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THE EFFECTIVENESS

OF STATE BUDGET SUPPORT OF INNOVATION DEVELOPMENT IN RUSSIA

LA EFICACIA DEL APOYO PRESUPUESTARIO ESTATAL AL DESARROLLO DE LA INNOVACIÓN EN RUSIA

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ABSTRACT

The purpose of the work is to confirm the hypothesis about the positive effective impact of budget incentives for innovative activities on the overall innovative potential of the state. The objective of this study is to assess the effectiveness of state budget support for innovative development in Russia using the state program "Scientific and Technological Development of the Russian Federation" as an example. The main methods used in this study include the collection and processing of statistical data, their comparative analysis, the study of the regulatory framework for budget regulation of innovative development of the Russian Federation, as well as other documents related to the sustainable development of the Russian economy. As a result of the study, directions for improving approaches to assessing the effectiveness of budget incentives for innovative development of the Russian economy were identified and substantiated. A conclusion is made about the need to adjust the existing approaches to assessing the effectiveness of program budget expenditures that contribute to the achievement of national development goals. The practical significance of the work done lies in the possibility of using the results obtained in the development of the main directions of the state budget policy aimed at stimulating structural changes in the Russian economy through the development of its innovative potential.

Keywords: Innovative development, Competitiveness of the economy, State budget support, Fragmentation of the world economy, Import substitution policy.

RESUMEN

El objetivo del trabajo es confirmar la hipótesis sobre el impacto positivo y efectivo de los incentivos presupuestarios para las actividades innovadoras en el potencial innovador general del estado. El objetivo de este estudio es evaluar la eficacia del apoyo presupuestario estatal al desarrollo innovador en Rusia utilizando como ejemplo el programa estatal «Desarrollo científico y tecnológico de la Federación de Rusia». Los principales métodos utilizados en este estudio incluyen la recopilación y el procesamiento de datos estadísticos, su análisis comparativo, el estudio del marco regulatorio para la regulación presupuestaria del desarrollo innovador de la Federación de Rusia, así como otros documentos relacionados con el desarrollo sostenible de la economía rusa. Como resultado del estudio, se identificaron

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y fundamentaron las direcciones para mejorar los enfoques para evaluar la eficacia de los incentivos presupuestarios para el desarrollo innovador de la economía rusa. Se llega a la conclusión sobre la necesidad de ajustar los enfoques existentes para evaluar la eficacia de los gastos del presupuesto del programa que contribuyen al logro de los objetivos nacionales de desarrollo. La importancia práctica del trabajo realizado radica en la posibilidad de utilizar los resultados obtenidos en el desarrollo de las principales direcciones de la política presupuestaria estatal destinadas a estimular cambios estructurales en la economía rusa a través del desarrollo de su potencial innovador.

Palabras clave: Desarrollo innovador, Competitividad de la economía, Apoyo presupuestario estatal, Fragmentación de la economía mundial, política de sustitución de importaciones.

INTRODUCTION

Innovative development of countries has become one of the key indicators of ensuring the conditions for the required level of their competitiveness within the fragmentation of the entire world economy. Given the current trends to extend global value chains due to the emergence of so-called “connecting” countries in order to implement a full production cycle, issues of development of science and technical support of markets are becoming quite acute.

Moreover, there are changes in applications for trademarks and industrial designs among the leading countries. Thus, the share of Asian countries in 2022 accounted for almost 70% of all global patent applications (Russian Center for the Turnover of Rights to the Results of Creative Activities, 2023). At the same time, the first positions belong to China, Japan and South Korea, followed by the United States and Germany. At the same time, the number of patent applications from residents of India in 2022 increased by more than 30%, continuing an 11-year period of growth in this area (Russian Center for the Turnover of Rights to the Results of Creative Activities, 2023).

Another trend is the growth of international trade in intellectual property licenses, with China leading the way. Thus, in the first 5 months of 2024, the growth of exports and imports of intellectual property rights in this country increased to $25 billion, or 14% year-on-year.

According to the document on scientific and technological development of the Russian Federation, the leading countries in terms of export volumes of high-tech industry products on the world market, in addition to China, are Germany, South Korea, the USA, Singapore and France. Russia is in 29th place in this rating with the volume of exports of relevant products equal to 10 billion US dollars. In order to improve the current positions of the Russian Federation in the rating of countries exporting innovative products, it is necessary to increase the “susceptibility of the economy and society to innovations, create conditions for the development of science-intensive business” (Government of the Russian Federation, 2019).

An analysis of international practice in the field of implementation and development of innovations indicates an increasing role of institutions, human capital, infrastructure elements, digital and other innovative technologies and products in the development of the country’s innovative potential (Dutta et al., 2023) (Table 1).

Table 1. The role of individual factors in the innovative development of Russian and foreign economies in the rating of the innovative potential of the state, 2023.

Country	General ranking	Institutes	Human Capital	Infrastructure	Market	Business	Technologies	New Ideas
Switzerland	1	2	6	4	7	5	1	1
USA	3	16	12	25	1	2	2	12
Singapore	5	1	2	8	6	3	10	18

Germany	8	22	4	23	14	16	9	7
South Korea	10	32	1	11	23	9	11	5
China	12	43	22	27	13	20	6	14
Russia	51	110	26	72	56	44	54	53

Source: Dutta et al. (2023).

The data in Table 1 show that China is improving its position in innovative development due to the creation (implementation) of new technologies (6th position in new technologies in the world); at the same time, the development of institutions and general infrastructure in this country has been at an average level over the past 5 years. Russia's position in the field of development of institutions and infrastructure remains the weakest, which results in insufficient development of new technologies and new ideas that could generate higher added value in the world market, thereby ensuring greater GDP growth and reorientation of the sectoral structure of the Russian economy from raw materials to innovation due to the establishment of market mechanisms.

In order to enhance the role and stimulate the defining positions of Russia's innovative development in the global ranking, in 2019 the state program of the Russian Federation "Scientific and Technological Development of the Russian Federation" for the period up to 2023 was developed and approved, which became a key instrument for implementing the Strategy for Scientific and Technological Development of Russia. Its main purpose is to provide scientific, technical and intellectual support for structural changes in the Russian economy by combining government spending on scientific research and scientific development for civilian purposes to improve the manageability and efficiency of scientific activity, as well as organizing and stimulating technological renewal of scientific, scientific, technical and innovative activities in the sectors of the Russian economy, effective reproduction of personnel for science and the social sphere.

Considering the long period of implementation of this state program, its intersectoral complex nature, the assessment of the effectiveness of measures and instruments of budgetary influence on innovative activity in the Russian economy is of great importance in achieving its goals.

The need for innovative development of the modern economy, in the context of a rapidly changing global environment, makes the demand for the most effective tools and mechanisms that ensure the achievement of the required result in a fairly short time frame relevant.

In this regard, first of all, it is worth paying attention to the indicators of innovation activity, which can determine the weaknesses and strengths of the economy in the field of its innovative development (Vlasova et al., 2022). At the same time, the process of financing innovative development in the case of Russia should be assessed taking into account the effect of international sanctions against it in the context of increasing geopolitical tensions, which entails the use of non-standard approaches in the implementation of state support for innovative projects in various sectors of the economy (Petrov, 2023).

Most often, studies of the country's innovative activities in the works of Russian scientists are carried out at the level of its individual regions (Astashova et al., 2022). The analysis of the results of innovative development of regions is carried out through the prism of assessing the compliance and effectiveness of government support measures for this development.

Foreign studies in this area also rely on approaches to assessing the impact of various types of government support on the country's innovative development, thereby determining its effectiveness. For example, this may include an analysis of the effectiveness of government measures in ensuring the development of human resources, whose qualifications are so necessary to achieve more competitive positions within the entire global economy (Ogedengbe et al., 2023). Particular attention is paid to supporting the innovative development of individual sectors or areas of the economy, including renewable energy (Grafström et al., 2023; Tang et al., 2022), the digital economy (Lin & Yan, 2023; Pan et al., 2022), the service sector (Guariso et al., 2023; Oltaev, 2024) and many others. A separate area in foreign literature is the analysis of state support at the level of small and medium-sized enterprises, whose contribution to the formation of GDP in many developed countries is about 70-80%. Particular attention is paid to state support for programs for the formation and sustainable development of new knowledge in the field of innovative development at the company level (Mahardhani, 2023; Truong et al., 2024).

It is also worth paying attention to studies devoted to assessing the effectiveness of the implementation of state programs from the standpoint of achieving not only the indicators planned in them, but also the goals of sustainable development. For this purpose, various quantitative methods are used in foreign practice to take into account the impact of budget expenditures on the sustainable development of the economy, such as regression analysis, machine learning methods, agent-based calculations. The problem of applying these methods is the impossibility of separating industry effects (i.e. target effects in the semantics of sustainable development goals).

Thus, it can be concluded that in modern conditions there is a sufficient number of studies in the field of analysis of approaches and instruments of state support for innovative development of the economy and its individual spheres. However, the issues of assessing the effectiveness of state budget policy in the field of innovative development are, in our opinion, insufficiently covered, especially given the current changes in the global economy. This was the reason for using this object of research for analysis in this article.

MATERIALS AND METHODS

The target of this study is to assess the effectiveness of the state budget policy in the field of innovative development of the Russian Federation.

The object of the study is the innovative development of the Russian economy in comparison with other economies, taking into account external factors. The subject of the study is to determine the effectiveness of the state budget policy in the field of innovative development of the Russian Federation.

The aim of the work is to confirm the hypothesis about the positive effective impact of budgetary incentives for innovative activities on the overall innovative potential of the state. The main methods used in this study include the collection and processing of statistical data, their comparative analysis, the study of the regulatory framework for budget regulation of innovative development of the Russian Federation, as well as other documents related to sustainable economic development.

RESULTS AND DISCUSSION

The authors of the article conducted a study of the effectiveness of budget support for innovative development of the Russian economy using the example of the implementation of the state comprehensive program “Scientific and Technological Development of the Russian Federation”. The choice of this program is due to the fact that it provides for the financing of all federal budget expenditures on fundamental research and more than 95% of all federal budget expenditures on applied research and development.

The State Comprehensive Program “Scientific and Technological Development of the Russian Federation” (hereinafter referred to as the State Program, the analyzed State Program) has been implemented since 2019 in two stages, the first of which ended in 2021, and the second will last until 2030. The responsible executor of this program is the Ministry of Science and Higher Education, whose tasks include implementing measures to reveal the intellectual potential of the nation, as well as other federal departments, including the Ministry of Digital Development, Communications and Mass Media, the Ministry of Economic Development, the Ministry of Energy, the Ministry of Industry and Trade, the Ministry of Education, the State Corporation Rosatom, etc. Scientific and technological development should stimulate structural changes in the Russian economy, including import substitution. The basis for such a breakthrough is both the technological renewal of innovative activities and the improvement of its organizational structure.

The state program under study is financed mainly from the federal budget with a fairly high percentage of cash execution of the expenses provided for it (Table 2). Despite the fact that the sources of financial support for this state program also include funds from the consolidated budgets of the constituent entities of the Russian Federation and funds from extra-budgetary sources, their share in the total volume of its financing is extremely small (0.46% and 8%, respectively, by the end of 2023).

Table 2. Financing of the state program «Scientific and technological development of the Russian Federation» for 2020-2023 from the federal budget and the percentage of its execution by cash expenditures.

Years	approved volume according to the consolidated budget estimate, billion rubles.	growth rate (compared to previous year), %	cash execution, billion rubles	cash execution level, %
2020	785,8	-	776,5	98,8
2021	815,2	103,7	810,1	99,4
2022	1148,9	140,9	1135,2	98,8
2023	1270,5	110,6	1261,6	99,3

Source: compiled by the authors based on official data from consolidated annual reports on the progress of implementation and assessment of the effectiveness of state programs of the Russian Federation for 2020-2023.

A noticeable increase in funding for this state program has been outlined since 2022 (the absolute increase in spending on it amounted to more than 333 billion rubles compared to 2021). At the same time, the Ministry of Education and Science of Russia, as the responsible executor of the state program, accounts for the bulk of its funding - 55.6% of the total expenditure provided for in the consolidated budget breakdown (hereinafter - SBR) in 2022 and 56.1% in 2023.

Of interest is the distribution of funding volumes for the analyzed state program by its structural elements. In accordance with the new structure of state programs approved in 2021 (Government of the Russian Federation, 2021), in 2024, it includes 74 structural elements (2 elements more than in 2023). The majority of federal budget funds in 2024 (about 2/3) are allocated to finance the process part of this state program (i.e., to complexes of continuous or constantly renewable process activities related to the financing of current expenditure obligations - 12 in total); slightly more than 1/3 of federal budget funds are allocated to finance its project part (in the format of 48 federal projects (23 of which are part of eight national projects), 13 departmental projects and 1 federal target program). Similar proportions of distribution of budget allocations between the process and project parts of the analyzed state program were also in 2023 (67.3% / 32.7%, respectively). At the same time, since 2025, the share of the project part of the said state program in the total volume of its financing will be reduced by almost 2 times (from 34 to 19 percent), which indicates a decrease in project management approaches in its implementation. Financing of the analyzed state program in the current budget cycle in terms of its structural elements is presented in Table 3.

Table 3. Structure of financing of the state program «Scientific and technological development of the Russian Federation» in 2024-2026 by component elements.

Structural element of the state program	2024	2025	2026
Federal projects	26,58%	14,49%	17,65%
Departmental projects	7,59%	4,61%	4,63%
Federal targeted program	0,03%	0,02%	0,02%
TOTAL PROJECT PART OF THE STATE PROGRAM	34,20%	19,12%	22,30%
Complexes of process activities	65,80%	80,88%	77,70%
TOTAL PROCESS PART OF THE STATE PROGRAM	65,80%	80,88%	77,70%

Source: compiled by the authors based on Government of the Russian Federation (2023).

More than half of the budget funds within the framework of the implementation of process activities are used to implement higher education educational programs. Thus, it is the universities that are the main conductors in the implementation of innovative approaches in the formation of new knowledge and skills of future personnel of the innovative economy. In the project part, the most capacious area of financing are departmental projects, implemented mainly by the Ministry of Science and Higher Education of the Russian Federation itself, related to the implementation of applied scientific research in a wide range of areas, as well as federal projects related to the development of infrastructure for scientific research and training of personnel, integration processes in the field of science, higher education and industry. Thus, the focus of budget financing of the analyzed state program reflects its focus on the formation of human capital of a new level and quality as an important strategic resource in the innovative economy through the cultivation

of new knowledge in various sectors of the economy, as well as through stimulating innovative business activity in the direction of breakthrough strategies for the sustainable development of the Russian economy.

In the rating of the effectiveness of all state programs for 2023, the state program "Scientific and Technological Development of the Russian Federation" took 22 place out of 38, significantly improving its position after 36 place in 2022 and 44 place in 2021) and entering the group of state programs with an "Above Average" performance indicator of 95.84% (versus 88.34 in 2022 and 79.4% in 2021), which is 1.43% higher than the average integrated assessment of the effectiveness of the assessed state programs in Russia in 2023.

A summary assessment of the effectiveness of the implementation of the analyzed program for 2022–2023 based on key criteria, forming an integral indicator of its effectiveness, is presented in Table 4.

Table 4. Information on the results of the integrated assessment of the implementation and effectiveness of state programs of the Russian Federation based on the results of 2022 and 2023.

Year of implementation of the state program	Integral assessment, in %	Level of achievement of state program indicators, %			Evaluation of the dynamics of growth of indicator values, in %			Financial Management Assessment, in %
		State program level indicators	Indicators of the level of structural elements	Total	State program level indicators	Indicators of the level of structural elements	Total	
Year 2022	88,34%	87,16%	88,57%	87,86%	78,5%	88,9%	81,65%	94,20%
Year 2023	95,84%	100,00%	97,60%	98,80%	68,62%	85,77%	73,77%	94,20%

Source: compiled by the authors based on data from consolidated annual reports on the progress of implementation and assessment of the effectiveness of state programs of the Russian Federation for 2022 and 2023.

An analysis of three key components of the integrated assessment of the effectiveness of the analyzed state program based on the results of its implementation for 2023 showed that the said state program demonstrates the best value according to the criterion of "level of achievement of the state program" (98.8% out of 100%), which corresponds to only 26th place out of 38; the worst - according to the criterion of "assessment of the dynamics of growth of the values of state program indicators" (only 73.77% out of 100%), which corresponds to 29th place out of 38.

The percentage value for the first criterion shows a significant increase in 2023 (from 87.86% to 98.8%, i.e. by more than 10 percentage points). This growth was achieved not only due to 100% achievement of planned indicators at the level of the state program as a whole (versus 87.16% in 2022), but also due to their significantly higher achievement at the level of structural elements of the state program (97.6% in 2023 versus 88.57% in 2022). The greatest failure to achieve the planned values of the resulting indicators in 2023 at the level of individual federal and departmental projects was revealed in the number of applications for subsidies for investment projects related to the introduction of effective ("green") technologies to reduce emissions into the environment (the planned value of the indicator is 12 units, the actual value is 4 units, or 33% of the plan), as well as in the volume of innovative products sold in value terms following the implementation of innovative projects (the planned value is 5.2 billion rubles, the actual value is 2.5 billion rubles, or less than 50% of the plan).

The assessment of the effectiveness of the implementation of the analyzed program by the number of achieved/not achieved indicators reflects a generally positive trend in their achievement in 2023. Thus, out of 20 indicators assigned to the state program, including 10 analytical end-to-end indicators, all 20 were achieved, while in 2022, 35 indicators were assigned to the specified program (including 19 end-to-end indicators), of which 4 indicators were not achieved (including the share of young (under 39 years old) researchers in the total number of Russian researchers; the number of patents (inventions, etc.) in respect of which exclusive rights under an agreement have been registered; the number of created research infrastructure facilities for innovative activities in the field of agriculture; the number of created and modernized research vessels that are part of the marine scientific fleet of the unlimited navigation area of the Russian Federation). At the same time, the percentage of unfulfilled indicators at the level of structural elements decreased

(6.4% in 2023 or 9 indicators out of 141 versus 14.3% in 2022 or 19 indicators out of 133), which also increased the overall program effectiveness rating.

With regard to the second criterion - the assessment of the dynamics of the growth of the values of the indicators of the state program and its structural elements for the analyzed state program, the opposite situation has developed: its value in 2023 decreased by almost 8 percentage points compared to 2022 (from 81.65% to 73.77%). At the same time, both in 2022 and in 2023, higher dynamics of growth of the resulting indicators developed at the level of the structural elements of the state program with a total score of 85.77% in 2023 (versus 88.9% in 2022), and lower - at the level of the state program as a whole (only 68.62% out of 100% in 2023 versus 78.5% in 2022).

At the same time, the analysis of the dynamics of the growth of the values of the resulting indicators of the above-mentioned state program and its structural elements from the standpoint of stimulating innovative development of the Russian economy at the expense of budgetary funds allowed us to identify the following discrepancies in their values. Let us dwell in more detail on some of them to understand the achievements and reserves for the growth of the resulting impact of budgetary support for innovation in the Russian economy.

The indicator reflecting the share of researchers under 39 in the total number of scientists participating in national scientific research is problematic from the point of view of achieving high performance of the state program for the period 2021–2023. In 2021, its value was 44.2%, in 2022 – 43.9% (with the planned value of 45.5%), in 2023 – again 43.9% (with the planned value of the indicator decreasing to 43.9%, despite its increasing dynamics established in the state program, which is 1.6% lower compared to 2022). That is, over the past three years, the share of young researchers has not exceeded the threshold of 45% in the total number of researchers. At the same time, the state program passport provides for an increase in this indicator to 48% already in 2025.

The value of another indicator related to the previous one - the share of faculty members under 39 years of age in the total number of faculty members is also small, although it has a tendency to grow: from 29.7% in 2021 to 30.3% in 2023. In our opinion, it is advisable to achieve high results in attracting young personnel to the ranks of researchers through material incentives for researchers.

Another indicator of the analyzed state program, the achievement of which contributes to the innovative development of the Russian economy, is the dynamics of the number of annually registered patents, which shows a rather low growth. Thus, in 2021, a total of 7878 units of inventions, utility models, industrial goods were patented; in 2022 - 8497 units (with a planned value of 8666 units); in 2023 - 9060 units. By 2025, it is planned to increase the number of registered patents to 9848 units.

The failure to achieve the planned values for 2023 and the actual indicators for 2022 by the indicator: Number of protected results of intellectual activity provided for by the Civil Code of the Russian Federation obtained as a result of the implementation of innovative projects, which demonstrated negative dynamics over the reporting period, confirms the insufficient effectiveness of budget support for innovation activities within the framework of the analyzed state program. This indicator is approved as an indicator of effectiveness in the federal project: Assistance in the implementation of research and development work in civilian industries, which is part of the state program.

However, to ensure structural changes in the Russian economy, it is not so much the fact of registering the result of intellectual activity that is important, but its implementation. In connection with this circumstance, it is advisable to take into account the demand for registered patents in the indicator of the effectiveness of intellectual support for innovative activity, supplementing the indicators of the state program with the number of patents used (implemented) in economic activity. In this regard, it is proposed to include the indicator: Number of implemented results of intellectual activity based on the results of the implementation of innovative projects, in the composition of the indicators of the effectiveness of the analyzed state program and to assign its implementation and monitoring to the Russian Science Foundation.

Another indicator of the state program, reflecting the share of domestic expenditure on scientific research in GDP, has not undergone any significant changes over the three-year period, remaining at the same level over the past three years, slightly more than 1% of GDP, with zero dynamics (Table 5).

Table 5. Share of domestic expenditure on research and development in GDP in the Russian Federation, %

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total in Russia	1,07	1,10	1,10	1,11	1,0	1,04	1,10	1,03	1,03	1,03

Source: Federal State Statistics Service of Russian Federation (2024).

As a criterion for the effectiveness of this indicator, its decreasing dynamics has been fixed in the state program since 2022, although it is the annual increase in this indicator that should reflect a positive trend indicating a general increase in spending on all R&D, including internal ones. This statement is supported by the outpacing growth of inflation in the Russian economy since 2022. In this regard, we believe that it is incorrect to fix the decreasing dynamics of this indicator as a positive trend.

The most informative indicator of the involvement of the state and business in scientific research and their role in economic development is an important indicator of the analyzed state program: The place of the Russian Federation in terms of the volume of scientific research and development, including through the creation of an effective system of higher education. Over the past three years from 2021 to 2023, Russia's position on this criterion has remained unchanged - 9th place with the necessary decreasing dynamics of this indicator to increase the effectiveness of budget support for the innovative development of the Russian economy.

In China, R&D investment was 2.43% of GDP in 2022, up 0.53 percentage points from 2012. In the United States, it was 2.7% in 2012 and rose to 3.59% by 2022. South Korea improved its position over the same period from 3.9% to 5.21%. In our opinion, without increasing budget funding for domestic scientific developments, it is not possible to significantly increase this indicator. This is explained by the fact that innovative research, especially fundamental research, is paid for mainly by the state. Stimulating businesses to increase R&D spending is promising, but will not provide a large increase in the indicator.

Foreign studies assessing the impact of public R&D spending, especially on corporate technological innovation, show that companies registered in territorial entities with higher public R&D spending are more innovative than companies in other territorial entities. Through subsidies and tax incentives, public R&D spending promotes corporate innovation by easing their tax burden and co-financing high-risk and long-payback costs. However, in most cases, subsidies are more effective than taxes in stimulating corporate technological innovation. In general, public R&D spending can significantly improve corporate technological innovation through fiscal instruments.

On the other hand, increased budgetary incentives for innovation, implemented mainly through increased budget expenditures, lead to an increase in the share of budget sources in the total volume of sources of financing innovation. This, in turn, will slow down the dynamics of the indicator reflecting the ratio of extra-budgetary funds and budgetary allocations in the composition of internal expenditure on research and development. According to the results of 2023, a barely noticeable positive trend (101.8%) is observed in relation to the growth of this indicator, which causes the excess of the share of extra-budgetary sources of financing internal expenditure on research and development over budgetary sources by 7 percent.

However, despite the fulfillment of the planned values of this indicator, such dynamics cannot be considered satisfactory. Given the intensification of budget support for research and development, one can question the growth of this indicator in future periods. In this regard, in the context of stimulating innovation in science, the Government of the Russian Federation needs not so much to increase direct budgetary allocations for funding research, but to develop incentive mechanisms for involving extra-budgetary sources in this process, for example, funds from companies to conduct such research. That is, we are talking not so much about budgetary mechanisms, but about tax mechanisms for activating the scientific activity of economic entities, including in the format of the current tax benefit on corporate income tax for companies when they direct financial resources to research and development with the subsequent attribution of the resulting costs to reduce taxable profit.

This approach is confirmed by international practice. In order to activate the use of extra-budgetary sources in R&D expenditures, most countries most often resort to the use of fiscal instruments that allow reducing tax payments for economic entities that finance scientific developments on their own. At the same time, the size of tax preferences depends on the volume of such expenses. Expanding the volume of state co-financing of companies' R&D expenses, primarily related to applied research in innovative technologies in the company's field of activity, can also be an incentive to increase the share of extra-budgetary sources in the total volume of financing of innovation expenses.

In addition to achieving the resulting indicators of the state program, the most important criterion for its implementation is the effectiveness of the person responsible for its implementation. As noted above, the person responsible for the state program: Scientific and Technological Development of the Russian Federation, is the Ministry of Education and Science of Russia. Until 2022, the activities of person responsible for executing state programs were assessed using the indicator of the same name: assessment of the effectiveness of the person responsible for the program. Its value in 2020 according to the Ministry of Education and Science of Russia was only 50% out of 100%; in 2021, it increased to 75%. Since 2022, this indicator has been replaced by: quality of financial management in the implementation of the state program, according to which the analyzed state program showed a high result in 2022, including in comparison with the values of other criteria for the integral assessment of the effectiveness of the state program - over 94% in both 2022 and 2023. To a large extent, the high value of this indicator was due to the high percentage of cash execution of expenses on the state program at the expense of federal budget funds, taken into account as the main criterion in assessing the quality of financial management, as well as minimal deviations from planned and actual indicators in cash planning of federal budget expenses for the implementation of the state program, while the overall assessment of the quality of public finance management carried out by the Ministry of Education and Science of Russia in 2023, calculated according to the methodology of the Accounts Chamber, amounted to only 45 points with a target value of 59 points (or 75%).

In our opinion, the assessment of the quality of financial management of the state program, based primarily on the level of its cash execution, as well as on the number of changes made to the SBR in relation to the financial support of the state program and the level of use of other sources (funds from other budgets of the budgetary system of Russia and extra-budgetary sources) does not fully characterize the effectiveness of the responsible executor. This is justified as follows.

Thus, the analysis of the conclusions of the Accounts Chamber of the Russian Federation on the results of the execution of budget reporting and federal budget funds in the Ministry of Science and Higher Education of the Russian Federation in 2022 and 2023 made it possible to systematize a number of shortcomings in relation to the management of the analyzed state program, the significant ones of which include the following (Zaitsev, 2024):

1. the achievement of individual results of the structural elements of the state program was carried out by adjusting their planned values downwards, which ensured a nominal increase in the effectiveness of the state program. Thus, at the end of 2022, the planned value of the indicator: Share of researchers under 39 years of age in the total number of Russian researchers, was adjusted downwards from 45.5 to 43.9 percent, which led to its achievement as a whole for both 2022 and 2023. A decrease in the planned values in 2023 was also noted for the indicator: Share of faculty under 39 years of age in the total number of faculty. These changes reduce the overall effectiveness of the state program and do not allow tracking the continuity of its indicators. In 2023, in relation to the indicators of a number of structural elements of the analyzed state program, the planned values for 2023 were also set below the actual values for 2022, which led to a decrease in the assessment of the dynamics of growth of indicators;
2. for a number of indicators, an incorrect determination of the type of heritability and dynamics of the indicator used to assess the dynamics of the growth of indicator values was revealed, as well as the reflection in the reports of not actual, but predicted values;
3. a high level of cash execution was achieved by reducing the planned volumes of budget allocations to the SBR in the 4th quarter, for example, under the federal project “Science and Universities”, etc.;
4. the lack of a relationship between the results of federal projects and the volumes of their financing (for example, for the Federal Program “Personnel” about 50% of the results), which generally discredits the principle of results-oriented budgeting, which provides for a direct link between the volumes of financial support for program expenditures and the results of their implementation;
5. low efficiency of development of subsidies for other purposes allocated to executors and co-executors of state programs and projects and process activities leading to them: the balances of funds for these subsidies at the beginning of 2024 exceeded the same indicator at the beginning of 2023 by 69%, which is due to delays in their provision by the Ministry of Education and Science of Russia (Zaitsev, 2024). On the other hand, this also indicates shortcomings in planning, including the redundancy of the funds provided;
6. substitution of the resulting indicators that serve as the basis for providing funding. Thus, in 2022 and 2023, the Ministry of Education and Science of Russia made a property contribution to the Russian Science Foundation (RSF) based on the result: A property contribution of the Russian Federation to the Russian Science Foundation was made instead of the result: Number of scientific projects financed by the Foundation;

7. duplication of functions and objectives of activities by institutions subordinate to the Ministry of Education and Science of Russia. Thus, the functions of the departmental project office in the Ministry of Education and Science of Russia are carried out by the Department for Support of National Projects and Organization of Project Activities (Department of Project Activities) as a project office. Certain tasks of the project office are also carried out by the Federal State Autonomous Educational Institution of Higher Education "Moscow Institute of Physics and Technology (National Research University)", subordinate to the Ministry of Education and Science of Russia. In 2022, in addition to MIPT, the Federal State Autonomous Institution "Center for Sociological Research" and the Federal State Budgetary Scientific Institution "Directorate of Scientific and Technical Programs" participated in ensuring the organization of the implementation of federal projects, which were provided with subsidies in the total amount of over 600 million rubles within the framework of the federal projects "Integration" and "Research Leadership" (Zaitsev, 2024).

The above-mentioned shortcomings are mostly not reflected in the indicator of the level of cash execution of expenses for the state program, which forms the indicator of the quality of its financial management. In this regard, when assessing the effectiveness of the state program as a whole, it is necessary to single out the indicator "effectiveness of the responsible executor's activities" as a separate criterion with a corresponding specific weight in the integral assessment of at least 0.25 (or 25%).

CONCLUSIONS

In order to increase the effectiveness of state budget support for innovative development within the framework of the state program "Scientific and Technological Development of the Russian Federation", it seems appropriate to take the following measures.

In order to increase the share of young scientists under 39 years of age, both from the teaching staff and among the participants in scientific research attracted on a business-accounting basis, it is necessary to assess not only their share in the total number of researchers, but also the level of their average material remuneration for the research conducted in current prices per person. In addition, it is necessary to take into account the share of payments for remuneration of young scientists in the total amount of budget funds allocated for the state program under study. The introduction of this indicator into the state program indicators will allow an objective assessment of the role of material incentives for young scientists in increasing their number among Russian scientists.

When assessing the scientific, technical and intellectual support for structural changes in the Russian economy, it is proposed to take into account not only the total number of registered patents, but also the percentage of their implementation in business and economic activity, which makes it possible to assess the demand for patented developments. The actual value of the proposed indicator and its dynamics must be taken into account not only when assessing the effectiveness of the analyzed state program, but also when planning the volume of budget funds allocated for financing (including subsidizing) innovations and R & D in general and their subsequent distribution among beneficiaries. In particular, it is proposed to assess this indicator in the industry context to identify industries and areas of the economy that ensure the highest level of implementation of innovative developments in economic activity. It is proposed to assign planning and monitoring of this indicator to Rospatent in cooperation with the Department of Project Activities under the Ministry of Education and Science. Taking into account the number of implemented patented scientific developments and research will allow us to identify the most in-demand results of intellectual activity in the Russian economy, as well as to select federal and departmental projects for their financing, taking into account the primary needs and priorities of Russia's innovative development.

In order to increase the share of extra-budgetary funds in R&D in the total volume of financing of scientific research, it is necessary to give priority to tax instruments for stimulating economic entities. Within the framework of budget regulation, it is possible to provide for the allocation of budget funds to organizations for R&D in priority areas in an amount not exceeding the company's own contribution for these purposes.

A significant increase in budget expenditures is required for the development of scientific and technological potential, as evidenced by Russia's lag behind the world's leading economies in terms of the share of research and development expenditures in GDP.

It is also advisable to link disaggregated indicators of structural elements of the state program for stimulating innovation to the goals of sustainable development with subsequent assessment of the contribution of each indicator to achieving these goals. This will allow us to determine an agreed set of goals that must be achieved in terms of innovation development indicators in the economy through the implementation of specific state programs.

The proposals formulated will contribute to improving the position of the Russian Federation in the international

ranking of scientific research and development, reflecting the level of innovation of the state economy.

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