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Financial Interrelations of Scenario Indicators of Budget Forecasting with Indicators of the Federal Budget of Russia

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ABSTRACT

The realism of the scenario indicators used in the formation of the federal budget of the Russian Federation in the context of the special significance of the budgetary mechanism for the adaptation of the national economy to global challenges becomes of particular importance while maintaining internal and external sanctions risks. The **purpose** of this study is to assess the validity of the forecast values of scenario macroeconomic indicators that determine the key characteristics of the Russian federal budget in the current budget cycle, and to develop proposals for clarifying the composition and concretizing approaches to their forecasting for the medium term in conditions of increased uncertainty. The study is based on an abstract-logical **method**, including a critical analysis of the predictive values of macro-indicators adopted as the basis for the parameters of the federal budget of the Russian Federation in 2023 and the planned period of 2024 and 2025 (using the level of consumer prices and the exchange rate of the ruble as an example), establishing causal relationships between the reliability of projected budget parameters at the federal level and the state of the Russian economy, identifying possible directions for the development of approaches to forecasting initial indicators for the preparation of the federal budget. In particular, the article suggests that in the forecasting of basic scenario parameters to detail the accounting for the dynamics of world prices, the real effective exchange rate of the ruble, to optimize the selection of exchange rate factors, and to take into account the variability of exchange rate volatility. The author's developments presented in the article contribute to the efficiency of the execution of the federal budget in terms of the use of its resources, and therefore can be used in the activities of state authorities in the development of budget policy. Keywords: federal budget; budget planning and forecasting; scenario macroeconomic indicators; inflation; exchange rate

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INTRODUCTION

The role of state financial regulation, the effectiveness of which is determined by the quality of the processes of formation and execution of the federal budget of the Russian Federation (hereinafter — Federal budget) is substantially increasing in the changing conditions of the functioning of Russian economy [1]. Budget indicators influence not only the volume of financial distribution by spheres, industries and regions, but also represent a compass orienting market participants to public policy priorities. In turn, the fundamental indicators of economic development, which are commonly called scenario macroeconomic indicators, have a

significant impact on budgetary parameters and the effectiveness of budgetary policy [2].

Given the increased volatility of macroeconomic indicators as a result of continued sanctions impact on the Russian economy, it becomes relevant and essential to analyze the validity of scenario conditions for the formulation of federal budget parameters in the medium term. The authors conduct such an assessment in connection to the values and methods of determining the level of consumer prices and the ruble exchange rate in order to achieve the objectives of this study. The selection of these macroeconomic indicators for further research and review is due to their uncertain impact on the various groups of

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federal budget income and expenditure when their actual values diverge from the approved values during the budget cycle.

As a rule, the deviation of the level of consumer prices in a larger direction compared to the forecast value creates conditions for the nominal growth of the taxable base that determines the income of tax revenues of budgets. On the other hand, this deviation can negatively affect the level of business and purchasing activity, reducing budget revenues, causing the indexation of social obligations of the budget and increasing the cost of execution of government contracts.

Forecasting the level of consumer prices and the reverse multiplicative effect on it of budget expenditure planned in the reporting period [3], especially during periods of active fiscal anti-crisis or stimulus expansion, is not to be forgotten [4].

In turn, the effects of deviation from the predicted value of the ruble exchange rate can influence budgetary parameters in various ways, forming, for example, additional income from foreign economic activities of the state and business as a result of currency devaluation while decreasing income from organizations using imported technologies, raw materials etc. [5].

Furthermore, the present study focused on inflation and exchange rate because there is a close connection between the changes in consumer prices and the currency rate of the ruble: the exchange price follows the historical inflation trend, and prices react to currency volatility. Responsibly, if one of these indicators' changes, the federal budget will be under pressure from the other.

METHODOLOGY

Despite existing diverse studies of budgetary problems, including in the field of budget planning [6, 7], the authors proceed from the need to continuously improve the design processes and implementation of the parameters of the federal budget in order to preserve its resilience to various risks and expand on this basis budgetary capabilities to stimulate national economic development.

The *purpose* of the study — is to develop and substantiate proposals for the specification of approaches to the determination of the forecast values of individual scenario macroeconomic indicators used in the process of designing the parameters of the federal budget of Russia, in order to increase the degree of effectiveness of implementation of budget indicators in the context of anti-Russian sanctions.

To achieve the goal the following objectives are set:

• to analyze the forecast values of scenario macroeconomic indicators used in the planning and forecasting of the federal budget of Russia for 2023–2025 for their compatibility with the current situation;

• to identify and justify the connections between the reasonability of the scenario macroeconomic indicators of the federal budget and the possibilities of their parameters;

• to formulate proposals on the specification of approaches to the determination of forecast values of scenario macroeconomic indicators for the purpose of designing the parameters of the federal budget.

The methodological basis of the article is the general logical methods and methods of research, including comparison and comparative analysis of data, construction of trends on the basis of them, identification of causal relationships, etc., used to assess the validity and reliability of the forecast values of the basic scenario indicators of socioeconomic development, taking into account the realized and planned geopolitical and economic risks of national development.

Scientific novelty of the study is that, based on the study of the causal relationships between important macro indicators of the federal budget and indicators of the scenario, the author has formulated proposals for specification of various methods for determining the forecast values of these indicators and their composition in order to increase the reliability and realism of the characteristics of the federal budget.

ASSESSMENT OF THE REASONABLENESS OF THE MACROECONOMIC INDICATORS OF THE FEDERAL BUDGET OF RUSSIA ON THE EXAMPLE OF THE CURRENT BUDGET CYCLE

The federal budget as the main financial document of the state is the benchmark that sets a certain trajectory of the movement of the national economy, based on proven scenarios of developments in the medium-term period. The principle of reliability, which means the reliability of the forecasts of socio-economic development, on which the budget indicators are based, and the resulting realism of the calculation of the parameters of the federal budget itself, plays an essential role in its formation.¹ First of all, it affects the inflation rate and exchange rate.

With increasing market uncertainty in Russia, there are increasingly unfavorable variances between the actual levels of indicators used to calculate the parameters of the federal budget and their approved values (*Table 1*). In the authors view, this is due to insufficient scientific support for the forecast of these indicators.

When evaluating the realisticity of the inflation forecast values contained in the present federal budget law, it is possible to infer that the possibility of obtaining these indicators is low, because a number of components of inflation risk remained "beyond the frame" when setting their levels. First of all, this concerns the inadequate impact of global inflation. Indeed, the factors of modern economic development in Russia are unique, significantly different from the development factors of many countries. But the state of the world economy, at least, continues to influence the Russian economy. With significant volumes and the value of goods and services imported to Russia, global inflation trends can not but be reflected on the prices of the Russian market, because imports are taken into account, the price ratios for domestic analogues and related spheres are formed. If you look at the macroeconomic possibilities considered in the budget over the next three years, you can expect an increase in imported inflation due to planned import growth and devaluation rate dynamics.

Inflation in the federal budget for 2023-2025 differs from the forecasts for global inflation of the International Monetary Fund (IMF). The IMF forecasts that global inflation will be 7.0% in 2023 and 4.9% in 2024, with base inflation expected to decline at a slower rate. That is, the inflation rate, taken into account in the forecast characteristics of the federal budget, fell by 1.5 p.p. in 2023 and by 0.9 p.p. in 2024, below the IMF's global inflation forecasts. When the dynamics of global and Russian inflation are compared from 2000 to 2022, the Russian indicator consistently outperforms the global indicator, and this difference is especially obvious during crisis periods (*Fig. 1*).²

In the modeling of inflation in Russia, economic activity, costs of producers, sectoral production volumes, etc. are usually referred to as determinants [8]. But global inflation does not stand out among the factors taken into account in making inflation forecasts that are used in planning and forecasting the federal budget. It is necessary in the econometric and satellite models of forecasting CPI to provide for the accounting of the dynamics of world prices in terms of its (index) of the main components: subindices

¹ Budget Code of the Russian Federation. Chapter 5, art. 37. URL: https://www.consultant.ru/document/cons_doc_LAW_19 702/73147d61f1183d32e517768da079cfdf28cca0a9/ (accessed on 28.07.2023).

² Trading Economics Platforms. Level of inflation by countries. URL: https://ru.tradingeconomics.com/country-list/inflationrate; Official websites of Rosstat. URL: https://rosstat.gov.ru/ statistics/price; Official website of the IMF. URL: https://www. imf.org/external/datamapper/PCPIPCH@WEO/WEOWORLD (accessed on 28.07.2023).

Table 1

Year	Inflation rate, %		US dollar to Russian ruble exchange rate	
	Forecast	Actual	Forecast	Actual
2013	5-6	6.45	32.4	31.81
2014	5.0	11.36	33.4	37.5
2015	5.0	12.91	35.5	60.73
2016	6.4	5.4	63.3	66.9
2017	3.8	2.52	64.2	58.3
2018	4.0	4.3	64.7	62.5
2019	4.3	3	63.9	64.73
2020	3.0	3.9	57.0	71.9
2021	3.7	8.4	72.4	73.6
2022	4.0	11.9	72.1	68.35

Comparative Assessment of Forecast and Actual Values of Key Macroeconomic Indicators for 2013–2022

Source: Compiled by the authors Forecasts of socio-economic development of the Russian Federation in 2013-2022.

of prices for food goods, non-food goods and services in accordance with the share of imports in each component. This is especially relevant when forecasting the dynamics of food prices, more than others affected by nonmonetary factors of inflation.

Additionally, the forecast rate of change of GDP does not fully correspond to Russia's inflation scenarios for 2023–2025. Thus, it is expected that in 2023 the GDP will continue to decline, although with the negative dynamic slowing down.³ However, given this context, a structural shortage of goods and services along with a total domestic supply reduction, the slowdown of Russian inflation appears to be an uncertain version.

"Over-planned" inflation increase relative to the federal budget may serve as the basis for tightening monetary policy, which will have a negative effect on consumer moods, related demand decisions, and production cost growth [9]. To stimulate business activity will require increased expenditure of the federal budget, the scale of extrabudgetary redistribution of resources. The consequences could be an increase in the imbalance of the federal budget and a return to the policy of fiscal consolidation, leading to the suspension of budgetary programmes and projects and a reduction in budgetary funds allocated to the financing of the national economy [10].

The exchange rate of the ruble is the second most important scenario indicator that has a direct and indirect impact on the state of the federal budget parameters, especially in the unstable conditions of anti-Russian sanctions.

The forecast of the federal budget indicators for 2023–2025 was made on the basis of a moderate weakening of the national currency rate during the specified period to 68.3–72.2 rubles per US dollar in accordance

³ Forecast of the socio-economic development of the Russian Federation for 2023 and the planning period 2024–2025. URL: https://www.economy.gov.ru/material/file/ea2fd3ce38f2e2 8d51c312acf2be0917/prognoz_socialno_ekonom_razvitiya_ rf_2023–2025.pdf (accessed on 28.07.2023).

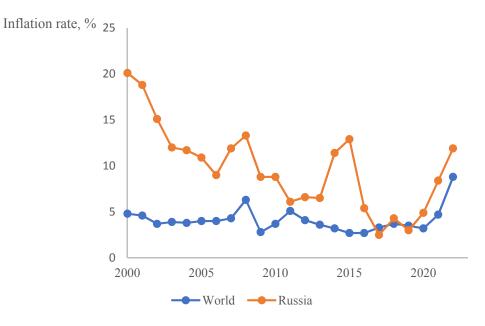


Fig. 1. Dynamics of Inflation in the Russian Federation and in the World for 2000–2022, Annual Percent Change

Source: Compiled by the authors.

with the current balance of payments account forecasts.⁴ But it is the prospective state of the current account that gives reason to expect a greater weakening of the exchange rate of the ruble than is provided for by the federal budget law for 2023–2025.

According to the Monetary Policy Guidelines, exports are projected to decline by 31.7%, imports will increase by 11.4% between 2022 and 2025 and the current account balance will fall by more than 15 times.⁵ Under such conditions, the net inflow of foreign currency into the domestic market will be significantly reduced in the forecast period, making it difficult to replenish the State's international assets and, as a result, the smooth devaluation of the national currency by the Bank of Russia through the mechanism of continuous foreign exchange interventions. Furthermore, in the current circumstances, cautious evaluation of state foreign exchange assets is required, because the growth of restrictive practices in interactions with the outside world can exacerbate the already tough situation with the Russian market's investment attractiveness. It should also be taken into account that the change in the configuration of the budget rule, affecting the volume indicators of the foreign exchange market depending on the sufficiency of oil and gas revenues, only increases uncertainty in the exchange rate dynamics of the ruble [11].

Given the above-mentioned variables, of which the most significant are the status of the current account and the number of international reserves, it is highly likely that the exchange rate of the Russian currency will be at least 90 rubles per US dollar on the horizon of the forecast of the federal budget.

The insufficient justification of the values of the exchange rate in the forecast of socioeconomic development for 2023 is confirmed by its actual dynamics in the current reporting period. By mid-February 2023 the exchange rate of the ruble exceeded the maximum value of the rate range adopted for the federal budget for 2023–2025.

 $^{^4}$ Forecast of the socio-economic development of the Russian Federation for 2023 and the planning period 2024–2025 (further — forecast of SED).

⁵ Official Website of Bank of Russia. URL: https://www.cbr. ru/about_br/publ/ondkp/on_2023_2025/; https://www.cbr.ru/ statistics/macro_itm/svs/p_balance/ (accessed on 28.07.2023).

The forecast value of the exchange rate of the ruble, stated in the developed scenario conditions of socio-economic development by the Ministry of Economic Development of Russia for 2024–2026 (hereinafter – forecast for the period 2024–2026) seems unrealistic.⁶ The forecast for 2024–2026 suggests that in 2024 the rate of the ruble will decrease by 0.4% with a growth of the trade balance to GDP of 6.9%, not compensating for its fall in 2023, and practically the same change in the indicators of exports and imports. It is doubtful that the declared growth rate of the Russian GDP as a factor of the ruble will be achieved due to such a small increase in investment in fixed assets at the current high level of depreciation of fixed assets and only on the internal possibilities of their renewal. Without additional external stimulus to economic growth, GDP growth above 2-3% per year can occur with a time lag of 1.5-2 years after the implementation of a sustained positive investment in fixed capital. The growth of the real disposable income of the Russian population, as indicated in the forecast for 2024–2026, after their decline in previous years is unlikely to turn demand into the main driver of the development of Russian economy.

To maintain the rate of the ruble in the framework set by the forecast for 2024–2026 is possible only at the expense of the active intervention policy of the mega regulator, on the problematic of which in the conditions of adaptation of the Russian economy to the sanctions regime was indicated earlier.

If, in fact, the exchange rate of the ruble weakens significantly above the

value approved for the federal budget, it may partially compensate for the loss of federal budget revenues due to the fall in exports. Simultaneously, there will be a proinflationary effect of exchange rate change. According to the latest data of the Bank of Russia, the effect of transferring the change of the exchange rate to annual inflation in Russia was estimated as follows: with a decrease in the nominal effective currency rate of the ruble by 10% the yearly inflation increases by 1 p.p.⁷

Despite the fact that the shocks of the anti-Russian sanctions 2022 affected the effect of the exchange rate shift, increasing the sensitivity to inflation, even taking advantage of the indicated ratio, characteristic of not as complicated as at the current moment of the situation, we get that with our forecasts of the nominal rate of the ruble, which are given above (at least 90 rubles per 1 dollar), and extrapolation of the differences in the dynamics between nominal and nominal effective rate of ruble in the Q1 of 2023, inflation only under the influence of the devaluation of national currency in 2024 can increase almost 1.5% compared to its forecast value.

The indicated pro-inflation effect is likely to affect the decline in key non-oilgas revenues of the federal budget against the background of higher imports and rising inflation expectations [12]. As a result, its execution in terms of expense will deteriorate, exacerbated by the financial problems of national security with all the consequences.

Obviously, it is not easy to the maximum reliability of forecasting scenario indicators in budgetary planning in conditions of high uncertainty [13]. But it is in this situation that the requirements for the scientific justification of forecasting the values of macroeconomic parameters are increasing. In this regard, the authors identify several potentially

⁶ The official website of the Ministry of Economic Development. Development scenarios of the economy of the Russian Federation and the main parameters of the forecast of the socioeconomic development of Russia for 2024 and for the planning period 2025–2026. URL: https://www.economy.gov.ru/material/ directions/makroec/prognozy_socialno_ekonomicheskogo_ razvitiya/scenarnye_usloviya_funkcionirovaniya_ekonomiki_ rossiyskoy_federacii_i_osnovnye_parametry_prognoza_socialno_ ekonomicheskogo_razvitiya_rossiyskoy_federacii_na_2024_ god_i_na_planovyy_period_2025_i_2026_godov.html (accessed on 28.07.2023).

⁷ Official Website of Bank of Russia. URL: http://www.cbr.ru/ Collection/Collection/File/7822/2018_03_ddcp.pdf (accessed on 28.07.2023).

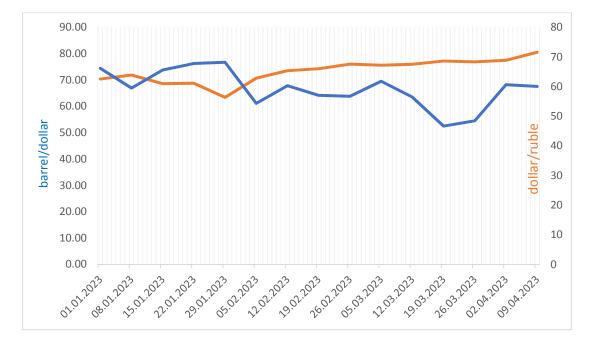


Fig. 2. Dynamics of World Oil Prices and the US Dollar Exchange Rate in Rubles for the Period from 01.01.2023 to 04.30.2023

Source: Compiled by the authors.

important directions of transformation of the course formation process for the purposes of forecasting the federal budget of the Russian Federation in the conditions of the economy of resistance.

The shift of priorities among the exchange rate factors is very important in budgetary forecasting. Importance in contemporary conditions should acquire such factors of exchange rate dynamics of the Russian currency, as risk of investments in Russian assets, geopolitics, uncertainty of global development, from which substantially depends the volume of dollar liquidity in the Russian foreign exchange market. The statistics confirm the need for such a transformation. The exchange rate of the ruble, for example, is less and less dependent on such a traditional factor as the dynamics of world prices (Fig. 2), but is more and more responsive to economic developments: the volume of foreign currency sales by exporters, the amount of cross-border transfers, the sale of business in Russia by foreign companies, the introduction of external governance of foreign firms, the rise of political tensions, etc.

The determination of the planned size of the federal budget indicators requires a review and evaluation of any factors impacting the dynamics of the ruble exchange rate that may develop during the implementation of the budget law. The authors consider that to optimize the process of selection of price-forming factors in planning and forecasting the characteristics of the federal budget will help the preparation of the EFE matrix (External Factor Evaluation matrix), which will reflect the complex of factors, relevant to the situation and ranked by significance on the basis of expert assessments for the state strategy implemented in the relevant reporting period. Comprehensive accounting in the matrix of the most significant exchange rate factors, with the focus of the state's financial policy on the implementation of priority strategies, will allow for a more objective assessment of the forecast values of the national currency in accordance with the national development guidelines during the modeling process. An example of such a matrix is given in Table 4, 5.

Table 2

	National economic development strategies				
Exchange rate factors	Import substitution	Structural transformation of the economy	Total for each factor		
Endogenous factors					
Inflation	3				
Economic growth rate	3				
Consumer demand	4				
Investment activity	4				
Public expenditure	2				
Exogenous factors					
International reserves	1				
World prices of basic exports goods	1				
World prices of basic imports goods	2				
Balance of payments	2				

Exchange Rate Matrix (Pattern)

Source: Compiled by the authors.

Note: The number of strategies included in the forecast is not limited.

At the same time, in order to improve the adaptation of the federal budget to conditions of uncertainty under external sanctioning pressure, it is advisable to calculate scenario macroeconomic indicators on the basis of variability of exchange rate volatility in reasonable exchange rates corridors.

The aspect of the problem of correctness of forecasting the parameters of the federal budget is the type of exchange rate of the ruble, which should be taken as a macroeconomic indicator. The parameters of the federal budget are formed based on the average annual nominal rate of the national currency, but are very sensitive to the price dynamics of traded goods and the currency structure of international settlements. These dependencies can be summarized if the real effective exchange rate (REER) of the ruble is used to predict the average annual nominal exchange rate of national currency in the budget cycle.

The undoubted advantages of using REER in planning and forecasting the parameters of the federal budget are that this indicator allows to detail the "contribution" of inflation dynamics in different countries to the index of consumer prices in Russia and

Accounting Methods for Results of A	Assessing Exchange Rate Factors
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Exchange rate factors assessment	Degree of influence of exchange rate factors	
4	Very strong influence	
3	Strong influence	
2	Average influence	
1	Weak influence	
0	No influence	

Source: Compiled by the authors.

Note: The forecast takes into account factors whose share is 50% of the total estimate.

to take into account the structure of foreign trade turnover of Russia with other states, which is extremely relevant in the current conditions of transformation of foreign economic relations. Furthermore, the use of the REER in macroeconomic forecasts will ensure consistency of the values of the other indicators it affects for all subsequent periods of the budget cycle [14].

Given the probability of diversified dynamics of the real effective exchange price of the ruble for different commodity groups and, consequently, the different impact of this indicator on the parameters of the federal budget, it is proposed to include the real effective exchange rate of the Ruble for the three-year period in the list of the main macroeconomic indicators forecast by the Ministry of Economic Development of Russia and used for the formation of the draft Federal budget. According to the authors, adding the indicators proposed to the scenario conditions for the creation of the federal budget will allow more objectively to consider the effects of inflation and the changes in the structure of foreign trade turnover at the nominal exchange rate of the ruble. Authors also consider that this will increase the accuracy of the forecast of the budgetary designs themselves.

The determination of the real effective exchange rate of the ruble is necessary not

only in determining the parameters of the federal budget, but also in the development of budgetary policy tools. For example, the reason for the state support of market operators using imports as intermediate goods at the expense of the federal budget may be a loss of their competitiveness due to a decrease in the real effective rate of the ruble, designed specifically for imports.

Other effects of using this indicator as part of macro indicators will include improved predictability of the scenarios of the conditions of activities of various economic actors. And with the positive dynamics of the real effective exchange rate, determined by the targeted economic policy of the state, this will serve as a motivation for the growth of business activity in the medium- and longterm periods.

CONCLUSION

To solve the strategic task of adapting the Russian Federation's economy to the conditions of strong anti-Russian sanctions, which have resulted in major financial and non-financial resource limits, funds given to the economy from the federal budget are important. Budgetary capabilities for regulating economic development, depending on the volume of budget revenues from different sources, are largely determined at the stage of planning and forecasting of the federal budget.

Analysis of the indicators of the federal budget of Russia for 2023–2025 showed that the forecast values used in their planning of key macroeconomic indicators do not fully correspond to the developing trends and risks of the medium-term period. In part, this was expressed either in the undervaluation or revaluation of individual input basic indicators of macroeconomic development.

During the study carried out by the authors proved the need to change individual approaches in forecasting such scenario macro indicators, behind the federal budget, as the level of consumer prices and the exchange rate of the ruble. The authors developed and substantiated proposals on optimization of the procedure of selection of price factors in the planning and forecasting of the characteristics of the federal budget on the basis of a matrix approach. In forecasting the annual nominal exchange rate of the national currency for the medium-term period, it is proposed to use the real effective rate of ruble with the inclusion of the latter in the compulsory scenario conditions for the formation of budgetary projections at the federal level.

In preparing the Forecast of socioeconomic development of the Russian Federation for the three-year period, objective coherence should be ensured between the rate of growth of GDP and the level of inflation, taking into account the impact on them of the forecasted parameters of expenditure of the federal budget and the new mechanism of their financing through the change of the budget rule for the introduction of the practice of variable scenario modeling, especially in the context of sanctions.

Since the current conditions of development of the Russian economy are characterized by their unpredictable volatility, we consider it advisable when forecasting the values of key macroeconomic indicators, on which the budgetary characteristics are based, to lay a certain "pillow" in the form of an interval range of such values, taking into account endogenous and exogeneous factors, which minimizes the risks of execution of the federal budget. In addition, in the situation of possible long-term preservation of external sanctions pressure on the Russian economy in the design of the parameters of the federal budget, it is advisable to use a variable approach more productively, which would allow to launch algorithms for the realization of budgetary objectives, adequate to the specific circumstances, reduce the likelihood of failures and negative consequences of crisis situations, increase the probability of balanced high-technology development of Russian economy.

The authors consider that the ideas have applied importance because they affect the reliability and credibility of major features of the federal budget, and thus increase the effectiveness of its the implementation to ensure balanced development of the Russian economy.

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Authors' declared contributions:

M.E. Kosov — statement of the problem, research methodology, expert assessment of the validity of the current characteristics of the federal budget and forecasts of socio-economic development.

E.K. Voronkova — development of the concept of the article, critical analysis of the macroeconomic parameters of the federal budget, substantiation of the author's conclusions.

A. Yu. Chalova — the formulation of goals and objectives, analysis and systematization of the results of the study of macroeconomic indicators adopted for the preparation of the federal budget, the formation of conclusions and proposals.

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