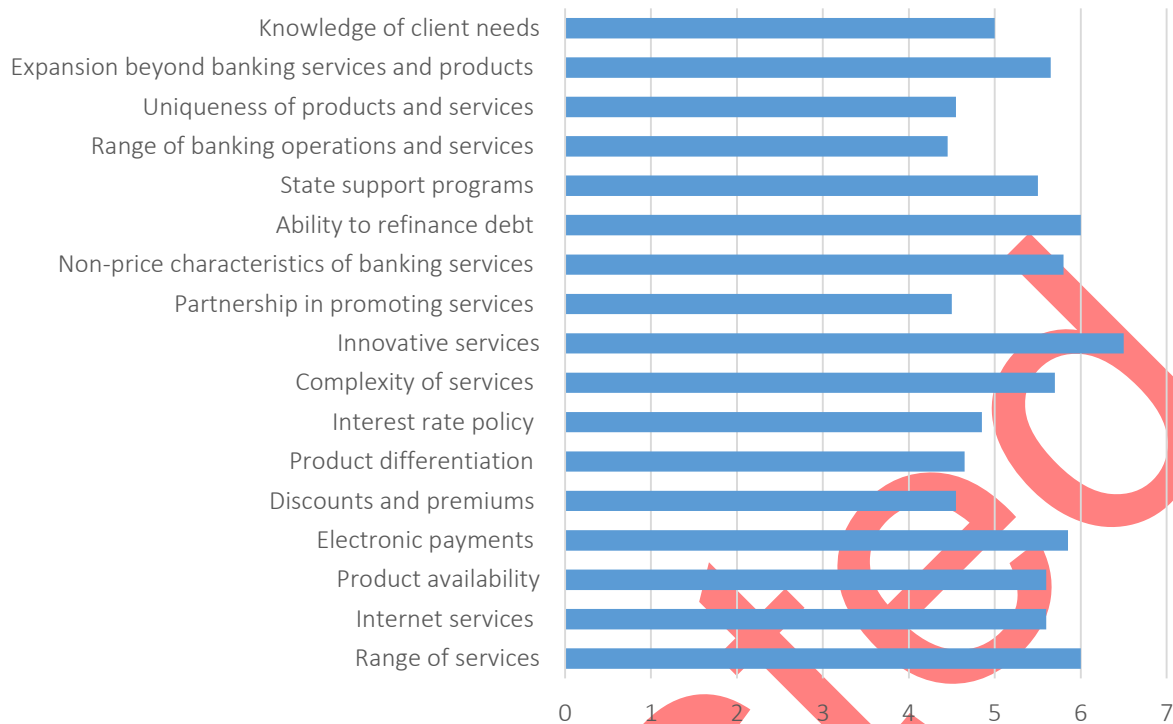


Figure 1. Banking services impacting the confidence level to the Russian banks

Low share of market transactions in the financial asset markets and low liquidity of individual banking segments are largely due to the low depth of the financial market as a whole (financial depth of the economy), the acute form of which is characteristic of individual segments. However, they are not limited to the overall low financial depth, but are also the result of inefficient exchange infrastructure and institutions, in particular, regulators and supervisors (Figure 1).

The survey included 106 responses of professors and researchers of the Financial University ranged by level of influence: 7 – very high; 6 – high; 5 – little higher, 4 – middle, 3 – little low, 2 – low, and 1 – very low.

The low level of financialization of assets and the economy is a consequence of the following problems:

- inefficient Russian regulation for the purposes of securitization;
- the lack of a market valuation (and the possibility of obtaining it) of a significant part of assets;

- non-involvement of assets in economic and financial turnover after lack of market value (in land and other objects, there are no movable and recoverable reserves of mineral resources);
- underdeveloped urgent commodity markets that provide financialization of commodity assets.

There are no developed tools on the foreign markets, which impede the expansion of Russian capital even in countries located in the zone of Russian economic attractiveness.

4. DISCUSSION

This paper confirmed the idea of Vernikov (2009) about the increase in transaction costs of raising capital in the non-banking financial market, which is associated not only with the high cost of maintaining the standards of corporate governance and ensuring an adequate level of transparency, but also with increased non-market risks (Meynkhard, 2019, Meynkhard, 2020a).

This study found that the compliance with the financial market leads to increased profitability and business development in the near future (including the reflection of this in the market valuation of business, capitalization). The most cost-effective, fast-growing and maximal transparent corporate raiders have attracted the most attention, and possibilities of protection against hostile takeovers for public corporations are limited to legal practice, which is selective in modern Russia. As a result, there are victims of hostile takeovers (Mikhaylov, 2019; Denisova, 2019).

On the other hand, the current study showed that main characteristics of banks (net assets) have grown. Loans, securities purchased by credit organizations, deposits of individuals, funds raised from organizations were in an upward trend from

2014 to 2018 (Lokshina, 2016; Agarwal & Taffler, 2008). The main directions are as follows:

1. Changing the hierarchy of goals for social development and stimulating the activities of public servants (ensuring mandatory and accurate implementation of reforms; introducing political responsibility for strategy implementation).
2. Improving the investment climate.
3. Reducing the share of the state in the economy (privatization of state property with the predominant use of exchange mechanisms; indicators of advanced long-term stock returns should be the main criterion for the effectiveness of privatization).

CONCLUSION

This research tested the idea that an integral feature of the existing structure of the Russian economy is a high share of the state, which largely determines the structure as a whole.

It has been found that the most important problem of this group is obviously the extremely low confidence in the national judicial system. Various experts often call the problem of confidence level the main brake on financial development in the country. However, this problem, according to the authors, is related to the low quality of institutions operating in Russia, which causes a poor investment climate and low quality of the state (Vernikov, 2011).

The confidence level is the result of very low capacity of institutional investors (mutual funds, pension institutions, insurance companies) due to lack of money coming into the banking system.

The authors believe that the priority ideology over the economy, the enthusiasm for geopolitical issues to the detriment of social and economic development – all these create irrational behavior of the state from the point of view of economic development, which negatively affects financial development.

The main conclusion is that in Russia there are no proper incentives for potential investment recipients to attract investment resources in the domestic stock market, and there is a steady reduction in the number of banks.

AUTHOR CONTRIBUTIONS

Conceptualization: Natalia Sokolinskaya.

Data curation: Natalia Sokolinskaya.

Formal analysis: Natalia Sokolinskaya.

Funding acquisition: Oleg Lavrushin.

Investigation: Oleg Lavrushin.

Methodology: Oleg Lavrushin.

Project administration: Oleg Lavrushin.

Resources: Oleg Lavrushin.
 Software: Natalia Sokolinskaya.
 Supervision: Oleg Lavrushin.
 Validation: Oleg Lavrushin.
 Visualization: Oleg Lavrushin.
 Writing – original draft: Oleg Lavrushin, Natalia Sokolinskaya.
 Writing – reviewing & editing: Natalia Sokolinskaya.

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/s11213-009-0165-3>
2. Abedifar, P., Molyneux, P., & Tarazi, A. (2013). Risk in Islamic banking. *Review of Finance*, 17(6), 2035-2096. Retrieved from <https://hal-unilim.archives-ouvertes.fr/hal-00915115/document/>
3. Agarwal, V., & Taffler, R. (2008). Comparing the performance of market-based and accounting-based bankruptcy prediction models. *Journal of Banking & Finance*, 32(8), 1541-1551. Retrieved from https://dspace.lib.cranfield.ac.uk/bitstream/handle/1826/7694/Comparing_the_performance_of_market_based.pdf?sequence=1&isAllowed=y
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
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 & Finance*, 21(11-12), 1721-1742. [https://doi.org/10.1016/S0378-4266\(97\)00036-8](https://doi.org/10.1016/S0378-4266(97)00036-8)
8. Alwaelya, S. A., Yousif, N. B. A., & Mikhaylov, A. (2020). Emotional Development in Preschoolers and Socialization. *Early Child Development and Care*, 190(6). <https://doi.org/10.1080/03004430.2020.1717480>
9. An, J., Mikhaylov, A., & Moiseev, N. (2019). Oil Price Predictors: Machine Learning Approach. *International Journal of Energy Economics and Policy*, 9(5), 1-6. <https://doi.org/10.32479/ijeeep.7597>
10. An, J., & Dorofeev, M. (2019). Short-term FX forecasting: decision making on the base of expert polls. *Investment Management and Financial Innovations*, 16(4), 72-85. [https://doi.org/10.21511/imfi.16\(4\).2019.07](https://doi.org/10.21511/imfi.16(4).2019.07)
11. Dayong, N., Mikhaylov, A., Bratanovsky, S., Shaikh, Z. A., & Stepanova, D. (2020). Mathematical modeling of the technological processes of catering products production. *Journal of Food Process Engineering*, 43(2). <https://doi.org/10.1111/jfpe.13340>
12. 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>
13. Denisova, V. (2020). Financial Development and Energy Consumption: Evidence from Germany. *International Journal of Energy Economics and Policy*, 10(2), 35-39. <https://doi.org/10.32479/ijeeep.8603>
14. Fungáčová, Z., Solanko, L., & Weill, L. (2010). Market power in the Russian banking industry. *International Economics*, 124(4), 127-145. Retrieved from <https://www.cairn.info/revue-economie-internationale-2010-4-page-127.htm>
15. 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. Retrieved from <https://ssrn.com/abstract=1944686>
16. Johansen, S. (1991). Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models. *Econometrica*, 59(6), 1551-1580. Retrieved from <https://ideas.repec.org/a/ecm/emetrp/v59y-1991i6p1551-80.html>
17. Karagiannis, E. (2014). The Russian interventions in south Ossetia and Crimea compared: Military performance, legitimacy and goals. *Contemporary Security Policy*, 35(3), 400-420. <https://doi.org/10.1080/13523260.2014.963965>
18. Karas, A., & Vernikov, A. (2016). *Russian Bank Database: Birth and Death, Location, Mergers, Deposit Insurance Participation, State and Foreign Ownership* (Discussion Paper Series No. 16-04). Utrecht School of Economics. Retrieved from <https://ideas.repec.org/p/use/tkiwps/1604.html>

19. Karminsky, A. M., Hainsworth, R. N., & Solodkov, V. M. (2013). Arm's Length Method for Comparing Rating Scales. *Eurasian Economic Review*, 3(2), 114-135. Retrieved from <https://ideas.repec.org/a/ebz/eejrjn/v3y2013i2p114-135.html>
20. Klinova, M., & Sidorova, E. (2014). Economic sanctions and their impact on Russia's economic ties with the European Union. *Problems of Economic Transition*, 58(3), 218-234. <https://doi.org/10.1080/10611991.2016.1200391>
21. Lisin, A. (2020a). Biofuel Energy in the Post-oil Era. *International Journal of Energy Economics and Policy*, 10(2), 194-199. <https://doi.org/10.32479/ijeeep.8769>
22. Lisin, A. (2020b). Prospects and Challenges of Energy Cooperation between Russia and South Korea. *International Journal of Energy Economics and Policy*, 10(3), 130-135. Retrieved from <http://www.econjournals.com/index.php/ijeeep/article/view/9070>
23. Lokshina, Y. (2016). TSB sviazal posbleniyu: Kreditovaniye sobstvennikov bankov ogranichat chastichno [The Central Bank has linked indulgences: Lending to bank owners will be limited in part]. (In Russian). Retrieved from <https://www.kommersant.ru/doc/2989590>
24. 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>
25. Lopatin E. (2020). Cost of Heating Pump Systems in Russia. *International Journal of Energy Economics and Policy*, 10(3), 219-223. <https://doi.org/10.32479/ijeeep.9056>
26. Meynkhart, 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>
27. Meynkhart, A. (2020a). Priorities of Russian Energy Policy in Russian-Chinese Relations. *International Journal of Energy Economics and Policy*, 10(1), 65-71. <https://doi.org/10.32479/ijeeep.8507>
28. Meynkhart A. (2020b). Long-Term Prospects for the Development Energy Complex of Russia. *International Journal of Energy Economics and Policy*, 10(3). <https://doi.org/10.32479/ijeeep.9064>
29. 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/ijeeep.6635>
30. Mutalimov, V., Kovaleva, I., Mikhaylov, A., & Stepanova, D. (2020). Methodology comprehensive assessment of the business environment in the regions of Russia: introducing business environment into education system. *Journal of Entrepreneurship Education*, 23(1). Retrieved from <https://www.abacademies.org/articles/Methodology-comprehensive-assessment-of-the-business-environment-1528-2651-23-1-512.pdf>
31. Rock, C. P., & Solodkov, V. (2001). Monetary policies, banking, and confidence level in changing institutions: Russia's transition in the 1990s. *Journal of Economic Issues*, 35(2), 451-455. <https://doi.org/10.1080/00213624.2001.11506379>
32. Schoors, K. (2003). The fate of Russia's former state banks: Chronicle of a restructuring postponed and a crisis foretold. *Europe-Asia Studies*, 55(1), 75-100. <https://doi.org/10.1080/713663445>
33. Singer, E. (2007). *Oil Price Volatility and the US Macroeconomy: 1983-2006* (Working paper). Minnesota of USA: Carleton College. Retrieved from https://www.researchgate.net/publication/228744222_Oil_Price_Volatility_and_the_US_Macroeconomy_1983-2006
34. Speranskaya, T. (2009). An analysis of the Russian banking model versus the Chinese one. *Studies on Russian Economic Development*, 20(2), 181-188. <https://doi.org/10.1134/S1075700709020075>
35. Sprenger, C. (2010). State ownership in the Russian economy: Its magnitude, structure, and governance problems. *The Journal of the Institute of Public Enterprise (Hyderabad)*, 33(1-2), 63-110.
36. Tatuev, A. A., Shash, N. N., & Borodin, A. I. (2013). Problema perekhoda na programmnyy byudzhety politike Rossii [The Problem of Transition to the Program Budget: New Challenges to the Budget Policy of Russia]. *Terra Economicus*, 11(4), 145-151. Russia. Retrieved from <https://cyberleninka.ru/article/n/problemy-perehoda-na-programmnyy-byudzhety-novyye-vyzovy-byudzhety-politiki-rossii/viewer>
37. Vernikov, A. (2009). *Russian banking: The state makes a comeback?* (BOFIT Discussion Papers No. 24/2009). Helsinki, Finland: Bank of Finland. Retrieved from <https://www.econstor.eu/handle/10419/212668>
38. Vernikov, A. (2011). *Government banking in Russia: Magnitude and new features* (IWH Discussion Paper No. 13/2011). Halle-Saale, Germany: Halle Institute for Economic Research. Retrieved from <https://econpapers.repec.org/paper/zbwihw/dps/iwh-13-11.htm>
39. Yumashev, A., & Mikhaylov, A. (2020) Development of Polymer Film Coatings with High Adhesion to Steel Alloys and High Wear Resistance. *Polymer Composites*, 1-6. <https://doi.org/10.1002/pc.25583>