



# New Economic Model and Conceptual Directions for Increasing Russia's Regional Budgets Sustainability

Margarita Vasyunina<sup>1</sup>, Mikhail Kosov<sup>1, 2\*</sup> , Oksana Gorlova<sup>1</sup>, Andrey Masterov<sup>1</sup>,  
Khongor Zambaev<sup>1</sup>, Elena Safronova<sup>1</sup>, Nataliya Shmigol<sup>1</sup> 

<sup>1</sup> Financial University under the Government of the Russian Federation, Leningradskiy prosp. 49, Moscow 125167, Russian Federation.

<sup>2</sup> Plekhanov Russian University of Economics, Stremyanny lane 36, Moscow 117997, Russian Federation.

## Abstract

**Objectives:** This research aims to develop a new economic model and conceptual directions for increasing the sustainability of regional budgets in the Russian Federation. **Methods:** The research methodology is based on empirical methods (data collection, study, and comparison), methods of synthesizing theoretical and practical material, and mathematical and statistical analyses. When processing information, methods of systematization and grouping were used. The budgets of the constituent entities of the Russian Federation (BCERF) are the object of this study. The authors proposed grouping and revealed the consequences of the factor actions for the regions, leading to a reduction in income, an increase in the expenses of the BSRF, the need for government borrowing, etc. **Findings:** Conceptual directions for increasing the sustainability of regional budgets in the Russian Federation were proposed, such as eliminating the practice of subsidies in areas not defined by regulatory legal acts and improving the methodology for distributing subsidies for fiscal equalization, aimed at reducing the risks of underfinancing the expenditure obligations of a constituent entity of the Russian Federation (CERF). **Novelty:** The scientific novelty of this research includes the presentation of more effective mechanisms for controlling budgetary reserves and increasing the sustainability of regional budgets.

## Keywords:

Economic Model;  
Sustainability of Regional Budgets;  
Budget Sustainability Assessment;  
Budget Management;  
Reserve Funds;  
Financial Recovery.

## Article History:

<b>Received:</b>	24	December	2023
<b>Revised:</b>	21	March	2024
<b>Accepted:</b>	25	March	2024
<b>Published:</b>	01	April	2024

## 1- Introduction

Regional budget sustainability is a critical aspect of Russia's economic stability and development. As highlighted by Sohag et al. [1], the financial health of regional budgets directly impacts the provision of essential public services, social welfare, and infrastructure development. Moreover, Alexeev & Kurlyandskaya [2] argue that regional budget sustainability is crucial for maintaining fiscal federalism and reducing regional disparities in Russia. Russian regional budgets face numerous challenges in the current economic landscape. Zubarevich & Safronov [3] point out that the global financial crisis, economic sanctions, and fluctuations in oil prices have put significant strain on regional budgets. Additionally, Alexeev and Chernyavskiy [4] highlight the uneven distribution of tax revenues and dependence on federal transfers as major issues affecting regional budget stability.

Despite the importance of regional budget sustainability, there is a lack of a comprehensive understanding of the factors influencing it. While studies by Barykin et al. [5] and Espolov et al. [6] have explored some aspects of regional budget sustainability, they do not provide a holistic view of the complex interplay of economic, social, and political factors affecting regional budgets in Russia. Current approaches to assess and improve regional budget sustainability in

\* **CONTACT:** [mikhail\\_kosov\\_hse@mail.ru](mailto:mikhail_kosov_hse@mail.ru)

**DOI:** <http://dx.doi.org/10.28991/ESJ-2024-08-02-015>

© 2024 by the authors. Licensee ESJ, Italy. This is an open access article under the terms and conditions of the Creative Commons Attribution (CC-BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Russia are fragmented and limited in scope. Malkina [7] notes that existing methods focus primarily on financial indicators, overlooking the broader socioeconomic context. Given the insufficient understanding of factors affecting regional budget sustainability and the lack of comprehensive approaches to address the issue, there is a pressing need for new economic models and conceptual directions. This research gap was highlighted by Kiyosov et al. [8], who called for innovative solutions to tackle the challenges faced by regional budgets in Russia. The development of such models and directions is essential for informing policy decisions and promoting sustainable regional development.

Therefore, the primary objective of this research is to develop a novel economic model that addresses the challenges faced by regional budgets in Russia. The proposed model considers the complex interplay of economic, social, and political factors influencing BCERF sustainability. By incorporating these factors, the model provides a more accurate representation of the dynamics affecting regional budget stability and offers insights into potential strategies for enhancement. Building upon the new economic model, this study seeks to identify conceptual directions for improving the sustainability of regional budgets in Russia. These directions will encompass various aspects of fiscal policy, such as revenue generation, expenditure management, intergovernmental transfers, and debt management. By exploring these conceptual directions, this study provides a framework for policymakers to develop targeted strategies for strengthening regional budget sustainability.

There is a difference between the budget of a constituent entity of the Russian Federation (BCERF) and that of the constituent entity of the Russian Federation (CERF), as well as their respective sustainability concepts [2]. BCERF sustainability focuses on the budget's ability to ensure the implementation of assigned powers through full and timely financing of expenses, including debt servicing [1]. In contrast, CERF sustainability is a broader concept, referring to the region's ability to continue its budget policy without defaulting on obligations [5].

In other words, the central research questions this article aims to address is how the sustainability of regional budgets in Russia can be improved through the development of a new economic model and the identification of conceptual directions, considering the complex interplay of economic, social, and political factors influencing BCERF sustainability.

Our approach is to develop a comprehensive understanding of BCERF sustainability by considering various factors and components contributing to regional budget stability [9]. To address the identified research gap, we propose a new economic model and conceptual directions for increasing regional budget sustainability in Russia [8]. By examining influencing factors, analyzing current assessment instruments, and proposing recommendations for improvement, this article provides a holistic approach to enhancing regional budget sustainability in the Russian context [7].

This article makes several significant contributions to existing knowledge on regional budget sustainability in Russia. First, it develops a novel economic model that comprehensively captures the complex interplay of economic, social, and political factors influencing BCERF sustainability. Second, by identifying conceptual directions for improving regional budget sustainability, this study provides a framework for policymakers to develop targeted strategies. Third, the research offers a holistic approach to assessing and enhancing regional budget sustainability, addressing the limitations of existing methods that primarily focus on financial indicators. Finally, this article contributes to the theoretical understanding of regional budget sustainability by clarifying the distinction between BCERF and CERF sustainability concepts. These contributions collectively advance the understanding of regional budget sustainability in Russia and provide a foundation for future research and policy decisions.

## 2- Research Background

Under the conditions of limited budget resources, special attention should be paid to the justification of conceptual approaches to determining the sustainability of BCERF and the selection of advanced instruments for assessing BCERF sustainability. The problem of ensuring BCERF sustainability can be solved using various instruments, including the provision of budget loans and budget reserves. In this regard, there is a need to develop recommendations for increasing BCERF sustainability, including justification for the choice of relevant instruments for ensuring the sustainability of regional budgets. Given the variability of instruments ensuring BCERF sustainability, developing recommendations to improve its effectiveness is a complex task, which is the relevance of this study.

Despite numerous formulations, it is necessary to distinguish between the concepts of BCERF sustainability and CERF budget sustainability. As can be seen from Table 1, when different authors define sustainability, the emphasis shifts either to the definition of budget sustainability or to the definition of CERF budget sustainability. Thus, within the framework of the "BCERF sustainability-CERF fiscal sustainability" approach, we can highlight the definition [10], which focuses on budget sustainability as a characteristic of the budget. Sustainability is a state of the budget in which the implementation of all powers assigned to the government is ensured on the basis of full and timely financing stipulated in budgeted expenses, including the repayment and servicing of internal and external debt [10].

In turn, budget sustainability comes down to the characteristics of the region (there is also such a term as the financial sustainability of the PLE in the literature), which is characterized, for example, as the ability of public authorities to fully finance expenditure and debt obligations from their own budgetary funds, the PLE property, and borrowings by public authorities, the volumes of which do not exceed the limits established by law [11] or as the ability of regions to continue the current budget policy without defaulting on obligations to creditors [12]. Apparently, fiscal sustainability, which acts as a characteristic of CERF, is a consequence of budget sustainability and is closely interrelated with it. Precisely, budget sustainability—the state of the budget, which enables the financing of all expenditures and debt obligations of the region—makes the normal functioning of the CERF possible, acting as the main condition for the implementation of the budget policy. In turn, the insufficiency of budget funds to cover all expenditures and debt obligations will also lead to problems with the budgetary sustainability of the region, making its normal functioning and the implementation of socioeconomic and budgetary policies impossible.

The approaches to determining BCERF sustainability are presented in Figure 1.

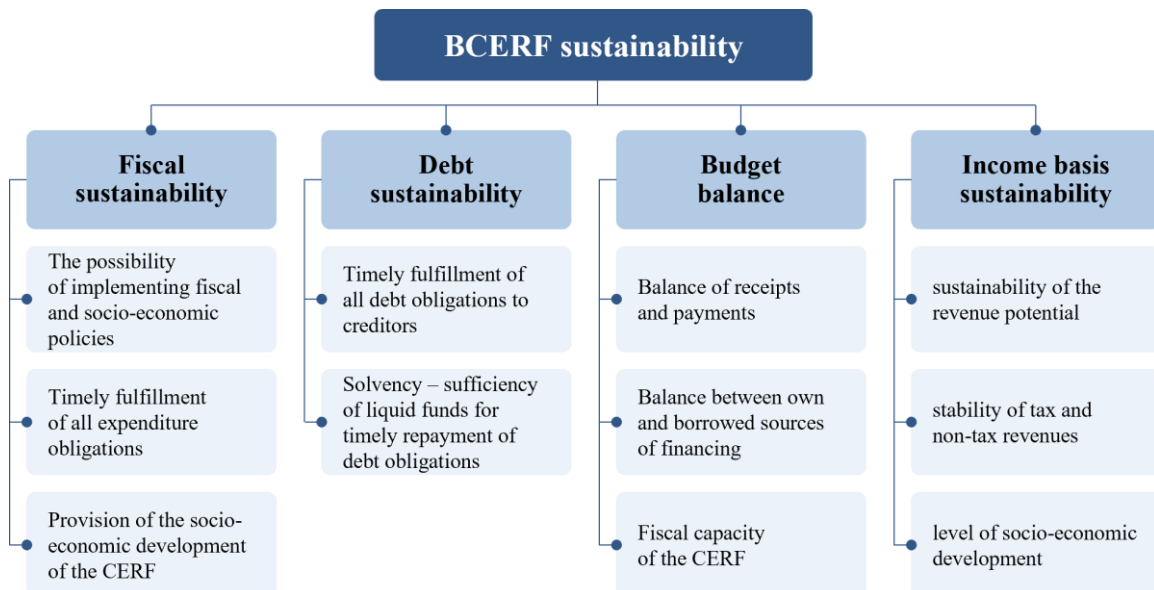


Figure 1. Approaches to BCERF sustainability

Regarding this, we propose to consider BCERF sustainability as a comprehensive characteristic of the state of the budget, which ensures a stable flow of income sufficient to fulfill the EO of the CERF, budget balance, and the region's solvency based on the debt sustainability of the CERF, which makes it possible to implement fiscal and debt policies in the region, enabling the creation of conditions for its progressive socio-economic development. The complexity and comprehensiveness of budget sustainability require the identification of different types of sustainability. The types of BCERF sustainability are systematically presented as follows (Figure 2).

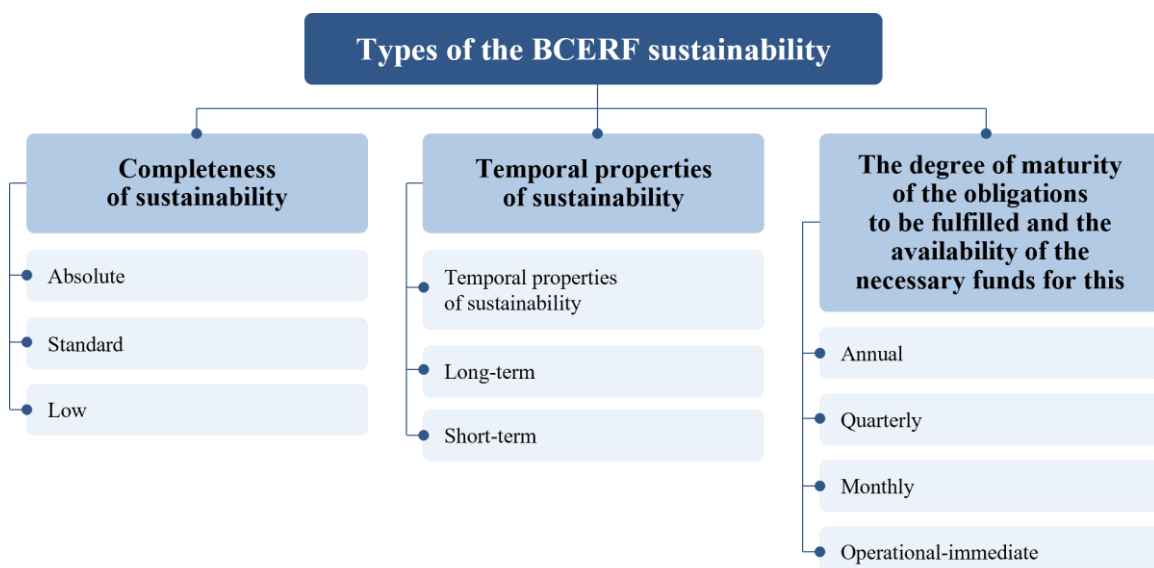
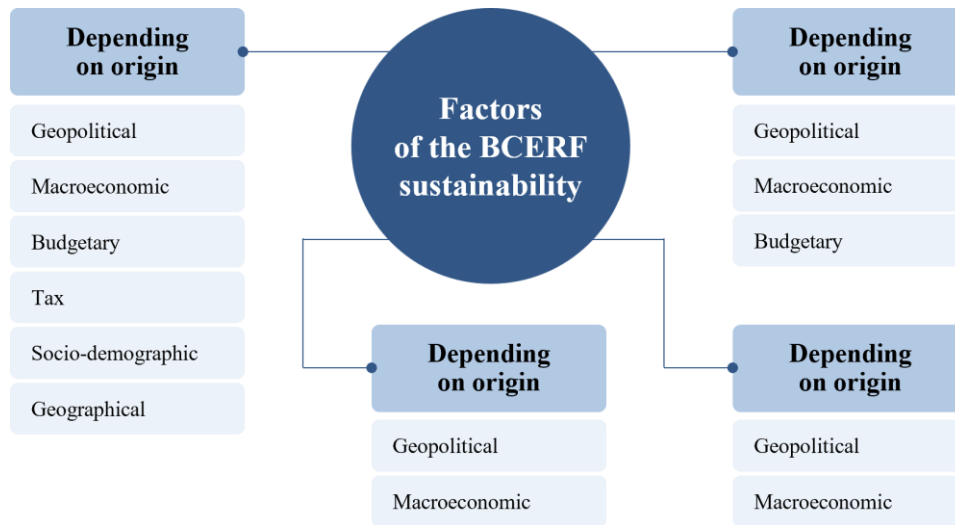


Figure 2. The types of BCERF sustainability

BCERF's sustainability is influenced by several factors. Thus, internal and external factors of budget sustainability are distinguished depending on the environment of occurrence [13, 14]. Internal factors include, for example, the presence of borrowed funds and associated financial obligations, tax evasion, which will lead to a decrease in own sources of revenue and a reduction in the revenue base, and various errors on the part of participants in the budget process. External factors include the stability of the macroeconomic situation and changes in legislation, etc. (Figure 3).



**Figure 3. Factors affecting BCERF sustainability**

Geopolitical, macroeconomic, budgetary, tax, socio-demographic, and geographical factors can be distinguished depending on their origin. At the same time, some factors can affect the budget sustainability of all regions, and certain factors have purely regional specifics related to geographical location, the level of the region's socio-economic development, etc. Analysis of scientific literature shows different approaches to defining budget sustainability, including at the regional level (Table 1).

**Table 1. Basic approaches for determining budget sustainability**

Approach	Key definitions
BCERF sustainability – fiscal sustainability	Sustainability is the ability of regions to continue their current budget policy without defaulting on their obligations to creditors [12].
	Sustainability is the state of the budget, ensuring the implementation of all powers assigned to the government body on the basis of full and timely financing of budgeted expenses, including the repayment and servicing of internal and external debts [10].
	Budget sustainability is the ability of public authorities to timely and fully cover expenses from their budgets, meet the investment needs of the territory, and repay debt and other obligations and the costs of servicing thereof [15].
	Budget sustainability is the sufficiency of financial resources to carry out all the activities provided for in the budget, even if the actual volumes of budget revenues deviate from those provided for by the budget law [16].
	Budget sustainability is a system of interdependent economic relations based on the principles of efficiency, flexibility, and autonomy with a low level of volatility of state economic policy, which allows for the current and strategic socioeconomic development of the state [17].
	Financial stability of PLE is an indicator characterizing the ability of public authorities to fully finance expenditure and debt obligations from their own budget funds, PLE property, and borrowings of public authorities, the volumes of which do not exceed the restrictions established by law [11].
	Financial sustainability of a territory is a movement of budget flows, their structure, and dynamics, which provides territorial authorities with the opportunity to fully and timely fulfill their obligations and contributes to the balanced development of the economy and social sphere [18].
	Current budget sustainability is the movement of cash flows that will provide the population of the region with a decent standard of living that meets national standards. Long-term sustainability is the most essential feature of a development-oriented budget and presupposes the duration of maintaining its characteristics in a balanced mode [19].
	Budget sustainability is determined in the following areas: <ul style="list-style-type: none"> <li>• In the field of forming and replenishing the budget revenue base;</li> <li>• In the field of expenditures, which determines the sources of financing the tasks and functions of public authorities and the efficiency of using financial resources;</li> <li>• In the field of intergovernmental relations, which is a system of measures to differentiate expenses and revenues on an ongoing basis between the levels of the budget system; distribute funds between budgets of different levels of taxes according to the approved standards; and redistribute funds between budgets in different forms;</li> <li>• In the field of budget balance and PLE debt management: implementing the principle of balance and searching for optimal methods for its repayment, about the implementation of priority budget tasks [13].</li> </ul>
	Budget sustainability is considered from the perspective of the influence of budgetary relations that arise not only in the process of generating revenues and implementing expenses but also when borrowing and regulating PLE debt [13].

Budget sustainability is a budget functioning mode that ensures a balance of budget revenues and expenses, the ability to withstand destructive fluctuations under the influence of changes occurring in the internal and external environment, and is focused on the positive dynamics of the parameters of the socio-economic development of the territory based on ensuring efficiency and economical use of budget funds [20].

Financial stability of budgets is the state of the totality of monetary funds, in which PLE can develop steadily, maintaining its financial security despite an additional level of risk. Conditions for financial sustainability of the budget include balance of revenues and expenses for development, budgetary independence, and solvency, which are characterized by the ability of a public authority to mobilize financial resources into the budget without resorting to financial assistance, and to fully and timely meet its obligations" [14].

Budget sustainability is a financial condition that ensures a balance of budget revenues and expenses and the ability to withstand the influence of internal and external factors, and the budget is focused on the positive dynamics of stable development, efficiency, and effectiveness of using budget funds" [21].

BCERF sustainability – BCERF balance	<p>The sustainability of the territorial budget is determined by the amount of funds necessary to ensure minimal, deterministic budget expenditures – funds provided in the budget to finance constitutionally guaranteed measures for the life support of the population [22].</p> <p>The budget balance, which consists of the quantitative correspondence of budget expenditures to the sources of their financing, is one of the fundamental principles of its formation and execution [23].</p> <p>From an economic viewpoint, balance is the state of budgets of the constituent entities of the federation in which the volume of budget expenditures quantitatively corresponds to the total volume of revenues from all sources of their financial support, which ensures the sustainability of regional budgets [24].</p> <p>The financial sustainability of the regional budget is the state of the region's budget determined by internal and external factors, characterized by independence from external sources and providing stable opportunities for financing expenses [25].</p> <p>Budget sustainability is a balance aimed at ensuring that a territorial entity remains creditworthy and solvent through a balance between its own and borrowed funds used to perform the functions of the state [26].</p> <p>Sustainability as a state of balanced monetary revenues and expenses of a constituent entity of the Russian Federation and their proportional change under the influence of the external environment [27].</p>
BCERF sustainability – debt sustainability	<p>Debt sustainability of a CERF is the ability of public authorities of the CERF to service public debt and contain the occurrence of debt crises" [28].</p> <p>Debt sustainability is a state of the CERF budget system in which the debt burden on the budget and economy of a constituent entity does not exceed certain standards. The CERF's borrowing activities are based on the need to maintain the balance and sustainability of the region's budget, the optimal structure of debt instruments, and the maximum use of their capabilities [29].</p> <p>Debt sustainability is not just a state in which the accumulation of debt is not allowed; it is the ability to maintain a reasonable tax burden in the absence of cost containment on government spending on investment and R&amp;D [30].</p> <p>A budget is sustainable if this value of the future primary surplus is equal to the current level of debt [31].</p> <p>A sufficient condition for sustainability is a strictly positive and statistically significant response of the primary budget balance to changes in debt [32, 33].</p>
Sustainability of BCERF – sustainability of the revenue base sufficient to support the powers of the SGB CERF	<p>Budget sustainability depends on how sufficient the revenue side of the budget is to implement expenditure obligations, which directly depends on the pace of development and the degree of using revenue potential, since budget revenues are the financial basis for the implementation of the state socio-economic policy [34]. "The main goal of managing the sustainability of the revenue base is to strengthen the financial basis for the sustainable development of the territory and provide a comfortable living environment for the population as a necessary condition for achieving the maximum possible result – the volume of product produced, achieved by realizing the interests and priorities of the state, society, and the individual [34].</p> <p>BCERF sustainability is a qualitative state of the budget in which a subject of public authority, in the existing socio-economic and regulatory conditions, mobilizes budget revenues in a timely manner and in full to ensure all the powers assigned thereto [35].</p> <p>Budget sustainability is the state of the budget ensured by the authorities of the constituent entity of the federation, in which stability and completeness of revenue receipts are achieved that are sufficient to fulfill the obligations of regional authorities on expenditures under the impact of internal and external factors influencing the formation of financial flows of the region [36].</p> <p>The ability of the CERF to maintain the financial sufficiency of the budget revenue base when internal and external factors change, guaranteeing the constant solvency and investment attractiveness of the region to ensure the implementation of powers by the regional authorities, the economic, social and political development of the region in the short and long term" [37].</p>

Thus, there are several main approaches that serve as the basis for developing definitions of BCERF sustainability and choosing appropriate instruments:

- 1) Characteristics of BCERF sustainability from the perspective of fiscal sustainability. This approach is comprehensive, focusing on various factors and components of budget sustainability, which determine the ability to implement the key functions of the CERF SGB and ensure a balance between budget revenues and expenditures.
- 2) Characteristics of BCERF sustainability in terms of balancing budgets. In this case, the emphasis is on the degree to which budget expenditures are supported by the regional budget's own sources of budget revenues and an assessment of the extent to which the regional budget needs to attract borrowed sources of financing to cover all budget expenditures and the degree of their sufficiency to finance the EO.
- 3) Characteristics of BCERF sustainability from the perspective of regional debt sustainability. In this case, the main focus shifts to the solvency of the region, its ability to meet its debt (credit) obligations, and the assessment of the degree of probability of default. Assessing sustainability involves analyzing debt indicators and their relationship with other key performance indicators of the CERF.
- 4) Characteristics of BCERF sustainability in terms of the sustainability of the revenue base of their budgets. In this case, it is assessed how sufficient budget revenues are to cover the EO of the region. The emphasis is on the sustainability of the socioeconomic development of the region, which influences the stability of budget revenues.

The most widespread approach in the studies of domestic authors is to define budget sustainability from the standpoint of budget balance, whereas in the studies of foreign authors, there are often attempts to define budget sustainability from the standpoint of debt sustainability.

### 3- Research Methodology

#### 3-1- Analysis of Instruments for Ensuring the Sustainability of Regional Budgets with Regard to Modern Challenges

##### 3-1-1- Types of Instruments for Ensuring Budget Sustainability of Constituent Entities of the Russian Federation. Institutional Instruments for Ensuring Sustainability

Ensuring BCERF sustainability is associated with the use of a set of instruments that minimize the negative impact of internal and external processes on the state of regional budgets. The main instruments used for BCERF sustainability are shown in Table 2.

**Table 2. Instruments for ensuring the sustainability of regional budgets**

Institutional Instruments	Instruments for the Intergovernmental Redistribution of Funds	Budgetary Reserve Instruments (Budget Reserves)
Regulatory restrictions and requirements for the BCERF and CERF public debt parameters	Budget and treasury loans	Reserve funds of the CERF EB
Regulatory control of CERF debt sustainability parameters	IGT	Reserve funds of the CERF
CERF's commitment to improving public finances and achieving performance targets and results		Reservation of BA indicating the volume and use of funds in the BCERF Act of the CERF
Changes to the CQBBD without introducing amendments to BCERF Act of the CERF	Restructuring and refinancing of CERF debt obligations	“Unrelated” budget balances at the beginning of the current fiscal year
Dissemination and revision of limits on budget obligations		

##### 3-1-2- CERF Budget Loans and Debt Restructuring under CERF Debt Obligations

In the modern context, the importance of budget loans in ensuring the balance of regional budgets has increased significantly. Expanding the practice of budget lending for the CERF made it possible to increase the operational efficiency of the CERF SGB in implementing anti-crisis measures. A special position in the budget lending mechanism is occupied by infrastructural budgetary and special treasury loans, which are attracted for financial support for cost-effective and socially significant regional projects selected on a competitive basis. These types of budget loans are built into the mechanism for smoothing out differences in the level of infrastructural development of regions, influencing the future budgetary stability of the region.

A reduction in borrowing costs and, accordingly, a reduction in BCERF expenses for servicing CERF government debt is one of the current trends. In particular, debt restructuring and other measures to optimize public debt allowed for a reduction in public debt servicing costs for most CERFs in 2023 and 2024. At the same time, the planned increase in spending for 2025 is usually associated with the expiration of the budget loan term and the need to attract commercial loans (Table 3) [35–38].

At the same time, the reduction in BCERF expenses for servicing the public debt is associated with similar dynamics in federal budget revenues for the use of budget funds. In 2022, federal budget revenues for the use of budget loans provided to the PLE budgets amounted to 51.2 million roubles, which is more than 3% lower than the 2021 indicator [54]. The obvious savings in budgetary funds achieved by replacing bank loans make it possible to characterize budgetary loans as an instrument of responsible debt policy in the regions. Another trend is to change the approach to balancing the BCERF, providing priority to financing the BCERF deficit over intergovernmental redistribution, and attracting temporarily free funds from government institutions, balances of funds at the temporary disposal of recipients of budget funds in treasury accounts, and funds from managing the balance of funds on the UBA. The next trend is to optimize the parameters of the CERF debt burden, which is the resulting manifestation of the processes of restructuring the debt portfolio and reducing the cost of servicing public debt. The quality of the CERF public debt has changed in favor of medium- and long-term investment-oriented obligations, which have become a significant source of financial support for relevant regional development projects.



**Table 3. Dynamics of BCERF expenses for servicing CERF public debt in 2022–2025**

Indicators	2022	2023	2024	2025
<i>The Trans-Baikal Territory</i>				
BCERF expenditure growth rate, %	85.7	116.5	84.4	101.1
Growth rate of expenses for servicing public debt CERF, %	77.7	83.0	187.2	106.4
Percentage of expenses for servicing public debt in total BCERF expenses, %	1.3	0.4	1.0	1.0
<i>The Krasnoyarsk Territory</i>				
BCERF expenditure growth rate, %	125.7	100.2	99.7	97.9
Growth rate of expenses for servicing public debt CERF, %	83.0	141.0	123.6	108.8
Percentage of expenses for servicing public debt in total BCERF expenses, %	1.0	1.4	1.8	2.0
<i>The Moscow Region</i>				
BCERF expenditure growth rate, %	107.1	117.2	109.5	103.1
Growth rate of expenses for servicing public debt CERF, %	105.2	82.4	166.5	120.8
Percentage of expenses for servicing public debt in total BCERF expenses, %	1.7	1.2	1.9	2.1
<i>Moscow</i>				
BCERF expenditure growth rate, %	105.4	116.2	102.0	103.0
Growth rate of expenses for servicing public debt CERF, %	154.6	79.6	170.0	140.8
Percentage of expenses for servicing public debt in total BCERF expenses, %	0.6	0.4	0.7	1.1
<i>The Republic of Tatarstan</i>				
BCERF expenditure growth rate, %	120.9	87.0	105.5	99.5
Growth rate of expenses for servicing public debt CERF, %	235.6	260.0	99.6	94.2
Percentage of expenses for servicing public debt in total BCERF expenses, %	0.05	0.15	0.14	0.13
<i>The Rostov Region</i>				
BCERF expenditure growth rate, %	123.6	97.5	95.2	94.0
Growth rate of expenses for servicing public debt CERF, %	93.9	290.4	115.4	120.1
Percentage of expenses for servicing public debt in total BCERF expenses, %	0.4	1.2	1.5	1.9
<i>The Sverdlovsk Region</i>				
BCERF expenditure growth rate, %	109.2	80.1	98.5	101.2
Growth rate of expenses for servicing public debt CERF, %	71.5	128.9	100.0	100.0
Percentage of expenses for servicing public debt in total BCERF expenses, %	0.9	1.4	1.4	1.4
<i>The Khabarovsk Territory</i>				
BCERF expenditure growth rate, %	89.4	100.4	88.6	101.9
Growth rate of expenses for servicing public debt CERF, %	109.2	88.4	89.4	138.4
Percentage of expenses for servicing public debt in total BCERF expenses, %	0.5	0.4	0.4	0.6

### 3-1-4- Using Budget Reserves to Ensure the Sustainability of Regional Budgets

The third group of instruments actively involved in solving the problem of budget sustainability includes budgetary reservation instruments in the form of CERF EB reserve funds (hereinafter referred to as BCERF reserve funds), CERF reserve funds, and reserved BA without the formation of reserve funds, with the volume and their uses indicated in the BCERF Act [55]. Regardless of whether a CERF belongs to a specific group, general trends are evident, making it possible to overcome the influence of instability factors and strengthen the BCERF, including:

- Mandatory compliance with legally regulated budget rules that establish requirements for the parameters of BCERF deficit, CERF government borrowing, CERF public debt, and costs for its servicing, which are aimed at establishing a framework that helps ensure BCERF sustainability;
- Fulfillment of obligations for socio-economic development and rehabilitation of public finances of the CERF when it receives subsidies for FE, including measures aimed at increasing tax and non-tax revenues of the CBCERF and optimizing BCERF expenses, which the CERF should implement to increase budget sustainability;
- Implementation of measures to achieve the performance targets and results of the CERF activities within the framework of concluding agreements on the provision of subsidies from the federal budget, which determine the specific results of the use of subsidies, including those contributing to the sustainability of the BCERF;

- The use of instruments that allow, if necessary, to ensure the intra-annual sustainability of the BCERF – introducing changes to the CQBBD without amending the BCERF Act of the CERF and disseminating and revoking limits on budgetary obligations;
- Increasing the significance of subsidies as an instrument of intergovernmental redistribution, contributing to the overall balance of the BCERF in crisis conditions. Simultaneously, the main emphasis is placed on subsidies to balance the BCERF, despite the absence of correlation between the share of subsidies in the NRR structure and the available BCERF deficit;
- Strengthening the position of budget loans in the CERF debt portfolio. Refusal (minimization) of commercial lending and the activity of repayable budget financing are trends that have become widespread;
- Expansion of the composition and increase in the volume of reserve funds attracted by the CERF to provide financial support to the relevant EOs. For most CERFs, there has been a significant increase in the volume of BCERF reserve funds.

The analysis conducted makes it possible to conclude that the noted instruments of financial regulation have a significant potential for a positive impact on the parameters of BCERF formation in terms of ensuring their sustainability. Implementation of the positive impact is relevant for all CERFs.

## 4- Results

### *4-1-Determination of Modern Instruments for Assessing the Budget Sustainability of the Constituent Entities of the Russian Federation*

Analysis of economic literature [11-18, 13, 37, 46, 56-64] allows us to conclude that an indicative approach is the most common approach to assessing budget sustainability, which is significantly variable in terms of composition and grouping of the assessment indicators used (Appendix I) and the assessment methodology using the relevant indicators. Across the variety of methodological approaches to assessing budget sustainability, as a rule, the following is carried out:

- Formation of a system of private indicators, each measuring individual aspects of budget sustainability;
- Construction of an integral indicator of budget sustainability, allowing for its comprehensive assessment;
- Grouping regions according to budget sustainability.

Furthermore, the primary role in assessing budget sustainability within the framework of the indicative approach is played by precisely the set of indicators on the basis of which it is assessed. This is determined by the fact that, on the one hand, an excessive number of indicators can lead to ambiguity in the interpretation of the result obtained, and on the other hand, a consequence of an insufficient number of indicators is a loss of comprehensiveness and under-accounting of individual factors affecting BCERF sustainability. However, the choice of assessment indicators may be limited by the lack of statistical/factual data posted in open sources on the basis of which the proposed indicators could be calculated. In this study, the indicators were selected considering the determination of the sustainability of CERF budgets, within which the following components can be distinguished:

- 1) Stability of revenue flows in the BCERF;
- 2) Enforcement of EO in the CERF;
- 3) BCERF balance;
- 4) solvency of the region, based on CERF debt sustainability.

The indicators were selected in compliance with the following conditions:

- Simplicity and unambiguity of the interpretation of indicators;
- Availability of statistical/actual data to calculate indicators;
- Assessment of budget sustainability indicators in dynamics or in relative terms (to ensure their comparability).

Based on the results of the integral assessment, CERFs are classified into one of three groups according to the type of budget sustainability: high, medium, and low. Assigning CERF to different groups according to the type of budget sustainability makes it possible to:

- Assess the quality of financial management conducted by the CERF SGB;
- Conclude the need to adjust the implemented fiscal and debt policies of the CERF;
- Determine the prompt adoption and implementation of fiscal and debt policy responses aimed at improving sustainability.



It can be noted that the disadvantages of the indicative assessment method are that it has a certain static nature and allows for assessment of exactly the current state in the area under study. In addition, analyzing financial data using the indicative method is complicated because of the non-linear (data are not arranged sequentially) and non-stationary (data with a trend, seasonality, cyclicity and unevenness) characteristics of time series, which are further complicated by the effect of clustering and unforeseen changes, such as structural breaks and sudden data surges.

#### ***4-2-Recommendations for Improving the Budget Sustainability of the Russian Federation Constituent Entities***

##### ***4-2-1- Recommendations for Increasing Regional Budget Sustainability in the Context of Improving the Division of Powers on Subjects of Joint Jurisdiction of the Russian Federation and its Constituent Entities***

The division of jurisdictions of the PLE and matters of authority of the SGB are strategic directions in the development of a unified system of public authority in the Russian Federation. Depending on whether a balance is achieved in the division of jurisdiction and matters of authority, fiscal policy will be structured to increase BCERF sustainability. As part of the analysis of the division of matters of authority, special attention is paid to the issue of delegated powers, which is performed on the basis of individual federal laws, agreements between federal and regional executive bodies, and RLAs of the President of the Russian Federation and the Russian Government.

For the most part, powers are delegated to the regional level in the fields of protection and use of wildlife, water and forest relations, and veterinary medicine – about 38 powers; social sphere (prevention of neglect of minors, provision of housing for certain categories of citizens in need, provision of social support measures for payment of housing and communal services, employment, education and others) – about 33 powers. The list of delegated powers also includes certain powers in the field of environmental assessment (3 powers), provision of judicial power (2 powers), urban planning and architecture (2 powers), protection of cultural heritage sites (2 powers), state registration of acts of civil status (1 power), military registration of citizens (1 power), and others.

Financial support for the delegated powers is provided through subventions from the federal budget. At the same time, certain cases have been established when a subvention may not be provided. These include cases when there is no need to create new regional bodies and government institutions; cause additional budget investment, payments from the BCERF to citizens and legal entities; and increase the staffing level of regional civil servants and employees of regional government institutions [65]. Thus, under these circumstances, the delegated powers are implemented by the regions independently and at the expense of BCERF funds, while maintaining control on the part of the federal executive authority over their implementation.

The implementation of powers that are not assigned to the regions provides for the expansion of job responsibilities of regional civil servants and employees of regional government agencies. In fact, a situation arises when a region exercises powers that are not assigned to its own, but at its own expense. In this regard, the need for adequate financial support within the framework of intergovernmental redistribution of funds becomes obvious. Considering the abovementioned problems, the implementation of the following measures can contribute to improving the mechanism for dividing powers between SGBs at the federal and regional levels to ensure BCERF sustainability.

First, harmonization of the provisions of Federal Law No. 414-FZ of December 21, 2021, and “sectoral” federal laws. In particular, it is advisable to establish a basic list of state powers of the CERF SGB on the subjects of joint jurisdiction in Federal Law No. 414-FZ, which is fully consistent with the main subject of regulation of this federal law. At the same time, in “sectoral” federal laws, it is recommended to disclose a detailed list of provisions characterizing the basic authority and the rights, duties, and responsibilities of the CERF SGB. It is advisable to minimize the practice of duplicating regional powers in two federal laws.

Second, the improvement of the mechanism for financial support of transferred state powers in the form of subventions, which involves adjusting the methodology for calculating the volume of IGT, regarding the need for the creation of new CERF SGB units and regional government agencies, as well as the need for additional financial support to ensure the functions of existing CERF SGB and regional government agencies. When substantiating the volume of the subvention, it is advisable to consider the creation of state bodies and institutions, the effectuation of investments conditioned by the fulfillment of assigned duties, and the need to perform official duties in a combined format on the part of regional civil servants and employees of regional government institutions.

Third, the coordination of the budget legislation of the Russian Federation and Federal Law No. 414-FZ regarding the implementation of the right of regions to exercise non-transferred powers, which is currently possible if the CERF does not exceed the threshold in terms of the conditions for the provision of IGT from the federal budget. In relation to regions in whose budgets during two of the three reporting financial years the share of subsidies in the volume of CBCERF own revenues exceeds 10%, it is advisable to provide for a partial ban on the exercise of powers beyond their competence. This measure will facilitate the implementation of residual competence by regions, for example, in the exercise of non-transferred powers in the social sphere by providing additional social support to certain categories of citizens. The main recommendations for improving the division of matters of authority in the areas of jurisdiction of the Russian Federation and the CERF to increase BCERF sustainability are presented in Table 4.

**Table 4. Improvement of the division of state powers in the areas of jurisdiction of the Russian Federation and CERF**

Improvement of the division of state powers of state government bodies into constituent entities of the Russian Federation	
<b>Directions</b>	Harmonizing the provisions of Federal Law No. 414-FZ of December 21, 2021 and “sectoral” federal laws
	Improving the mechanism for financial support of transferred state powers regarding the adjustment of the methodology for calculating subventions
	Coordinating the provisions of budget legislation and laws on the division of the state powers of the SGB regarding the ban in terms of providing intergovernmental transfers to exercise non-transferred powers
<b>Cumulative effect</b>	Enforcing regions’ right to exercise independently adopted state powers
	Regulating the State Powers of the Constituent Entities of the Russian Federation
	Increasing the validity of resource support for new and delegated powers of state government bodies in the constituent entities of the Russian Federation

#### **4-2-2- Recommendations for Strengthening the Revenue Base of Regional Budgets of Constituent Entities of the Russian Federation**

BCERF revenue performance results for the period from 2020 to 2022 show that the growth rate of total revenue as of 01/01/2023 is 113.12%; the highest growth rate was observed in non-tax revenues of BCERF, 142.80% (Table 5) [66].

**Table 5. BCERF revenue performance for 2020–2022**

No.	Indicator	2020, million rubles	2021, million rubles	Growth rate, %	2022, million rubles	Growth rate, %
1	Total revenues	13253645.61	15676412.93	118.28	17571705.40	112.09
1.1	Tax and non-tax revenues, including	9149508.94	11781364.98	128.76	13326745.44	113.12
1.1.1	Corporate tax	2910490.73	4501302.93	154.66	4663603.64	103.61
1.1.2	Personal income tax	3344636.65	3802992.39	113.70	4423697.68	116.32
1.1.3	Excise tax	755169.08	900493.24	119.24	1055856.74	117.25
1.1.4	Corporate property tax	901671.69	956417.61	106.07	1114357.61	116.51
1.1.6	Severance tax	77995.17	94352.06	120.97	123601.41	131.0
1.1.7	Other tax revenues	614470.34	791162.99	128.76	927986.35	117.29
1.1.8	Non-tax revenues	459263.06	630828.56	137.36	900798.77	142.80
1.2	Non-repayable receipts	3776207.84	3676792.95	97.37	3922587.21	106.69

Some principles are noted, compliance with which significantly affects BCERF sustainability from the tax aspect standpoint. First, the stability of the tax system is facilitated by diversifying revenue sources and reducing dependence on certain industries or types of economic activity. Different types of taxes (corporate tax, property tax and others) provide a more stable revenue base for the BCERF. Second, BCERF sustainability relies heavily on an efficient tax collection mechanism. Qualitative tax administration (including effective tax collection and enforcement mechanisms) helps reduce tax evasion and ensures the stability of BCERF revenues. Third, predictability and stability of tax policy create a favorable investment environment and contribute to CERF’s economic growth. Constant changes in tax laws cause taxpayer dissatisfaction, which can negatively affect BCERF sustainability.

The following measures can improve BCERF sustainability by strengthening its revenue base. First, reducing the corporate income tax rate (while maintaining the existing quotas for delineating revenues between budgets of different levels). This measure is associated with a positive effect in many areas, including a high probability of increasing corporate income tax revenues to budgets, intensifying private investment in business development, and using sanctions pressure as an incentive for the development of domestic entrepreneurship. Second, strengthening measures to combat tax evasion and improving the quality of tax administration. One of the specific changes that is advisable to implement is related to the introduction of an electronic document management system and digital control over tax obligations [67, 68]. Third, increasing the CERF’s economic diversification and corresponding tax incentives for sectoral restructuring. The key benefits of diversification are, on the one hand, the stimulation of economic development: diversification contributes to the development of various economic sectors in the region and reduces dependence on the state of certain industries. On the other hand, it reduces the dependence of the BCERF on a limited number of tax revenue sources. Diversification makes it possible to distribute risks, which decreases the likelihood of destabilization in the formation of BCERFs in the event of a reduction in tax revenues. Thus, a highly diversified regional economy is more resistant to economic and financial crises. The key recommendations for strengthening the revenue base to improve BCERF sustainability are shown in Table 6.

**Table 6. Strengthening of the BCERF revenue base**

<b>Strengthening the budget revenue base of the constituent entities of the Russian Federation</b>	
<b>Directions</b>	Providing tax incentives for sectoral restructuring of the regional economy
	Counteracting tax evasion and improving the quality of tax administration
	Reducing the corporate income tax rate while maintaining existing quotas for delimiting tax income between budgets
	Increasing accessibility of investment protection and promotion agreement mechanisms for regional investors
<b>Cumulative effect</b>	Diversifying the regional economy and expanding revenue sources for the budgets of the constituent entities of the Russian Federation
	Increasing the volume of tax revenues by increasing the efficiency of tax administration and reducing tax evasion
	Strengthening the budget revenue base of the constituent entities of the Russian Federation through the growth of private investment

#### **4-2-3- Recommendations for Improving Instruments for Ensuring Budget Sustainability of Constituent Entities of the Russian Federation**

These measures are advisable to improve the institution of budget rules and restrictions at the regional level. First, forming budget rules in accordance with the requirements aimed at preventing crisis phenomena in the region, smoothing the consequences of economic cycles, ensuring the possibility of implementing a countercyclical budget policy, maintaining operational flexibility and managerial autonomy in responding to various macroeconomic shocks and emergencies, and ensuring openness of budget restrictions and monitoring compliance with budget rules. Second, eliminating the dependence of the parameters of budget restrictions on the level of CERF subsidies. It is advisable to maintain a differentiated approach to the application of budget restrictions solely on the basis of the volume of accumulated public debt. Third, combining incentives and sanctions – built-in mechanisms that include CERF incentives for responsible fiscal policy and sanctions for violating fiscal rules. Fourth, expanding the practice of forming CERF reserves, which is aimed at reducing BCERF dependence on volatile market revenues (in particular, corporate income tax, and mineral extraction tax). Key recommendations for improving institutional instruments/fiscal rules to improve BCERF sustainability are presented in Table 7.

**Table 7. Improvement of institutional instruments and fiscal rules for the CERF**

<b>Improvement of institutional instruments and fiscal rules</b>	
<b>Directions</b>	Providing flexibility to adjust/suspend budgetary requirements based on the current situation
	Eliminating dependence of the parameters of budget restrictions on the level of CERF subsidizing
	Establishing a clear system of penalties for violating budget rules
<b>Cumulative effect</b>	Implementing opportunities for operational flexibility and managerial independence while making budget decisions on BCERF formation by the CERF SGB
	Providing opportunities for the development of the CERF with a high level of subsidization

Considering the results of the analysis described in paragraph 3 of this study, non-targeted IGT with a leveling and balancing orientation, budget reserves formed in fund and non-fund forms, budget loans for operational and investment purposes, and measures to restructure debt thereon are the most active instruments ensuring BCERF sustainability.

The subsidy mechanism acts as an instrument actively promoting the balance of the BCERFs, ensuring an impact on their sustainability through the following:

- Reducing the volatility of the BCERF revenue base and mitigating the adverse impact of financial and industry crises;
- Regulating formation parameters and the cost structure of the BCERF;
- Bringing the level of fiscal capacity unsecured by the CERFS to the optimal equalization criterion;
- Providing guarantees for fulfilling socially prioritized obligations.

The development of a subsidy mechanism to ensure BCERF sustainability from the current perspective is associated with the implementation of the following activities (measures):

- Eliminating the practice of subsidies in areas not determined by the RLA (based on the results of control and accounting activities, violations are noted in terms of the use of subsidies for balance in areas that do not comply with the established procedure);
- Improving the methodology for distributing subsidies for FE, aimed at reducing the risks of underfunding of CERF EO, including by fully considering factors that increase the cost of services and the population of the regions;

- Securing the right for the CERF to use the remaining subsidies for balancing received from the BA of the Government Reserve Fund of the Russian Federation for specified purposes in the next financial year;
- Coordinating the mechanism for subsidizing shortfalls in BCERF revenues with other instruments to compensate for losses in revenues caused by changes in budget and tax legislation.

The main directions for improving the subsidy mechanism to ensure BCERF sustainability are presented in Table 8.

**Table 8. Improvement of the CERF subsidy mechanism**

<b>Improvement of the mechanism for subsidizing the constituent entities of the Russian Federation</b>	
<b>Directions</b>	Eliminating the practice of subsidies in areas not determined by the RLA
	Improving the methodology for distributing subsidies for fiscal equalization of the constituent entities of the Russian Federation (regarding model budget)
	Securing the right to use the remaining subsidies for supporting measures to ensure balanced budgets from the Government Reserve Fund of the Russian Federation for the next financial year
<b>Cumulative effects</b>	Reducing the volatility of the BCERF revenue base and ensuring the fulfillment of certain expenditure obligations of constituent entities of the Russian Federation
	Regulating the budget parameters of constituent entities of the Russian Federation, including the cost structure

Under modern conditions, the importance of budget lending in ensuring BCERF sustainability has increased significantly, providing for:

- Reducing the regional budget deficit and CERF public debt to target parameters (as a condition for the provision of borrowed funds);
- Reducing the liquidity risk in the CERF borrowing market associated with the inability to attract bank loans to finance the budget deficit and repay the CERF public debt due to the high cost or refusal of credit institutions to provide borrowed funds;
- Optimizing BCERF expenses for servicing regional debt obligations, which in turn contributes to the transition of the CERF to regions with an average (high) level of debt sustainability;
- Stimulating investment processes and the development of transport, social, and other infrastructure facilities of the CERF.

The development of a budget lending mechanism to strengthen BCERF sustainability is associated with the implementation of the following activities (measures):

First, expanding the practice of interregional (“horizontal”) budget lending, including as part of the implementation of an agreement on cooperation in the implementation of infrastructure projects. Currently, any CERF has the right to provide budget loans to other CERFs for up to three years [55]. Second, based on the results of BCERF execution, securing the possibility of exceeding the maximum deficit level by the amount of BA, provided through budget loans for investment purposes. Third, legal regulation of the conditions and procedures for refinancing loan debt from credit institutions, foreign banks, and IFIs at the expense of budget loans. Fourth, ensuring transparency of the regional debt policy in terms of budget lending, including public posting of information on the CERF debt portfolio, and presenting an independent opinion of Russian rating agencies on the region’s debt sustainability. The key directions for improving the budget lending mechanism to ensure BCERF sustainability are presented in Table 9.

**Table 9. Improvement of the CERF’s budget lending mechanism**

<b>Improvement of the mechanism for budget lending of the constituent entities of the Russian Federation</b>	
<b>Directions</b>	Expanding the practice of interregional budget lending
	Securing the right of the constituent entities of the Russian Federation to exceed the maximum budget deficit level by the amount of budget loans for investment
	Regulating the conditions and procedures for refinancing commercial loan debts of constituent entities of the Russian Federation
	Ensuring transparency of the debt policy of the constituent entities of the Russian Federation in terms of budget lending
	Assigning obligations to the constituent entities of the Russian Federation to use additional income from the implementation of investment and infrastructure projects financed through budget loans for the early repayment of debt obligations
<b>Cumulative effects</b>	Reducing the budget deficit and public debt of the constituent entities of the Russian Federation to target parameters
	Reducing liquidity risk in borrowings by constituent entities of the Russian Federation
	Optimizing expenses for servicing debt obligations of constituent entities of the Russian Federation
	Stimulating investment and other economic processes

Debt restructuring on debt obligations associated with budget lending is an active instrument of financial support for the CERF that contributes to BCERF sustainability. The use of this tool provides the following:

- Reducing the regional debt burden by refusing new borrowings, including in the financial market;
- Distributing uniform debt repayment payments over a long-term period with minimal additional installment costs;
- Encouraging “over-leveraged” regions to refuse to attract commercial loans and issue government securities to finance the BCERF deficit.

The directions of influence and measures to improve regulation of CERF debt restructuring on debt obligations related to budget lending are presented in Table 10.

**Table 10. Improvement of regulation of CERF debt restructuring on budget loans**

<b>Improving the regulation of debt restructuring on budget loans of the constituent entities of the Russian Federation</b>	
<b>Directions</b>	Coordination of the procedure and timing of debt repayment on budget loans within the restructuring program framework
	Monitoring the fulfillment of obligations by constituent entities of the Russian Federation under restructured budget loans
	Reducing the regional debt burden
<b>Cumulative effects</b>	Distributing uniform debt repayment payments with minimal additional installment costs
	Encouraging “over-leveraged” regions to refuse to attract loans on market terms

Reserve funds (both in fund and non-fund forms) are a significant instrument for ensuring the sustainability of regional budgets. The use of this tool contributes to the following:

- Mobilize budget funds (including free balances of budget funds) for the implementation of adopted EOS during the budget cycle;
- Increasing the efficiency of operational management of regional budget expenditures based on the redistribution of budget funds in accordance with changes in the CQBBD without amending BCERF Act of the CERF.

Directions of influence and measures to improve budgetary reserves to ensure BCERF sustainability are shown in Table 11.

**Table 11. Improvement of the budget reserve mechanism in the CERF**

<b>Improvement of the budget reserve mechanism among the constituent entities of the Russian Federation</b>	
<b>Directions</b>	Expanding the right of constituent entities of the Russian Federation to redistribute budget appropriations without introducing amendments to the CERF Budget Act
	Adjustment of the approach to rationing the reserve funds of the budgets of the constituent entities of the Russian Federation; the CERF obligation to comply with the maximum level when introducing a financial recovery mode; and the right to exceed the limit in the event of non-application of the specified mode
	Securing budgetary appropriations for the provision of targeted intergovernmental transfers (except for subventions) as the sources of the formation of budget reserve funds of the constituent entities of the Russian Federation in the absence of agreements on the IMT provision concluded with municipal entities within the established time frame
<b>Cumulative effects</b>	Increasing the efficiency of the operational management of regional budget expenditures
	Activating the mechanism for using BSFR reserve funds to stimulate municipal entities to effectively use IGT
	Mobilizing budget funds for the implementation of the adopted EOs during the budget cycle

The recommendations presented in this study to improve BCERF sustainability can be used in practical activities by the government and financial authorities of the constituent entities of the Russian Federation.

## 5- Discussion

The research presented in this article has yielded several key findings that contribute to the understanding of budget sustainability in the constituent entities of the Russian Federation (CERF). The results of this study extend the existing literature on the relationship between government revenues and expenditures by providing a comprehensive analysis of the relationship between aggregated revenues and expenses of the budget of the constituent entities of the Russian Federation (BCERF).

Through a comprehensive analysis of the literature, we have identified four main approaches to determining BCERF sustainability: BCERF sustainability as fiscal sustainability, BCERF sustainability as BCERF balance, BCERF sustainability as debt sustainability, and BCERF sustainability as the sustainability of the revenue base sufficient to ensure the powers of the CERF government bodies. We argue that none of these approaches alone provide a comprehensive understanding of BCERF sustainability. Instead, we propose considering BCERF sustainability as a



multifaceted characteristic of the budget state, which ensures a stable flow of revenues sufficient for the effectuation of CERF expenditure obligations, budget balance, and regional solvency, based on CERF debt sustainability. This approach enables the implementation of fiscal and debt policies in the region, creating conditions for its progressive socioeconomic development.

Our analysis of the factors influencing BCERF sustainability in the context of modern challenges has led to their grouping according to different classification criteria, such as the nature of origin, environments of occurrence, possibilities of impact and control, and impact mediation. This grouping has revealed the consequences of these factors for regions, including decreased revenues, increased BCERF expenses, and the need for government borrowing, all of which directly affect BCERF sustainability. To assess BCERF sustainability, we justified the use of an indicative approach, with indicators selected based on our proposed definition of BCERF sustainability.

Ensuring BCERF sustainability involves the use of a set of instruments that minimize the negative impact of internal and external processes on regional budgets. We have highlighted the increasing significance of institutional instruments, financial support mechanisms, and budgetary reserve instruments in overcoming the risks associated with temporary cash gaps, decreased revenue receipts, and increased budget appropriations for the effectuation of adopted expenditure obligations in the regions.

Among the various instruments discussed, the subsidy mechanism and debt restructuring have been identified as particularly effective in promoting the BCERF balance and sustainability. The subsidy mechanism reduces the volatility of the BCERF revenue base, mitigates the adverse impact of financial and industry crises, regulates formation parameters and expenditure structure, and guarantees the fulfillment of socially prioritized obligations. Debt restructuring, on the other hand, contributes to BCERF sustainability by reducing the debt burden of the regions, distributing debt repayment payments over a long-term period, and encouraging over-leveraged regions to refuse commercial loans and issue government securities to finance the BCERF deficit.

Finally, we have emphasized the significance of reserve funds as an instrument for ensuring the sustainability of regional budgets. Reserve funds mobilize budget funds to effectuate adopted expenditure obligations during the budget cycle and increase the efficiency of the operational management of regional budget expenditures. We have proposed measures to enhance the effectiveness of the budget reserve mechanism, such as expanding the basis for budget appropriation redistribution, adjusting the approach to rationing BCERF reserve funds, and activating the mechanism for using BCERF reserve funds to stimulate municipal entities to effectively use intergovernmental transfers.

The current study contributes to the existing literature by providing a comprehensive analysis of the relationship between aggregated revenues and expenses of the budget of the constituent entities of the Russian Federation. Furthermore, the research presented in this article provides a comprehensive analysis of the factors influencing BCERF sustainability, the instruments for assessing and ensuring sustainability, and recommendations for improving the sustainability of regional budgets in the Russian context. The findings and proposals presented in this article contribute to the theoretical understanding of regional budget sustainability and offer practical insights for policymakers and financial authorities in their efforts to promote stable and sustainable regional budgets.

### ***5-1- Practical Implications***

The findings of this study have several practical implications for policymakers, financial authorities, and other stakeholders involved in managing regional budgets in Russia. By providing a comprehensive understanding of the factors influencing budget sustainability in the constituent entities of the Russian Federation (CERF) and identifying effective instruments for assessing and ensuring sustainability, this research offers valuable insights for decision-makers.

First, the proposed approach to considering BCERF sustainability as a multifaceted characteristic of the budget state can help policymakers develop a more holistic view of regional budget sustainability. By recognizing the importance of ensuring a stable flow of revenues, maintaining budget balance, and managing debt sustainability, policymakers can design and implement more effective fiscal and debt policies that promote the progressive socioeconomic development of their regions.

Second, the identification of various factors influencing BCERF sustainability, such as the nature of origin, environments of occurrence, possibilities of impact and control, and impact mediation, can help policymakers anticipate and respond to potential challenges. By understanding the consequences of these factors, such as decreased revenues, increased expenses, and the need for government borrowing, decision makers can develop proactive strategies to mitigate their negative impact on regional budget sustainability.

Third, this study highlights the importance of institutional instruments, financial support mechanisms, and budgetary reserve instruments in ensuring BCERF sustainability. Policymakers can use these findings to strengthen the institutional framework, improve the design and implementation of financial support mechanisms, such as subsidies and debt restructuring, and optimize the use of budgetary reserve instruments to overcome risks associated with temporary cash gaps, decreased revenue receipts, and increased expenditure obligations.



Finally, the recommendations provided in this study for improving the sustainability of regional budgets, such as enhancing the effectiveness of the budget reserve mechanism, can serve as a guide for policymakers and financial authorities in their efforts to promote stable and sustainable regional budgets. By implementing these recommendations, decision-makers can contribute to the long-term financial health and resilience of their regions, ultimately supporting the Russian Federation's overall economic stability and development.

The practical implications of this study are far-reaching and can help policymakers, financial authorities, and other stakeholders make informed decisions, develop effective strategies, and implement targeted measures to enhance regional budget sustainability in Russia. By leveraging the insights and recommendations provided in this research, decision-makers can contribute to the promotion of stable and sustainable regional budgets, ultimately supporting the progressive socioeconomic development of their regions and the Russian Federation as a whole.

## 6- Conclusion

This study provides a comprehensive analysis of budget sustainability in the constituent entities of the Russian Federation (CERF), addressing the research question: How can the sustainability of regional budgets in Russia be improved through the development of a new economic model and the identification of conceptual directions, considering the complex interplay of economic, social, and political factors influencing BCERF sustainability?

Through a thorough examination of the existing literature, we identified four main approaches to determining BCERF sustainability and proposed a more comprehensive approach that considers BCERF sustainability as a multifaceted characteristic of the budget state. This approach emphasizes the importance of ensuring a stable flow of revenues, maintaining budget balance, and managing debt sustainability to create conditions for the progressive socioeconomic development of the regions. The findings of this study to investigate the complexities of fiscal relationships and offer valuable insights for policymakers in developing more effective fiscal policies and budgetary planning strategies. Furthermore, the study identified and grouped various factors influencing BCERF sustainability, highlighting the consequences of these factors for regions and emphasizing the importance of institutional instruments, financial support mechanisms, and budgetary reserve instruments in ensuring BCERF sustainability. The recommendations provided for improving the sustainability of regional budgets, such as enhancing the effectiveness of the budget reserve mechanism, can serve as a guide for policymakers and financial authorities in their efforts to promote stable and sustainable regional budgets. However, it is important to acknowledge the limitations of this study. The research focuses specifically on the Russian context, and while the findings may offer valuable insights for other countries facing similar challenges, the generalizability of the results may be limited. Future research could extend the analysis to include more recent data and explore the evolving dynamics of regional budget sustainability in Russia.

## 7- Nomenclature

BA	Budgetary Appropriations	BCERF	Budget of a Constituent Entity of the Russian Federation
BCRF	Budget Code of the Russian Federation	CBCERF	Consolidated Budget of a Constituent Entity of the Russian Federation
CERF	Constituent Entity of the Russian Federation	CERF EB	Executive Body of a constituent entity of the Russian Federation
CERF GP	Government Program of a Constituent Entity of the Russian Federation	CERF SGB	State Government Body of a Constituent Entity of the Russian Federation
CFY	Current Fiscal Year	CQBBDD	Consolidated Quarterly Budget Breakdown
EO	Expenditure Obligations	FC	Fiscal Capacity
FE	Fiscal Equalization	FEB	Federal Executive Body
FSGB	Federal State Government Body	FYR	Fiscal Year Reported on
GRP	Gross Regional Product	GS	Government Securities
IGT	Intergovernmental Transfers	IFI	International Financial Institutions
IPPA	Investment Protection and Promotion Agreement	ITD	Investment Tax Deductions
KFSDP	Key Focuses of the State Debt Policy of the Russian Federation	ME	Municipal Entity
NP	National Project	NRR	Non-repayable Receipts from other Budgets of the Budget System of the Russian Federation
PLE	Public-Law Entity	PNO	Public Normative Obligations
R&D	Research and Development	RF GP	Government Program of the Russian Federation
RLA	Regulatory Legal Act	RP	Regional Project
SGB	State Government Body	TCG	Taxpayers' Consolidated Group
TCI	Taxable Capacity Index	UBA	Unified Budget Account
UFBA	Unified Federal Budget Account	UTA	Unified Tax Account
UTP	Unified Tax Payment		

## 8- Declarations

### 8-1-Author Contributions

Conceptualization, M.K.; methodology, M.V.; software, A.M.; validation, K.Z.; formal analysis, E.S.; investigation, M.K.; resources, O.G.; data curation, O.G.; writing—original draft preparation, M.V. and M.K.; writing—review and editing, N.S.; visualization, A.M.; supervision, M.V.; project administration, M.K.; funding acquisition, M.K. All authors have read and agreed to the published version of the manuscript.

### 8-2-Data Availability Statement

The data presented in this study are openly available from the statistical database of the Russian Ministry of Finance.

### 8-3-Funding

The article was prepared on the basis of the research results conducted at the expense of budgetary funds under the state assignment of the Financial University under the Government of the Russian Federation.

### 8-4-Institutional Review Board Statement

Not applicable.

### 8-5-Informed Consent Statement

Not applicable.

### 8-6-Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

## 9- References

- [1] Sohag, K., Gainetdinova, A., & Mariev, O. (2023). Economic growth, institutional quality and deforestation: Evidence from Russia. *Forest Policy and Economics*, 150. doi:10.1016/j.forpol.2023.102949.
- [2] Alexeev, M., & Kurlyandskaya, G. (2003). Fiscal federalism and incentives in a Russian region. *Journal of Comparative Economics*, 31(1), 20–33. doi:10.1016/S0147-5967(02)00011-2.
- [3] Zubarevich, N. V., & Safronov, S. G. (2020). Russian Regions in the Acute Phase of the Coronavirus Crisis: Differences from Previous Economic Crises of the 2000s. *Regional Research of Russia*, 10(4), 443–453. doi:10.1134/S2079970520040115.
- [4] Alexeev, M., & Chernyavskiy, A. (2018). A tale of two crises: Federal transfers and regional economies in Russia in 2009 and 2014–2015. *Economic Systems*, 42(2), 175–185. doi:10.1016/j.ecosys.2017.07.002.
- [5] Barykin, S. E., Mikheev, A. A., Kiseleva, E. G., Putikhin, Y. E., Alekseeva, N. S., & Mikhaylov, A. (2022). An Empirical Analysis of Russian Regions' Debt Sustainability. *Economies*, 10(5), 10050106. doi:10.3390/economies10050106.
- [6] Espolov, T., Espolov, A., Aitkozhiba, D., Tireuov, K., Raiymbekov, S., & Suleimenov, Z. (2023). Comparing COVID-19 Budgeting Responses: New Budgeting Principles that Resulted from the Pandemic. *Comparative Economic Research*, 26(4), 7–25. doi:10.18778/1508-2008.26.28.
- [7] Malkina, M. Y. (2020). Assessment of the sustainability of budget revenues in the regions of the Russian Federation. *Journal of Siberian Federal University - Humanities and Social Sciences*, 13(4), 547–559. doi:10.17516/1997-1370-0588.
- [8] Meyliev, O., & Gofurova, K. (2023). Ways to Ensure the Stability of State Finances by Increasing Local Budget Revenues. *Best Journal of Innovation in Science, Research and Development*, 2(9), 123-128. doi:10.5281/zenodo.8386976.
- [9] Cherepovitsyn, A., Solovyova, V., & Dmitrieva, D. (2023). New challenges for the sustainable development of the rare-earth metals sector in Russia: Transforming industrial policies. *Resources Policy*, 81. doi:10.1016/j.resourpol.2023.103347.
- [10] Gryaznova, A. G. (2004). Financial and credit encyclopedic dictionary. Finance and Statistics, Moscow, Russian Federation.
- [11] Tukhbatullin, R. M. (2018). Financial sustainability of municipalities: factors of ensuring and assessment methodology: Ph.D. Thesis (Economics). Kazan Federal University, Kazan, Russia.
- [12] Alekhin, B. I. (2019). On the budget sustainability of the regions. *Bulletin of the Russian State University for the Humanities. Series "Economics. Control. Law"*, 2, 81-101.
- [13] Danilov, P. V. (2011). Improving methods for assessing the budgetary sustainability of municipal entities. PhD Thesis (Economics), Nizhny Novgorod Institute of Management (Branch of RANEP), Nizhny Novgorod, Russia.

- [14] Nikiforova, A. A. (2007). Factors of financial sustainability and security of the local budget: abstract of the Ph.D. Thesis (Economics). Volgograd State University, Volgograd, Russia.
- [15] Karataev, S. M. (2003). Toward the concept of budget sustainability. *Digest Finance*, 5, 39-46.
- [16] Iyashvili, V. B., & Chichelev, M. E. (2016). On the principles of formation of budget policy and budget indicators. Chamber of Control and Accounts of Moscow. Available online: [http://www.ksp.mos.ru/common/upload/news/docs/Principles\\_formation.pdf](http://www.ksp.mos.ru/common/upload/news/docs/Principles_formation.pdf) (accessed on March 2024).
- [17] Kutsuri, G. N., & Levdotsky, A. A. (2015). Features of the influence of the main factors on the financial stability of the budget. *Economics and Entrepreneurship*, 12(4), 80-84.
- [18] Shimshirt, N. D. (2013). Increasing the budget sustainability of the constituent entities of the federation as a strategic goal of increasing the efficiency of public finances. *Bulletin of Tomsk State University*, 2, 147-158.
- [19] Doronina, T. V. (1999). Financial and economic support for the sustainability of regional budgets. PhD Thesis, Moscow State University, Moscow, Russia.
- [20] Almazov, S. G. (2007). Improving the methodology for assessing the financial sustainability of local budgets. PhD Thesis, North Caucasus Institute of Humanities and Technology, Nevinnomyssk, Russia.
- [21] Panikin, V. E. (2009). Financial sustainability of the municipal budget in Russia. PhD Thesis, Volgograd State University, Volgograd, Russia.
- [22] Polyak, G. B. (2009). Budget system of Russia (2<sup>nd</sup> Ed.). UNITY-DANA, Moscow, Russia. (In Russian).
- [23] Kuznetsova, E. V. (2011). Methodological foundations and features for ensuring balanced budgets of the constituent entities of the Russian Federation. *Regional Economics: Theory and Practice*, 12, 53-60.
- [24] Kuznetsova, E. V. (2011). Assessment of the quality of balanced budgets of the constituent entities of the Russian Federation. *Finance*, 2, 15-19. (In Russian).
- [25] Fatalieva, Z. A. (2008). Formation of the regional budget in the context of the development of intergovernment relations. Ph.D. Thesis. Dagestan State University, Makhachkala, Russia.
- [26] Grachev, A. V. (2002). Analysis and management of the financial sustainability of the enterprise. Finpress Publishers, Moscow, Russian. (In Russian).
- [27] Edronova, V. N., & Kavinov, A. A. (2005). System of indicators for monitoring the sustainability of the regional financial system. *Finance and Credit*, 19, 4-11.
- [28] Sanakoev, A. Yu. (2020). Increasing the debt sustainability of the constituent entities of the Russian Federation. PhD Thesis, Financial University under the Government of the Russian Federation, Moscow, Russia.
- [29] Soldatkin, S. N. (2017). Debt Sustainability of Russian Regions: the Overall Assessment and the Adequacy of Regulation. *Polythematic Online Scientific Journal of Kuban State Agrarian University*, 128, 1–18. doi:10.21515/1990-4665-128-094.
- [30] Genoiro, H. (2005). General government debt sustainability in Slovenia. Bank of Slovenia Analysis & Research Department, Ljubljana, Slovenia. Available online: [https://bankaslovenije.blob.core.windows.net/publication-files/nov\\_genorio57\\_88.pdf](https://bankaslovenije.blob.core.windows.net/publication-files/nov_genorio57_88.pdf) (accessed on March 2024).
- [31] Krejdl, A. (2006). Fiscal sustainability: definition, indicators and assessment of Czech public finance sustainability. Economic Research Department, Czech National Bank, Prague, Czech.
- [32] Bohn, H. (1995). The Sustainability of Budget Deficits in a Stochastic Economy. *Journal of Money, Credit and Banking*, 27(1), 257. doi:10.2307/2077862.
- [33] Bohn, H. (1998). The behavior of U. S. public debt and deficits. *Quarterly Journal of Economics*, 113(3), 948–963. doi:10.1162/003355398555793.
- [34] Galukhin, A. V. (2017). Managing the sustainability of the revenue base of the consolidated budgets of the constituent entities of the Federation (as exemplified by the constituent entities of the Northwestern Federal District). Ph.D. Thesis, Vologda Research Center of the RAS, Vologda, Russia.
- [35] Yashina, N. I. (2007). Comprehensive assessment of the budget sustainability of municipal entities regarding the integral trend index and the risk indicator of the region's budget flows. *Finance and Credit*, 44, 25-35.
- [36] Tishutina, O. I. (2008). Methodology and strategy for ensuring the sustainability of the revenue base of the budgets of border constituent entities of the Russian Federation. PhD Thesis, Saratov Socio-Economic Institute, Saratov, Russia.
- [37] Mikheeva, T. N., & Kazakovtseva, M. V. (2012). Methodological instruments for assessing the financial sustainability of the regional budget revenue base. *Innovative Development of the Economy*, 2, 54-59.

- [38] Law of the Trans-Baikal Territory of 22.12.2022 No. 2134-ZZK. (2022). On the Budget of the Trans-Baikal Territory for 2023 and the target period of 2024 and 2025. Electronic fund legal and regulatory technical documents, St. Petersburg, Russia. Available online: <https://docs.cntd.ru/document/406410788?ysclid=lmw08w5vg3556256956> (accessed on March 2024).
- [39] Krskstate (2021). Law of the Krasnoyarsk Territory of 09.12.2021 No. 2–255. On the Territorial Budget for 2022 and the target period of 2023–2024”. Available online: <http://www.zakon.krskstate.ru/0/doc/82692?ysclid=lmw3kq0fg6465231593> (accessed on March 2024).
- [40] Krskstate (2022). Law of the Krasnoyarsk Territory of 09.12.2022 No. 4–1351. On the Territorial Budget for 2023 and the target period of 2024–2025. Available online: <http://www.krskstate.ru/docs/0/doc/92290?ysclid=lmw3lhff61482025102> (accessed on March 2024).
- [41] ConsultantPlus. (2022). Law of the Moscow Region No. 252/2021-OZ. On the Budget of the Moscow Region for 2022 and the target period of 2023 and 2024. Available online: <https://www.consultant.ru/regbase/cgi/online.cgi?BASENODE=14-3&req=doc&cacheid=3BE18073A5D6A72419797220D82692F5&mode=searchcard&rnd=sryjgqTwVy5CHXxk&base=MOB&n=370005#YL1kgqTq3ltY179k> (accessed on March 2024). (In Russian).
- [42] ConsultantPlus. (2023). Law of Moscow Region No. 220/2022-OZ. On the Budget of the Moscow Region for 2023 and the target period of 2024 and 2025. Available online: <https://www.consultant.ru/regbase/cgi/online.cgi?BASENODE=14-3&req=doc&cacheid=5A31A907579BADDA052394727E21C3A6&mode=searchcard&rnd=sryjgqTwVy5CHXxk&base=MOB&n=384494#SCCkgqT8GOebhle> (accessed on March 2024). (In Russian).
- [43] ConsultantPlus. (2021). Law of the city of Moscow of 24.11.2021 No. 33. On the Budget of the city of Moscow for 2022 and the target period of 2022 and 2024. Available online: <https://www.consultant.ru/regbase/cgi/online.cgi?BASENODE=19-3&req=doc&cacheid=67984089EB27CB6B8C65DC28892EECB4&mode=searchcard&rnd=sryjgqTwVy5CHXxk&base=MLAW&n=216464#n0PkqgT2fxoo5fIu> (accessed on March 2024).
- [44] Law of the city of Moscow of 02.11.2022 No. 30. (2022). On the Budget of the city of Moscow for 2023 and the target period of 2024 and 2025. Available online: <https://www.consultant.ru/regbase/cgi/online.cgi?BASENODE=19-3&req=doc&cacheid=F812FA04F96B6F805897C727C56D9A77&mode=searchcard&rnd=bJRuBw&base=MLAW&n=226863#alekgqTFV1uXUKTA> (accessed on March 2024).
- [45] Law of the Republic of Tatarstan of 25.11.2021 No. 86-ZRT. (2021). On the Budget of the Republic of Tatarstan for 2022 and the target period of 2023 and 2024. Electronic fund legal and regulatory technical documents, St. Petersburg, Russia. Available online: <https://docs.cntd.ru/document/577964826?ysclid=lmw3j3ry1v445823284> (accessed on March 2024). (In Russian).
- [46] Law of the Republic of Tatarstan of 23.11.2022 No. 82-ZRT. (2022). On the Budget of the Republic of Tatarstan for 2023 and the target period of 2024 and 2025. Electronic fund legal and regulatory technical documents, St. Petersburg, Russia. Available online: <https://docs.cntd.ru/document/406322461?ysclid=lmw3jnt0uq590375706> (accessed on March 2024). (In Russian).
- [47] Law of the Rostov Region of 16.12.2021 No. 635-ZS. (2021). On the Regional Budget for 2022 and the target period of 2023 and 2024. Electronic fund legal and regulatory technical documents, St. Petersburg, Russia. Available online: <https://docs.cntd.ru/document/578017776?ysclid=lmxfclm1c291091552> (accessed on March 2024). (In Russian).
- [48] Law of the Rostov Region of 16.12.2022 No. 6795-ZS. (2022). On the Regional Budget for 2023 and the target period of 2024 and 2025. Electronic fund legal and regulatory technical documents, St. Petersburg, Russia. Available online: <https://docs.cntd.ru/document/406411678?ysclid=lmxffwg5d2280692482> (accessed on March 2024). (In Russian).
- [49] Law of the Sverdlovsk Region of 08.12.2021 No. 111-OZ. (2021). On the Regional Budget for 2022 and the target period of 2023 and 2024. Electronic fund legal and regulatory technical documents, St. Petersburg, Russia. Available online: <https://docs.cntd.ru/document/577998291?ysclid=lmwcfryumd184143176> (accessed on March 2024). (In Russian).
- [50] Law of the Sverdlovsk Region of 07.12.2022 No. 137-OZ. (2022). On the Regional Budget for 2023 and the target period of 2024 and 2025. Electronic fund legal and regulatory technical documents, St. Petersburg, Russia. Available online: <https://docs.cntd.ru/document/406380321?ysclid=lmwc655k6552195748> (accessed on March 2024). (In Russian).
- [51] Bank of Russia Statistical Bulletin (2021). Law of the Khabarovsk Territory of 10.11.2021 No. 247. On the Territorial Budget for 2022 and the target period of 2023 and 2024, Moscow, Russia Federation. Available online: <https://minfin.khabkrai.ru/portal/Show/Content/4272?ParentItemId=227> (accessed on March 2024).
- [52] Bank of Russia Statistical Bulletin (2022). Law of the Khabarovsk Territory of 21.11.2022 No. 334. On the Territorial Budget for 2023 and the target period of 2024 and 2025, Moscow, Russia Federation. Available online: <https://minfin.khabkrai.ru/portal/Show/Content/5446?ParentItemId=227> (accessed on March 2024).
- [53] Law of the Trans-Baikal Territory of 27.12.2021 No. 2007-ZZK. (2021). On the Budget of the Trans-Baikal Territory for 2022 and the target period of 2023 and 2024. Electronic fund legal and regulatory technical documents, St. Petersburg, Russia. Available online: <https://docs.cntd.ru/document/578050420?ysclid=lmw08d22h596801629> (accessed on March 2024). (In Russian).

- [54] Conclusion of the Accounts Chamber of the Russian Federation on the results of an external audit of execution of the Federal Law. On the Federal Budget for 2022 and the Target Period of 2023 and 2024 and Budget Reporting on the Execution of the Federal Budget for 2022 in the Ministry of Finance of the Russian Federation. Ministry of Finance of the Russian Federation, Moscow, Russia. Available online: <https://ach.gov.ru/upload/iblock/4b3/w5svf50iknpfvrnmjks11n4yhj9xkfuq.pdf> (accessed on March 2024). (In Russian).
- [55] ConsultantPlus. (1998). Budget Code of the Russian Federation dated 31.07.1998 Law 145-FZ. Russian Federation, Moscow, Russia. Available online: <https://www.consultant.ru/cons/cgi/online.cgi?req=doc&rnd=1yFzMA&base=LAW&n=454253&cacheid=FE0FDDB17C31AA051BE232639AEFA6C6&mode=rubr#IcSVmqTiwX3tAVIJ1> (accessed on March 2024).
- [56] Naydenova, T. A., & Shvetsova, I. N. (2017). Methodological instruments for assessing the financial sustainability of budgets of constituent entities of the Russian Federation. *Socio-Economic Sciences*, 2, 222-233.
- [57] Kazakovtseva, M. V. (2022). Methodological support for the financial sustainability of the revenue base of the budgets of the constituent entities of the Russian Federation. Ph.D. Thesis, Volga State University of Technology, Yoshkar-Ola, Russian.
- [58] Zhuravleva, T., Semenova, E., & Goltsova, O. (2021). Financial Stability of Regional Budgets in Conditions of Cyclic Development of the Russian Economy. Part 2. *Regional Economy: South of Russia*, 4, 166–180. doi:10.15688/re.volsu.2021.4.16.
- [59] Tukhbatullin, R. M. (2016). Comprehensive assessment of the financial sustainability of municipal budgets using correlation analysis. *Bulletin of Economics, Law and Sociology*, 2, 121-125.
- [60] Gladkovskaya, E. N., Tsalo, I. M., & Teterkina, L. B. (2017). Assessment of financial stability of regional budgets in Russia: methodology and algorithm of its application. *Management*, 6, 119-131.
- [61] Uskova, T. V., & Galukhin, A. V. (2015). Managing the financial sustainability of the revenue base of regional budgets: theoretical and methodological aspects. *Problems of Territory Development*, 5, 135-147.
- [62] Zotova, A. I., & Kirichenko, M. V. (2017). Sustainability of the regional financial system: essence, factors, indicators. *Theory and Practice of Social Development*, 5, 76-82.
- [63] Mikhailova, A. A., & Timushev, E. N. (2020). Russia's budget system: how stable is it? *Economic Journal of the Higher School of Economics*, 4, 572-597. (In Russian).
- [64] Shekhovtsova, Yu. A. (2012). Application of the indicative method to assess the investment security of the region. *Regional Studies*, 2, 53-61. (In Russian).
- [65] Xiang, H., Lu, J., Kosov, M. E., Volkova, M. V., Ponkratov, V. V., Masterov, A. I., Elyakova, I. D., Popkov, S. Y., Taburov, D. Y., Lazareva, N. V., Muda, I., Vasiljeva, M. V., & Zekiy, A. O. (2023). Sustainable Development of Employee Lifecycle Management in the Age of Global Challenges: Evidence from China, Russia, and Indonesia. *Sustainability (Switzerland)*, 15(6), 4987. doi:10.3390/su15064987.
- [66] iMonitoring (2024). Selected indicators of budget execution of constituent entities of the Russian Federation. Available online: <https://www.iminfin.ru/areas-of-analysis/budget/otdelnye-pokazateli-ispolneniya?territory=45000000> (accessed on March 2024).
- [67] Karavaeva, O. A., & Litvinenko, E. N. (2020). Increasing the sustainability of regional budgets in conditions of disinflation. *Economics and Entrepreneurship*, 4, 292-295.
- [68] Trehan, B., & Walsh, C. E. (1988). Common trends, the government's budget constraint, and revenue smoothing. *Journal of Economic Dynamics and Control*, 12(2–3), 425–444. doi:10.1016/0165-1889(88)90048-6.

## Appendix I

**Table A-1-Approaches to the classification of indicators for assessing regional budget sustainability**

Groups of budget sustainability indicators	List of budget sustainability indicators	References
Sustainability of the budget revenue base	Autonomy coefficient	[48]
	Subsidy coefficient	
	Financial aid quality factor	
	Coefficient of coverage of expenses by tax revenues	
	Overall tax sustainability coefficient	
	Current financial sustainability ratio	
Budget autonomy	BCERF autonomy coefficient	[49]
	Ratio of expenses and own budget revenues	
	Budget debt coverage ratio	
Budget balance	BCERF balance factor	
	BCERF deficit-to-revenue ratio (excluding NRR)	
Budget sustainability regarding debt burden	Share of debt service expenses in total expenses	[4]
	Coefficient of covering the PLE budget deficit through loans and borrowings	
	Coefficient of cost of using borrowed funds	
	Coefficient of budget independence from attracted funding sources	
	Coefficient of financing expenses from borrowed funds	
Budget sustainability indicators	Coefficient of covering budget expenses with own income	
	Per capita income ratio	
	External financing ratio	
Debt sustainability indicators	PLE solvency ratio	
Sustainability of the budget revenue base	Share of own revenues (tax and non-tax revenues, grants, subsidies) in the total volume of PLE budget revenues	[2, 50]
	Coefficient of coverage of PLE expenses by tax and non-tax revenues coming to the PLE budget	
	Tax and non-tax revenues of the PLE budget per capita	
	NRR structure indicator	
	PLE budget independence coefficient	
	PLE budget balance ratio	
Budget autonomy	BCERF autonomy coefficient	[51]
	Ratio of expenses and own budget revenues	
	Budget debt coverage ratio	
Budget balance	BCERF balance factor	
	BCERF deficit-to-revenue ratio (excluding NRR)	
	Reserve coverage factor	
Fiscal sustainability	Public debt-to-budget revenues ratio excluding financial assistance from the federal budget	[28]
	Share of own revenues in total budget revenue	
	The volume of the own budget revenues	
	Budget deficit-to-budget revenues ratio	
	Current expenses-to-total expenses ratio	
Fiscal sustainability	Financial autonomy coefficient	[25, 52]
	Net tax independence ratio	
	Net financial independence ratio	
	Coefficient of covering own expenditure obligations with own budget revenues	
	Share of taxes not collected as a result of the application of benefits	
	Share of tax revenues from the largest taxpayer in BCERF tax revenues	



Intergovernmental cooperation	Share of financial assistance from the federal budget in BCERF revenues	
	Financial aid quality factor	
	Financing ratio of delegated budget expenditures	
	Share of IGT provided in the fourth quarter	
	Share of unused IGT	
	The ratio of revenues collected in the territory and received by the higher budget	
Region's solvency	Public debt- to-own BCERF revenue ratio	
	Issued guarantees-to-BCERF own revenues ratio	
	Share of the market component in the CERF public debt	
	Share of expenses for debt servicing and repayment in the volume of CBCERF expenses	
Fiscal sustainability	Degree of BCERF deficiency (surplus)	
	Share of federal transfers and tax revenues in the BCERF	
	External debt of the region to foreign states, federation, and other regions (absolute and as a percentage of GRP)	
	Internal debt of the region (as a percentage of GRP)	
	Availability of stabilization funds, financial reserves, debt from other states, federation, and other regions	[9]
	Share of expenses for servicing the regional external and internal debts as a percentage of BCERF expenses	
	IGT share in local budgets in BCERF	
	Share of regional investments in GRP	
Budget-tax sustainability	Degree of non-fulfillment of financial obligations in the region	
	Regional taxable capacity index	
	Fiscal capacity (without subsidies) per capita	
	IGT share from the federal budget	[53]
	The level of the region's debt burden over time	
	The amount of tax and non-tax revenues of CBCERF per capita	
Region's debt sustainability	CERF public debt-to-GRP ratio	
	CERF public debt per capita	
	Share of CERF public debt in regional exports	
	CERF public debt-to-total budget revenues ratio, excluding NRR	[68]
	Share of CERF public debt servicing costs in BCERF expenditures	
	Ratio of annual payments for CERF public debt servicing and repayment to total budget revenues, excluding NRR	
Fiscal sustainability	PLE public debt /revenues, excluding NRR	
	PLE debt servicing expenses/expenses, excluding received subventions	
	Payments for PLE debt repayment and servicing / own revenues and subsidies	
	Share of short-term liabilities	
	NRR / total revenue	
	Share of public debt PLE forms other than budget loans	[54]
	Share of reserved funds in the volume of budget expenditures	
	Share of PLE budget expenditures in consolidated budget expenditure (subventions are considered BCERF expenditure)	
	Capital budget expenditures/total expenditures	
	Financial assets/financial liabilities	
	Share of social security expenditures in budget expenditures	

	Ratio of budget revenues and sources of the budget deficit financing to budget expenditures	
Budget balance	The degree of coverage of budget expenditure by revenues	
	The degree of coverage of budget expenditure for the implementation of PLE's own powers from revenues, excluding NRR, the volume of which does not depend on the SGB PLE activities	
	Own revenues-to-total budget revenues ratio	
	Raised revenues-to-total budget revenues ratio	
	Own revenues-to-minimum expenditure ratio	
	Budget revenues-to-minimum expenditure ratio	
Budget autonomy	Tax revenues-to-minimum expenditure ratio	[47]
	Non-tax revenues-to-minimum expenditure ratio	
	The ratio of budget revenues received in the form of IGT from the federal budget to budget expenditures	
	Total revenues-to-budget expenditure ratio	
	Total budget revenues-to-socially significant budget expenditures ratio	
	Tax and non-tax revenues-to-budget expenditures ratio	
	Budget deficit-t-budget expenditures ratio	
Region's solvency	Debt-to-budget expenditure ratio	