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Role of Financial Resources of the Economy's Banking Sector in Russian Regions' Socio-Economic Development*

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Abstract. Financial capacities of the banking sector become an important strategic resource during the deficit of financial resources for the implementation of administrative multi-level spatial strategies and solution of important issues related to the territorial systems' socio-economic development. The purpose of the study is to justify the key role of the economy's banking sector in the solution of the issue concerning the increase of the RF entities' fiscal capacity and to assess a volume of credit institutions' necessary financial resources. To achieve this goal, the following objectives were set: to study fiscal capacity and structure of the regional systems' government debt and the banking sector's contribution to its formation, to construct spatial regression models showing the dependence of the regions' socio-economic development level and their fiscal capacity on financial resources attracted by the banking sector, to define the volume of credit institutions' financial resources, attraction of which will solve the problem of the RF entities' budget deficit. We use the methods of statistical and regression analysis in this work. As a result, it was revealed that the banking sector's investments in government and municipal debt securities and lending of the RF entities contribute to the increase of fiscal capacity, form financial foundation for the implementation of socio-economic development strategies. Attraction of investments in enterprises' shares and securities, loans to financial and non-financial business and households lead to an increase of the territories' gross

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regional product. The results of this study may be useful for the government authorities of the RF entities while implementing the developed spatial socio-economic development strategies.

Key words: financial resources, banking sector, fiscal capacity, strategic planning, regression modelling.

Introduction

Banks and credit institutions perform one of the most important functions in the economic development: they provide the real economic sector with necessary financial resources for the modernization and diversification of production. Scientists S.Yu. Glaz'ev [1], A.G. Aganbegyan [2], O.S. Sukharev [3], L.L. Igonina [4], S. Chung, H. Singh, K. Lee [5], J. Bushee Brian [6], Yafeh Yishay, Yosha Oved [7], and others wrote about the key importance of the bank credit in the development of the real sector of the economy. The banking sector also plays an important role in attracting long-term financial resources to implement investment projects aimed at building transport, engineering, and energy infrastructure. In the context of an acute shortage of budgetary financial resources for solving socio-economic problems of territorial systems development at various administration levels, issues related to the search for additional financial sources for the implementation of strategic initiatives emerge more often. In February 2019, the Government of the Russian Federation approved the Spatial Development Strategy until 2025[1], aimed at reducing inter-regional socio-economic imbalances, developing promising economic sectors of specialization, and forming promising centers of the economic growth, mineral resources and agro-industrial centers. The presence of budget deficits in most regions calls into question a possibility of implementing the formed strategies. Analyzing the problems of budget balance, N.V. Zubarevich argued that the policy of equalizing the budget deficit of territories implemented by the state at the expense of subsidies and state loans is not efficient, especially in the conditions of the crisis state of the Russian economy [8]. In our opinion, investment attraction from the banking sector in debt securities of Russian regions and their municipalities, as well as bank loans, may be the best way to solve this problem. In this regard, the purpose of this study is to substantiate the key role of the banking sector in solving the problem of balancing regional budgets, including assessment of the volume of credit institutions' required financial resources. To achieve this goal, the following objectives were set: to theoretically overview works on the assessment of the role of the banking sector of economy in increasing the territories' fiscal capacity, to assess the fiscal capacity of regional systems, to study the structure of the government debt of regional systems and contribution of the banking sector's financial resources in its formation; to build a regression model of the dependence of the regions' fiscal capacity and their level of socio-economic development on financial resources, attracted by banks; to determine the amount of financial resources of credit institutions which will help to solve the problem of budget deficit in the RF entities.

Theoretical overview of works on the assessment of the role of banks in increasing territories' fiscal capacity

Theoretical overview of works on the problems of territories provision with the banking sector's financial resources allowed drawing several conclusions.

[1] Spatial Development Strategy until 2025: Order of the Government of the Russian Federation no. 207-p, dated February 13, 2019.

1. There are ***opposite opinions regarding the banking sector's role in providing territories with financial resources.*** A.V. Chernyavskii wrote about an important role of the banking sector in solving the problems of balanced regional budgets. He noted that this sector is the main source of deficiency payments of regional budgets: "In 2012 and 2013, bank loans amounted to 58.3% in the structure of the RF entities' government debt and government debt securities, purchased by financial institutions – to 13.7%" [9, p. 22]. Ya.V. Zharii and Yu.V. Krasnyanskaya in the work "Transformation of the investment activity of the Ukraine's banking system for implementing strategic projects" highlight the role of banks in the implementation territories' socio-economic development strategies, and their credit and deposit resources in particular [10]. According to E.N. Ryabinina and A.F. Savderova, "the banking sector is an important component of the territory's financial system. In the strategy of socio-economic development, it is assigned a key role in ensuring the balance and innovative development of the economy". Researchers argued that the "sustainable development of regions is impossible without an adequate amount of financial resources, and it is credit organizations that accumulate and mobilize monetary capital, turning them into the most important source of funds for economic entities" [11, p. 25]. S.Yu. Glaz'ev, V.V. Ivanter, V.L. Makarov, A.D. Nekipelov, A.I. Tatarkin, R.S. Grinberg, and other scientists note that "the main reason for a persistent lack of funds for development is the orientation of financial policy to the existing state budget opportunities, which do not allow us to simultaneously solve the problems of maintaining current socio-economic stability and structural and technological modernization. The solution of the latter problem is possible only through the development of bank credit" [12, p. 19]. According to Sh.D. Arslanov, the need to develop the banking sector in the region is caused by the fact that "this structure of the socio-economic system is an important mechanism for self-development and stabilization of an entire region. The banking sector of a region, ensuring the redistribution of funds, lending, and settlements, contributes to the growth of public labor productivity" [13, p. 8]. A.G. Aganbegyan [2], O.S. Suharev [3], A.I. Stolyarov [14], E.V. Popova [15], and several foreign scientists – A. Belke, U. Haskamp, R. Setzer [16], C. Bernini, P. Brighi [17], M. Gjelsvik [18], S.S. Jha [19], etc. – wrote about the key role of the banking sector in the socio-economic development of territorial systems at the macro-economic level.

At the same time, some authors speak about a negative impact of the banking sector and the regulation policy of the Central Bank of the Russian Federation on the socio-economic development and financial stability of territorial systems. In particular, criticizing the monetary policy implemented in Russia, O.S. Sukharev noted that "the presence of the financial sector with institutions, created for it, greatly reduces the GDP growth rate". The reason for this, in his opinion, is the implementation of this sector "financial and speculative activities that are beyond the control of a reasonable macroeconomic policy of the Government, and they contribute to the leaching of financial resources from the regions, ultimately leading to the increase of the regional budget deficit|" [20, p. 135]. V.A. Fedoseeva argued that "Russian regions with a more developed regional banking sector can absorb capital from neighboring regions. At the same time, the economic security of regions with an undeveloped sector of regional banks will always depend on decisions made outside their territories" [21, p. 57]. According to A.G. Aganbegyan, due to inefficiently organized supervision of financial institutions in the regions and the policy of the Central Bank of the Russian Federation, "the banking system practically does not engage in credit investment of businesses or regions with municipalities" [22, p. 7]. A.I. Tatarkin noted that "the policy of the Central Bank of the Russian Federation to revoke licenses from commercial banks deprives the population, small- and medium-sized businesses of savings and funds for the development and innovative renewal of production" [23, p. 20]. He wrote that many subsidized regions do not have access to credit resources of the banking sector of the economy, and an inefficient financial policy is applied to them: instead of supporting territories with "state orders, bank credits, and investment programs to modernize their economy and switch to a model of sustainable self-development, annual subsidies are provided for them" [23, p. 15]. The negative impact of financial and speculative activities, carried out by the banking sector, on the regions' economic development was also noted in our early works. The study of the features of the formation and use of investment potential of banks showed that "available financial resources of this economic sector are used for speculative operations with foreign currency, shares, and debt securities of foreign issuers. Most financial resources of credit institutions are placed on foreign accounts in the form of deposits" [24]. In modern conditions of economic development, "the banking sector, unfortunately, no longer performs its traditional functions of accumulating, saving, and reproducing the monetary resources of the institutional economic sectors" [25]. And this is facilitated by the monetary policy of the Central Bank of the Russian Federation. To attract financial resources of the banking sector to various budgets in order to implement generated strategic ideas, it is necessary to restructure the financial policy of credit institutions along with, first of all, the state's monetary policy.

2. ***The second conclusion is that the banking sector's contribution to the development of territorial systems is limited in terms of financial instruments.*** Most researchers narrow the role of the banking sector down to lending infrastructure projects, implemented by government authorities at the regional and municipal levels, construction, and housing. The participation of the banking sector in the implementation of social policies of territorial systems – housing and consumer lending to households in particular – is also noted. At the same time, there is no assessment of the contribution of the banking sector to the formation of financial foundations of territorial systems using such an investment tool as investments in state institutions' debt securities, federal loan bonds, regional and municipal budgets. They are the most attractive for the public sector of the economy, because, unlike loans, they provide a repayment delay of the main part of the debt, especially when using debt securities with a long maturity. In the context of the need for long-term investments in the implementation of strategies for socio-economic development of territories, this investment tool of the banking sector of the economy becomes the most efficient mechanism for attracting financial resources. It should be noted that discussions on the role of the banking sector in the implementation of strategic programs for territorial development and a progressive socio-economic development of territorial systems in the scientific community have appeared relatively recently. The aspect of attracting financial resources of the banking sector to securities of the RF entities and their municipalities has not yet been thoroughly studied.

Methodological approach to the study of the role of the banking sector in increasing fiscal capacity and socio-economic development of regions

There are three main methodological approaches to the study of the provision of territorial systems with financial resources in the scientific literature: 1) statistical approach involves the comparison between the dynamics of indicators of the territory's socio-economic development and credit institutions' financial resources; 2) balance approach considers the system of movement of financial resources between institutional sectors in the territorial system in the form of an equilibrium model; 3) econometric modeling represents the dependence of territories' socio-economic development on resources, attracted by the banking sector, in the form of mathematical equations.

The first approach is the most common. It was used by N.V. Zubarevich [8], A.G. Aganbegyan [22], A.V. Chernyavskii [9], Ya.V. Zharii and Yu.V. Krasnyanskaya [10], E.N. Ryabinina, A.F. Savderova [11], Sh.D. Arslanov [13], and many others. Statistical analysis of indicators of the territories' financial development helps to establish trends and patterns in the dynamics of processes, but it does not allow proving the development dependence on financial resources, attracted by the banking sector, and forming the forecast concerning territorial systems' socio-economic development with changes of the volume of resources attracted by the banking sector.

This problem is also natural for the balance approach to the study of the territorial systems' provision with financial resources. The creation of financial flows' movement matrices between institutional sectors using the methodology of the System of National Accounts (SNA) and formation of a social accounting matrix (SAM) allows revealing interconnections between the financial corporations sector, which includes banks and other credit institutions, insurance companies, investment funds, and the sector of non-financial corporations, public administration, households, and foreign institutions. This approach, unlike others, allows thorough demonstration of all processes of financial resources' movement between these sectors by various instruments (investments in monetary gold, foreign currency, debt and equity securities, operations with deposits and loans, formation of reserves, etc.) and assessment of each sector's contribution to the territory's socio-economic development. However, such tools create serious limitations for work, since the statistics, used for its implementation, are generated at the macroeconomic level and rarely – at the regional level; in addition, they are updated once in five years, which makes it difficult to study the dynamics of financial resources between financial corporations and other sectors, and it excludes their analysis at the municipal level. In addition, this methodological approach does not allow predicting the impact of the banking sector on the territorial systems' provision with financial resources. A review of the scientific literature has shown that it is not common; it was used by E.A. Zakharchuk and A.F. Pasynkov [26], D.A. Tatarkin, E.N. Sidorova, A.V. Trynov [27], I.V. Naumov [24; 25], R. Stone [28], G. Pyatt, J.I. Round [29], H. Khan, E. Thorbecke[30].

The third methodological approach, econometric modeling, unlike others, allows justifying the impact of resources for territories' socio-economic development, attracted by the banking sector, evaluating the effectiveness of certain investment tools to attract resources, creating a forecast of the territories' provision with financial resources, and setting the amount of credit institutions' resources required to increase territorial security using functional dependences. In this regard, to justify the key role of the banking sector and its financial resources in solving the problems of improving budgetary security of entities of the Russian Federation and their socio-economic development and determining the scope of the resources, we will apply the tools of statistical analysis and regression modeling. As the base information, we intend to use official data of the Federal State Statistics Service on income and expenditure volumes of regions' consolidated budget, data of the Ministry of Finance of the Russian Federation on changes of the government debt of entities of the Russian Federation for the 2016–2018 period, regional statistical data of the Central Bank of the Russian Federation on banks' investments in debt and equity securities, the volume and structure of bank lending in 85 entities of the Russian Federation for the 2008–2018 period. The initial stage of the research implies the calculation and analysis of the dynamics of regions' fiscal capacity (differences in revenues and expenditures of the consolidated budget of the RF entities). To do this, we will calculate a three-year weighted average indicator of fiscal capacity covering the 2016–2018 period:

$$\overline{БО}_{р} = \frac{\sum(Д_{р} - Р_{Р})}{3}, \qquad (1)$$

where $\overline{БО}_{р}$ – weighted average for the last three years indicator of the fiscal capacity of a region, mil. rub.;

$Д_{р}$ – revenues of the consolidated budget of a RF entity, mil. rub.;

$Р_{р}$ – expenditures of the consolidated budget of a RF entity, mil. rub.

The need to use a weighted average indicator is caused by the importance of considering not only a current financial situation in the region but also a recently developed trend. The analysis of data on fiscal capacity in dynamics showed that many regions have had a deficit budget over the past few years, and, in 2018, some of them formed a budget surplus. For a correct assessment of the entities' fiscal capacity, the calculation of the average indicator for the last three years is proposed. The analysis will help to identify regions with budget deficits for which the issues of forming the financial basis for implementing the spatial strategy and solving the most important problems of socio-economic development are the most acute.

At the next stage, based on data of the Ministry of Finance of the Russian Federation, it is planned to study the structure of the government debt of entities of the Russian Federation and the banking sector's contribution of financial resources to its formation using the indicator:

$$\overline{БФ}_{р} = \frac{\sum \frac{\left(ГЦБ_{р} + КСФ_{Р}\right)}{ВД_{р}} \times 100}{3}, \qquad (2)$$

where: $\overline{БФ}_{р}$ – weighted average relative share of financial resources of the banking sector in the structure of government debt of an entity of the Russian Federation for 2016–2018, %;

$ГЦБ_{р}$ – volume of state and municipal securities issued by entities of the Russian Federation and purchased by financial institutions, mil. rub.;

$КСФ_{р}$ – amount of bank loans allocated to entities of the Russian Federation and their municipalities, mil. rub.;

$ВД_{р}$ – total government debt of an entity of the Russian Federation, mil. rub.

According to data, published by the RF Ministry of Finance, government debt of entities of the Russian Federation is formed as a result of the release of state and municipal debt securities by the authorities and their implementation by financial institutions, attraction of bank and budget loans, state guarantees. The calculation and analysis of the weighted average relative share of financial resources of the banking sector in the structure of the government debt of an entity of the Russian Federation will allow assessing the trend of the past three years rather than random values that appeared in 2018 and determining the contribution of financial resources of the banking sector to increasing fiscal capacity of regions. At the third stage, to study the spatial features in the distribution of financial resources of the banking sector, allocated to smooth out the regional budget deficit, it is proposed to compare fiscal capacity of regions and the share of financial resources of the banking sector in the formation of their government debt by spatial grouping. During its implementation, three sub-groups (with a low, medium, and high level of contribution of the banking sector's financial resources to the formation of the government debt of entities of the Russian Federation) were identified within two groups of regions (with a surplus and deficit consolidated budget). Differentiation of territorial systems by the contribution of financial resources of the banking sector to the formation of the government debt of regions ($\overline{БФ}_р$) is made using the following threshold values:

1. Territorial systems with high value of $\overline{БФ}_р$, exceeding upper border of mean-squire deviation of an indicator from an average value in RF:

$$\overline{БФ}_р > (\overline{БФ} + \sqrt{\frac{\sum(\overline{БФ}_р - \overline{БФ})^2}{n}}), \quad (3)$$

where: $\overline{БФ}_р$ – three-year average weighted (2016–2018) relative share of the banking sector's financial resources in the structure of a region's government debt, %;

$\overline{БФ}$ – average Russian level of relative share of the banking sector's financial resources in the structure of a region's government debt, %.

2. Territorial systems with higher than average relative share value of the banking sector's financial resources in the structure of a region's government debt:

$$\overline{БФ} < \overline{БФ}_р \le (\overline{БФ} + \sqrt{\frac{\sum(\overline{БФ}_р - \overline{БФ})^2}{n}}). \quad (4)$$

3. Territorial systems with a low value of relative share of banks' financial resources in the structure of the RF entities' government debt ($\overline{БФ}_р \le \overline{БФ}$).

As a result of this research stage, we expect to identify centers of financial resources concentration in the banking sector, aimed at increasing fiscal capacity of the RF entities, and territories having difficulties in attracting banks' resources required for the implementation of strategic initiatives and solution of the most important socio-economic development problems. To justify the key role of the banking sector in solving problems concerning the improvement of the regional budgets' balance and ensuring GRP growth, it is planned to conduct multiple regression analysis using a panel of statistical data next. This analysis implies the construction of the regression model of the impact of investments, attracted by the banking sector, on government debt securities of the RF entities and their municipal institutions, as well as the impact of loans on income level of the RF entities' consolidated budget ($Д_р$). The generated equation of the regression model will allow determining the amount of financial resources that the banking sector can attract to increase the budget provision of regional systems. At this stage, it is expected to form a regression model of the dependence of the GRP level of the RF entities on credit institutions' investments in state and corporate securities, shares, volume of loans allocated to households, non-financial organizations, credit organizations, and other financial institutions. This model can be further used by public authorities to predict the dynamics of changes in GRP in entities of the Russian Federation, as well as to develop management decisions.

The novelty of the proposed methodological approach to this research is the integrated usage of statistical and mathematical methods of data analysis, spatial analysis of distribution processes of the banking sector's financial resources, allocated for investments in state and municipal securities and loans of the RF entities. Research in this area is characterized by the usage of statistical methods or spatial analysis methods. We attempted to substantiate the key importance of the banking sector's financial resources in the regions' socio-economic development using regression analysis. The novelty of the proposed approach is in the systematic representation of the banking sector's contribution to the territories' socio-economic development. We tried to assess the impact of financial resources, attracted to increase fiscal capacity, and bank lending for all economic entities on the level of regions' economic development (GRP).

Research of regions' fiscal capacity and contribution of the banking sector's financial resources to its increase

A study of the dynamics of territories' fiscal capacity for the 2016–2018 period showed that only 18 regions had a surplus budget during the whole period. The highest surplus level was in Moscow; Bashkortostan, Tatarstan, and Dagestan republics; Primorsky, Altai, and Krasnodar krais; Chelyabinsk, Voronezh, Rostov, and Tver oblasts. In 2018, the deficit budget was typical for 15 entities of the Russian Federation, the rest had an excess of consolidated budget revenues over its expenditures. However, we cannot conclude that the majority of regions have a high fiscal capacity, since 67 entities of the Russian Federation had a deficit budget in the 2015–2017 period. The most acute shortage of budget resources in recent years has been occurring in the Moscow, Sakhalin, Yaroslavl, Magadan regions, Krasnoyarsk and Khabarovsk territories, and the Republic of Mordovia. The calculation of the three-year weighted average allowed confirming the conclusion about insufficient fiscal capacity in many regions (*Tab. 1*).

Table 1. Weighted average indicator of the region's fiscal capacity for 2016–2018 ($\overline{БО_р}$), mil. rub.

Regions with high budget surpluses (above average)		Regions with high budget deficit (above average)	
Moscow	59670	Moscow Oblast	-12790
YaNAO	20238	Saint Petersburg	-17508
Kemerovo Oblast	16901	Krasnoyarsk Krai	-7394
Republic of Bashkortostan	15471	Republic of Mordovia	-7164
Tyumen Oblast	13515	Khabarovsk Krai	-7080
Krasnodar Krai	11939	Sakhalin Oblast	-6304
Vologda Oblast	8821	Republic of Crimea	-5284
Primorsky Krai	8597	Yaroslavl Oblast	-3347
Chelyabinsk Oblast	6739	Other regions with budget deficit	
Republic of Tatarstan	6551	Tomsk, Oryol, Volgograd, Tambov, Kostroma, Kurgan, Omsk, Magadan, Kaliningrad, Ulyanovsk, Arkhangelsk, Tula, Kirov, Pskov, Penza oblasts	
Voronezh Oblast	6340		
Republic of Dagestan	5811	Khakassia, Buryatia, Sakha (Yakutia), Kalmykia, Karelia, Adygea, Udmurt, Kabardino-Balkarian, Karachay-Cherkess republics	
Altai Krai	5419	Zabaykalsky Krai, Jewish AO, Nenets AO, Sevastopol	
Source: *Regions of Russia. Socio-Economic Indicators*. Available at: http://rosstat.gov.ru/bgd/regl/b19_14p/Main.htm (accessed: August 3, 2020).			

According to the table, the highest deficit of budget resources over the past three years was observed in the Moscow Oblast, St. Petersburg, regions with the highest level of business activity and a high concentration of attracted investments in fixed capital and foreign direct investments. The budget deficit of most entities of the Russian Federation is associated with the government implementation of major investment projects for the development of transport, engineering, and energy infrastructure. The need to implement the spatial strategy, currently being developed in each region, by 2025 creates an additional burden on the budget of the RF entities.

Given the growing crisis in the economy and limited federal budget, not all regions will be able to obtain state loans to cover the budget deficit and implement strategic projects and programs of socio-economic development. In this regard, the issue of debt securities by entities of the Russian Federation and their municipalities, as well as the acquisition of bank loans, becomes an important area for attracting additional financial resources to regional budgets. As of January 1, 2020, the total public debt of constituent entities of the Russian Federation amounted to 2493,4 billion rubles. Compared to 2016, its volume decreased slightly – by 8.2%. Its structure was formed at the expense of budget loans (42%), allocated to the RF entities, bank loans (33%), and investments received from financial institutions in debt securities of entities of the Russian Federation and their municipalities (25%). The total share of the banking sector in the public

Table 2. Structure of public debt of the RF entities with the highest share of financial resources of the banking sector as of January 1, 2020

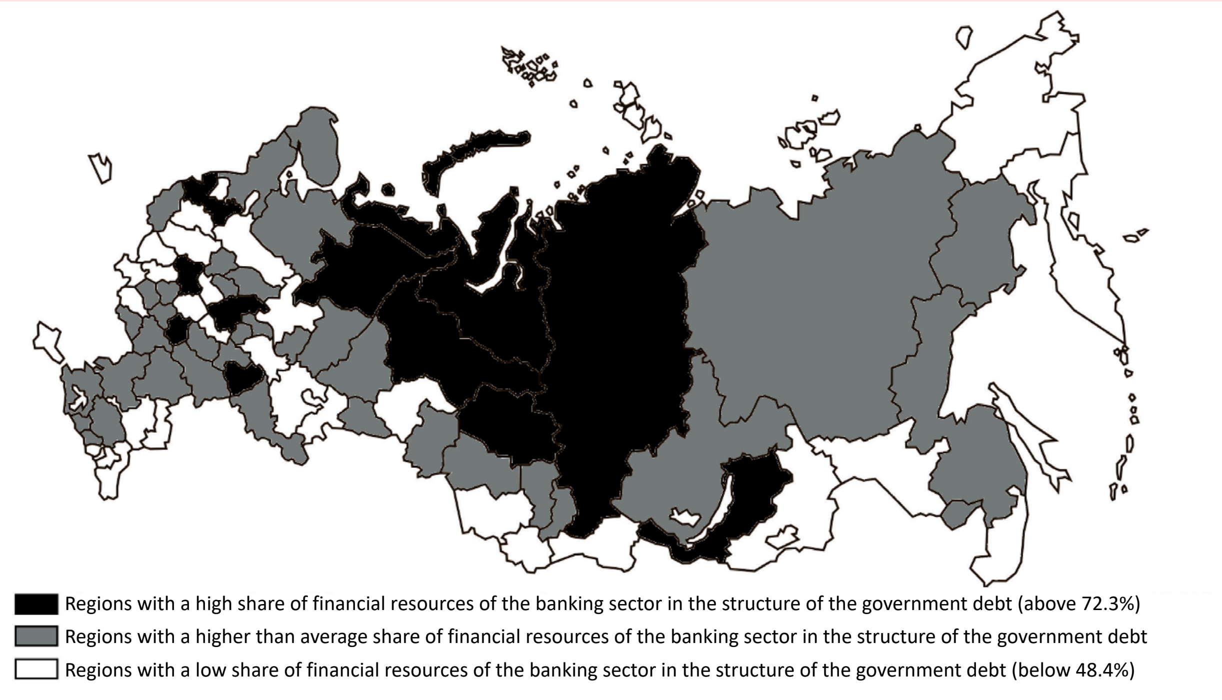
RF entity	Amount of funds raised as a result of the issue and sale of state and municipal securities, mil. rub.	Loans from credit institutions and foreign banks allocated to entities of the Russian Federation and their municipalities, mil. rub.	Budget credits allocated to the RF entities and their municipalities from other budgets of the budget system of the Russian Federation, mil. rub.	Share of financial resources of the BS in the government debt of the RF entities, %
Moscow	30000	0	0	100
Saint Petersburg	30100	0	0	100
Nenets AO	1600	60	0	100
Moscow Oblast	82750	89802	16674	91
KhMAO	13000	3294	2311	88
Tambov Oblast	8100	10219	3791	83
Pskov Oblast	0	14803	3247	82
Republic of Buryatia	0	12734	2753	82
YaNAO	12961	0	3514	79
Khabarovsk Krai	4074	40216	11621	79
Nizhny Novgorod Oblast	50300	20282	20236	78
Oryol Oblast	5000	10619	4709	77
Tomsk Oblast	19402	8608	8188	77
Krasnoyarsk Krai	60031	11389	24196	75
Komi Republic	18595	2579	7294	74
Sverdlovsk Oblast	25000	34407	21881	73
Republic of Sakha	33125	5035	14851	72
Samara Oblast	31965	15010	18384	72
Kurgan Oblast	0	12969	5037	72
Novosibirsk Oblast	29751	17480	19917	70

Source: data of the Ministry of Finance of the Russian Federation. Available at: https://minfin.gov.ru/ru/perfomance/public_debt/subdbt/ (accessed: August 3, 2020).

debt of all entities of the Russian Federation at the beginning of 2020 was 58%. In 34 regions, the share of financial resources of the banking sector in the government debt significantly exceeded this value (*Tab. 2*). The most significant contribution of the banking sector to improving fiscal capacity was in Moscow, St. Petersburg, and the Nenets Autonomous Okrug.

In these regions, the government debt was formed at the expense of the banking sector's investments in debt securities. The share of the banking sector's financial resources, exceeding 70%, in the government debt of the RF entities was recorded in Moscow, Tambov, Pskov, Nizhny Novgorod, Orel, Tomsk, Sverdlovsk, Samara, Kurgan, and Novosibirsk oblasts; KhMAO, YaNAO, Khabarovsk and Krasnoyarsk krais; Buryatia, Komi, and Sakha republics. The government debt of most regions was formed as a result of the implementation of state and municipal securities, issued by the RF entities. Bank loans were the most actively attracted in Kurgan and Pskov oblasts and the Republic of Buryatia. They did not use debt securities for increasing fiscal capacity. This instrument of attracting additional financial resources was not used in 43 regions. Their public debt was formed at the expense of bank and budget lending, which is a negative trend, since debt securities, unlike loans, help attract long-term investments the return of which is carried out at the end of the securities' validity period during its repayment. Spatial distribution of the three-year average weighted value of the share of the banking sector's financial resources in the structure of the RF entities' government debt (*Fig. 1*) showed that bank

Figure 1. Average weighted relative share of the banking sector's financial resources in the structure of the RF entities' government debt for 2016–2018, %



Source: data of the Ministry of Finance of the Russian Federation. Available at: https://minfin.gov.ru/ru/perfomance/public_debt/subdbt/ (accessed: August 3, 2020).

capital is in the most demand in regions with advanced economic development (Moscow, St. Petersburg; Moscow, Leningrad, Nizhny Novgorod, and Samara oblasts) and in the mineral resource centers of Russia (KhMAO, YaNAO, Nenets AO; Arkhangelsk and Tomsk oblasts; Krasnoyarsk Krai; Republic of Buryatia).

In some of them, despite a substantial inflow of the banking sector's financial resources, there is a budget deficit[2] (*Tab. 3*): in Nenets Autonomous Okrug (280 mil. rub.), the Republic of Buryatia (1869 mil. rub.); Tambov (1853 mil. rub.), Tomsk (2326 mil. rub.), and Moscow (12790 mil. rub.) oblasts; Krasnoyarsk Krai (7394 mil. rub.) and St. Petersburg (17508 mil. rub.).

According to the Spatial Development Strategy of the Russian Federation until 2025, St. Petersburg and towns of the Moscow Oblast are the promising centers of economic growth, Krasnoyarsk Krai and the Nenets Autonomous Okrug are promising mineral resource centers for the production of oil and natural gas, the Tambov Oblast is a promising agro-industrial center, the Tomsk Oblast is a promising world-level academic-educational center, and the Republic of Buryatia is a priority geo-strategic territory. Within a serious budget deficit, the implementation of these strategic initiatives becomes a difficult task and the banking sector's financial resources, which are currently attracted in a significant amount, make a significant contribution to improving the budget security of these regions.

Table 3 data show that deficit budget also exists in formed promising mineral-resource centers for gold mining – the Magadan Oblast (1166 mil. rub.); diamonds, gold, fuel, and energy resources – the Republic of Sakha (1148 mil. rub.); promising agro-industrial centers – Volgograd (2025 mil. rub.) and Penza (102 mil. rub.) oblasts; border geostrategic territories of the Russian Federation – Kurgan (1809 mil. rub.), Omsk (1613 mil. rub.), Pskov (1008 mil. rub.) oblasts; Jewish AO (677 mil. rub.), the Kabardino-Balkarian Republic (1241 mil. rub.), and Khabarovsk Krai (7080 mil. rub.). At the same time, some regions, marked in gray in the table, have an extremely high level of the government debt (more than 50% with an average number of 29.3% in Russia) in relation to consolidated budget revenues as of January 1, 2020. With such a budget deficit, the implementation of the spatial and socio-economic development strategies, currently being formed in the regions, is impossible without additional financial support from the government and the banking sector. In entities with a low fiscal capacity and low volume of the banking sector's attracted financial resources, with the exception of the Republic of Mordovia, the Kirov Oblast, and the Zabaykalsky Krai, the debt burden on the budget does not exceed the average level in Russia. In this regard, we consider it possible to implement the spatial strategy (the formation of a promising mineral resource center for coal mining in the Sakhalin Oblast and the border geostrategic territories in the Crimea and Sevastopol, the Karachay-Cherkess Republic, the Kaliningrad Oblast) to increase the government debt of entities of the Russian Federation by attracting the banking sector's financial resources.

To study the contribution of the banking sector's financial resources into the increase of regions' fiscal provision and opportunities for reasonable determination of the volume of the required debt securities' issue in order to attract the banking sector's financial resources, we conducted multiple least squares regression analysis using panel data.

[2] According to average weighted indicator of budgetary provision for 2016–2018.

Table 3. Grouping of regions by the level of fiscal capacity and the contribution of the banking sector to the formation of the government debt of entities of the Russian Federation, %

	Regions with a high share of financial resources of banks in the government debt structure		Regions with a higher than average share of banks' financial resources in the government debt structure		Regions with the share of financial resources of banks in the structure of the government debt below the average level
Regions with a surplus budget	Moscow	92.8	Voronezh Oblast	62.6	Vologda, Chelyabinsk, Tyumen, Astrakhan, Tver, Kursk, Bryansk, Ryazan, Amur, Vladimir, Kaluga, Leningrad, Smolensk, Novgorod oblasts
	YaNAO	79.4	Krasnodar Krai	52.3	
	KhMAO	88.7	Kemerovo Oblast	48.6	
	Komi Republic	77.6	Mari El Republic	59.1	
	Nizhny Novgorod Oblast	76.2	Sverdlovsk Oblast	69.7	
	Samara Oblast	74.4	Novosibirsk Oblast	68.5	
			Stavropol край	58.9	
			Lipetsk Oblast	56.5	Bashkortostan, Dagestan, Tatarstan, Tyva, Altai, North Ossetia, Ingushetia, Chechnya republics
			Ivanovo Oblast	56.3	
			Rostov Oblast	56.3	
			Irkutsk Oblast	54.8	
			Perm Krai	53.1	Primorsky, Kamchatka, Altai krais
			Belgorod Oblast	52.5	
			Murmansk Oblast	51.6	Chukotka Autonomous Okrug
			Orenburg Oblast	49.6	
			Chuvash Republic	48.7	
			Saratov Oblast	52.2	
Regions with budget deficit	Nenets AO	100	Ulyanovsk Oblast	68.5	Adygea, Kalmykia, Crimea, Karachay-Cherkess, Mordovia republics
	Republic of Buryatia	78.4	Magadan Oblast	68.1	
	Tambov Oblast	76.4	Kurgan Oblast	66.9	
	Tomsk Oblast	73.9	Omsk Oblast	66.3	Kaliningrad, Sakhalin, Kirov oblasts
	Moscow Oblast	79.2	Pskov Oblast	65.4	
	Krasnoyarsk Krai	76.7	Volgograd Oblast	61.0	
	Saint Petersburg	76.3	Arkhangelsk Oblast	59.7	Zabaykalsky Krai
			Penza Oblast	58.9	Sevastopol
			Republic of Karelia	54.9	
			Tula Oblast	54.7	
			Republic of Sakha	52.2	
			Kabardino-Balkarian Republic	49.1	
			Khabarovsk Krai	67.2	
			Yaroslavl Oblast	64.4	
			Oryol Oblast	62.8	
			Udmurt Republic	58.9	
			Republic of Khakassia	54.7	
			Kostroma Oblast	54.0	
			Jewish AO	52.4	

Note: Gray color indicates the ratio of the government debt to consolidated budget revenues exceeding 50% for 2019.
Source: *Regions of Russia. Socio-Economic Indicators*. Available at: http://rosstat.gov.ru/bgd/regl/b19_14p/Main.htm (accessed: August 3, 2020); data of the Ministry of Finance of the Russian Federation. Available at: https://minfin.gov.ru/ru/perfomance/public_debt/subdbt (accessed: August 3, 2020).

We chose the indicator "volume of revenues of an RF entity's consolidated budget" (Д), and the indicators "volume of government and municipal debt securities purchased by banks and financial institutions" (ЦБ), "volume of bank loans allocated to entities of the Russian Federation and their municipalities" (K), and "volume of budget loans allocated to entities of the Russian Federation" (БК). In the course of regression modeling, the presence of correlation relationships between factor features, linearity/nonlinearity, as well as the homogeneity of the distribution of the studied sample of observations was evaluated. After removing the factors that form multicollinearity from the model, we established the dependence of the RF entities' consolidated budget revenues on the investments of banks and financial institutions in their debt securities is established:

$$Д = 67280{,}8 + 9{,}9 \times ЦБ\,, \tag{5}$$

where: Д – volume of consolidated budget revenues, mil. rub.;

ЦБ – volume of government and municipal debt securities purchased by banks and financial institutions, mil. rub.

The evaluation of the regression statistics, obtained as a result of the analysis, indicates that the formed model is reliable, the main parameters of the regression are statistically significant (correlation coefficient R = 0.87 exceeds the value 0.7; the significance F of the obtained equation and the determination coefficient does not exceed the standard value of 0.05; P-values of regression coefficients are within acceptable values). The developed model showed the primary importance of investments of the banking sector in debt securities of entities of the Russian Federation and their municipalities in increasing their fiscal capacity. Budget and bank lending are secondary factors in attracting additional financial resources to the regional budget. The model is constructed with information about upcoming budget expenditures, and it allows predicting fiscal capacity of the regions with the change in the dynamics of investments in debt securities,

Table 4. Calculation of the volume of required investments in debt securities of entities of the Russian Federation to solve the problem of budget deficit, mil. rub.

RF entity	Budget expenditures in 2018	Budget deficit in 2018	Debt securities issued and sold by the RF entities in 2018	Volume of investments in securities whose attraction would allow solving the problem of the budget deficit of the RF entities in 2018 (ЦБ)	Modeled budget revenue (Д = 67280,8+9,9×ЦБ)
Regions with high budget deficit					
Moscow Obl.	703478	-12790	37500	64471	703478
Saint Petersburg	579701	-17508	30100	51928	579704
Khabarovsk Krai	132509	-7080	4074	6611	132518
Sakhalin Obl.	165315	-6304	0	9935	165319
Republic of Crimea	175471	-5284	0	10964	175473
Other regions with budget deficit					
Kaliningrad Obl.	123973	-1107	2707	5746	123982
Arkhangelsk Obl.	89932	-1055	0	2296	89938
Tula Obl.	89150	-685	1500	2217	89158
Zabaykalsky Krai	70424	-501	0	319	70429
Nenets AO	189381	-280	2000	12374	189387

Source for the 2nd and 3rd columns: *Regions of Russia. Socio-Economic Indicators*. Available at: http://rosstat.gov.ru/bgd/regl/b19_14p/Main.htm (accessed: August 3, 2020); source for the 4th column: data of the Ministry of Finance of the Russian Federation. Available at: https://minfin.gov.ru/ru/perfomance/public_debt/subdbt (accessed: August 3, 2020); columns 5 and 6 present the results of the calculation using the constructed regression model (5).

as well as to determine an optimal amount of required investments in the securities of the RF entities to solve the budget deficit (*Tab. 4*).

According to the constructed model, the relevant problem of the budget deficit in the Moscow Oblast in 2018 could be solved by additional issuance and sale of debt government and municipal securities in the amount of 269.71 mil. rub. (up to 64471 mil. rub.), in Saint Petersburg – by 21828 mil. rub., Nenets AO – by 10374 mil. rub., the Kaliningrad Oblast – by 3039 mil. rub., in Khabarovsk Krai – by 2537 mil. rub., and the Tula Oblast – by 717 mil. rub. The issue of securities in the amount presented in table 4 would attract additional financial resources to the Sakhalin and Arkhangelsk oblasts, the Republic of Crimea, and the Zabaykalsky Krai, increasing their budget security.

To substantiate the key role of banking sector's financial resources in the socio-economic development of regions, we conducted a regression analysis using panel data on entities of the Russian Federation for 2008–2018. After analyzing 935 cases, we constructed a model of the dependence of the GRP of the RF entities on the investments of enterprises in fixed capital, direct foreign investment and banks' financial resources, and other credit institutions:

$$GRP = 51010{,}78 + 3{,}229 \times IFA + 1{,}054 \times FI + \\ + 0{,}463 \times BL + 0{,}007 \times BIS, \quad (6)$$

where: GRP – Gross regional product, mil. rub.;

IFA – Investments in fixed assets, mil. rub.;

FI – Foreign investments, mil. rub.;

BIS – Bank investments in government and corporate debt securities, shares, registered promissory notes, mil. rub.;

BL – Volume of bank lending of financial, non-financial corporations, individuals, mil. rub.

On the basis of the results of the regression analysis, presented in *table 5*, we can conclude that the model and its main parameters are reliable.

The correlation coefficient in the model is close to one, the null hypothesis of the insignificance of the coefficient of determination is rejected ($Prob_{(F\text{-statistic})} < 0.05$), statistical significance of regression coefficients is confirmed (Prob. < 0.05), the model lacks multicollinearity and autocorrelation between

Table 5. Regression analysis results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	51010,78	11737,81	4,345852	0.0000
IFA	3,229107	0,062070	52,02324	0.0000
FI	1,053551	0,107138	9,833557	0.0000
BIS	0,463158	0,132272	3,501569	0,0004
BL	0,006531	0,023452	0,278523	0.0425
R-squared	0,962216	Mean dependent var		605794,5
Adjusted R-squared	0,962054	S.D. dependent var		1335497
S.E. of regression	275197,1	Akaike info criterion		27,556
Sumsquared resid	4.13E+13	Schwarz criterion		27,587
F-statistic	5921,045	Durbin-Watson stat		2,159
Prob (F-statistic)	0.000000			

Note: the results of regression analysis of the dependence of the RF entities' GRP on the investment of enterprises in fixed capital, direct foreign investments, banks' financial resources, and other credit institutions are presented using panel data (935 cases) by the RF entities for 2008–2018.

Source: data on the amount of investments of the banking sector are taken from the regional section of statistics of credit institutions of the RF Central Bank. Available at: http://cbr.ru (accessed: August 3, 2020).

residues. As a result of modeling, we came to the conclusion that the attraction of additional financial resources of banks and other credit institutions, investment of enterprises in fixed capital and foreign direct investment will contribute to the growth of GRP of considered territorial systems. The banking sector has significant financial resources that can be used to increase the budget provision of regions and their municipalities, solve relevant problems of socio-economic development, and implement currently formed spatial strategies. Unfortunately, today, the banking sector implements a speculative policy of managing financial resources: credit institutions invest in shares and securities of foreign issuers, foreign currency, the exchange rate of which is currently highly volatile, and risky derivative financial instruments (futures, options, and other derivatives). High volatility in the financial and commodity markets, uncertainty in the domestic economy development contribute to an active outflow of financial resources of the banking sector abroad. To attract such resources to the Russian economy, we consider it necessary to change the government's monetary policy in terms of regulating the key rate, using mechanisms of state support for credit institutions, such as subordinated lending, subsidizing part of the interest rate on bank loans and investments attracted in debt securities of entities of the Russian Federation and their municipalities. The monetary policy implemented by the state should be subordinated to the goals of economic development, stimulate financial institutions, and create conditions for the progressive socio-economic development of territorial systems.

Conclusion

The reported study presents the methodological approach to substantiating the role of the economy's banking sector in increasing regions' fiscal capacity and their socio-economic development. It implies: 1) calculation and analysis of the dynamics of the RF entities' fiscal capacity aimed at looking for territorial systems with the most acute issues related to the formation of financial foundations for implementing spatial strategy; 2) study of the structure of the RF entities' government debt and contributions of the banking sectors' financial resources to its formation; 3) analysis of spatial features of the distribution of the banking sector's financial resources aimed at smoothing the regional budget deficit; 4) construction of the regression model of the impact of attracted financial resources by the banking sector on increasing regions' fiscal capacity; 5) determination of financial resources of credit institutions whose involvement will solve the problem of the RF entities' budget deficit; 6) consideration of the contribution to the economic development of regions and the banking sector's other financial resources using spatial-temporal regression modeling.

A study of the dynamics of regions' fiscal capacity for the 2016–2018 period showed that only 18 of them had a surplus budget during the entire period. In the context of insufficient fiscal capacity and the deteriorating economic situation, the vast majority of regions do not have financial resources to implement spatial strategies, which are currently being developed.

The analysis of the structure of the government debt of entities of the Russian Federation indicates a significant role of the banking sector in its formation. Currently, 58% of the RF entities' government debt is formed by bank loans, as well as state and municipal debt securities sold to financial institutions. Spatial distribution of the three-year weighted average value of the share of the banking sector's financial resources in the structure of government debt of the RF entities showed that bank capital is most in demand in central regions with a high level of economic development (Moscow, Saint Petersburg; Moscow, Leningrad, Nizhny Novgorod, Samara oblasts) and mineral resource centers of Russia (KhMO, YaNAO, Nenets AO; Arkhangelsk and Tomsk oblasts; Krasnoyarsk Krai, the Republic of Buryatia). Constructed regression models allowed substantiating the hypothesis about a significant contribution of the banking sector's attracted financial resources to improving budget sufficiency of the RF entities and their municipal formations, as well as to socio-economic development of these territorial systems. The formed model helped to determine the amount of financial resources of credit institutions whose involvement will contribute to solving the problem of the budget deficit in entities of the Russian Federation.

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