THE EFFECTIVENESS EVALUATION OF TAX INCENTIVES MEASURES IN THE INNOVATION DEVELOPMENT TAKING INTO ACCOUNT EXTERNAL SHOCKS (FACTORS)

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ABSTRACT

The relevance of the study is determined by the need to ensure sustainable innovative development of the Russian economy and the importance of assessing the effectiveness of tax regulation measures provided by the state in this process. The purpose of the work is to form a package of proposals for regulating tax measures to stimulate innovative development, taking into account external shocks, as well as to develop an indicator to assess the effectiveness of existing fiscal instruments in order to activate the scientific and technological potential of economic entities. The object of this study is to analyze the applied innovative tax incentives for demand and to develop an approach to assessing their effectiveness. 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 tax regulation of science and technological development of the country, as well as other documents related to sustainable economic development. As a result of the study, areas for improving the applied tax instruments aimed at revealing the domestic scientific and technological potential, taking into account external factors, were identified. In addition, a multifactor model was developed to assess the effectiveness of tax incentives for innovative development IDt.

Keywords: Tax incentives; Innovative development, Efficiency of tax incentives; State financial regulation; External factors; Competitiveness; Fragmentation of the global economy.

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INTRODUCTION

In the last 10-15 years, the entire world economy has been experiencing serious imbalances, largely associated with the crisis phenomena occurring in developed countries (Levin et al., 2023). Since the global financial crisis of 2009, the problems associated with the growth of public debt in key Western economies have not been resolved, but have only been postponed by increasing the additional financial burden on the budgets of the respective countries. The unresolved nature of this problem is explained, among other things, by the limited capabilities of the existing market model, within which the economic growth of a country is conditioned by expanding access to new markets for products or services produced by companies of the respective economy. Moreover, the level of competitiveness of such products depends on the companies' access to cheap natural resources and the level of innovative superiority in relation to the products of competitors in other countries (Kirillova et al., 2023; Eskerkhanova et al., 2023). If at least one of the above conditions is not met, then a gradual imbalance of the entire economic system of the respective economy and even the entire region occurs, which leads to additional expenses in the country.

The current situation in the world is a confirmation of this. The process of fragmentation of the world economy has led to the destruction of existing global value chains, which has affected absolutely all regions of the world (Degtev et al., 2022; Safiullin et al., 2023). An example of such an imbalance are the countries of the European Union, which over the past 2.5 years have experienced significant difficulties in obtaining cheap natural resources necessary for the production of absolutely any product or service. As a result, additional state programs are being developed to support both the population of European countries and companies in various sectors of the economy (Kochetkov et al., 2023).

An important aspect of tax incentives today is the issues of innovative development of companies in various countries. Thus, the Russian economy is faced with a situation in which it is necessary to replace foreign high-tech products with domestic analogues, which requires the provision of additional motivational instruments in the state tax and budget policy for Russian companies. Taking into account the Address of the President of the Russian Federation V.V. Putin to the Federal Assembly dated 29.02.2024, the Russian Federation should more than double the total investment of the state and business in research and development, which will

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bring their share to 2% of GDP by 2030 (Adress..., 2024). At the same time, we are talking about the effectiveness of such investments, that is, about achieving a specific result through tax incentives in each case under consideration.

Of course, the tax factor in stimulating innovation processes is not decisive, but its effectiveness is undeniable (Rybakov et al., 2022). Fiscal measures have long been successfully used in both developed and developing countries to activate scientific and technological potential and have proven their effectiveness.

The negative consequences of introducing tax preferences may include not only administrative costs for both the taxpayer and the state, but also their abuse by users of benefits in order to illegally reduce their tax liabilities (Ermakov et al., 2022). In addition, it is necessary to periodically monitor the achievement of the goals of introducing tax preferences to reduce the state's risks in additional lost budget revenues. If the benefits are ineffective, they must be regulated to improve the mechanism for providing them or cancelled.

As for the phenomenon of "innovative development" of the economy, it was first voiced by Schumpeter J. in his scientific work "The Theory of Economic Development" (Schumpeter J. A., 2024). It was he who defined the word "innovation" as "a process of industrial mutation that continuously revolutionizes ...". The theory of innovative development is based on the works of M. Tugan-Baranovsky, which assert that the unevenness and cyclicality of economic development depends on scientific and technological progress (Tugan-Baranovsky M. I., 2023). In this regard, Kondratiev N. defined the cyclicality of economic development as approximately 50 years (Kondratiev N. D., 2002), and Glazyev S. Developed the concept of technological structures, which is one of the main ones in the modern theory of innovative development (Glazyev S. Yu., 2022). In this case, innovative development is defined as a type of economic development (of a country, region, organization), the main factor of which is innovation. It is also worth considering the place of innovative development in the socio-economic policy of the region in question, including tax policy "in terms of optimizing the level of tax burden on the basic factors of innovative development (primarily in relation to employees), as well as in terms of introducing the necessary tax incentives" (Order of the Government of the Russian Federation №227-r.).

Thus, the question arises of assessing the effectiveness of tax incentives for innovative development of various economies, taking into account external factors. At the same time, for each individual country, these external factors will differ.

LITERATURE REVIEW

The issues of innovative development in various regions and countries have been considered for a long period of time by both foreign and Russian scientists. At the same time, the areas of influence of innovative development, as well as the instruments that influence the level of innovative development of economies, are quite diverse.

Thus, Russian scientists considered tax incentives as a tool for supporting innovative activities of various entities. Moreover, a comprehensive assessment of the effectiveness of such tax incentives was carried out based on the formula of I. Maiburov, as well as individual coefficients (Samarsky M.A., 2014; Kiseleva O.V., 2018). A detailed assessment and calculation of the effectiveness of tax incentives for innovative activities were also considered in relation to the Russian Federation, taking into account the specifics of state planning, as well as regional interaction within the country (Korostelkina I.A., 2020; Khasanova et al., 2023). At the same time, a comparative analysis of the effectiveness of tax incentives was also carried out for various countries (Suslina A.L., 2018) and China separately (Glazyev S.Yu., 2023). It is also worth noting the need and problems of assessing the effectiveness of tax incentives, which are specifically aimed at stimulating the innovative development of a separate economy (Ryumina Yu.A., 2015; Yashin S.N. et al. 2018).

Foreign researchers, in turn, focused on two components of the influence of tax incentives on innovative development: through companies, which thereby influence the creation of regional economic growth (Binbin T., et al, 2020; Jingzheng W. et al, 2024; Sepehr G. et al, 2021), through individual sectors of the economy (Li S. et al, 2023; Xiaoyong D. et al, 2022) and the entire economy as a whole (Zhixiong H. et al, 2024; Masanori O. et al, 2023). Some scholars placed particular emphasis on tax credits for the area of innovation, which in turn has a positive effect on the economic development of the region in question (Bradford F. et al, 2024; Walter m., et al 2024).

Thus, it can be concluded that at the current moment there is a sufficient number of studies in the field of the impact of tax incentives on the innovative development of various regions, which consider both theoretical aspects of this issue and practical ones, including the role of institutions, government regulation, as well as the use of individual indicators and mathematical models. The issue of tax incentives in achieving innovative development of the Russian economy has not been considered in detail by

domestic specialists at the current moment, which was the reason for using this object of research for analysis in this article.

METHODOLOGY

The objective of this study is to conduct an analysis and develop a model for assessing the effectiveness of tax incentives for innovative development, taking into account external factors.

The object of the study is the innovative development of various economies, taking into account external factors. The subject of the study is to assess the effectiveness of tax incentives aimed at the innovative development of various economies in order to build new economic ties within the fragmentation of the entire global economy.

The aim of the work is to form a package of proposals for additional tax measures to stimulate innovative development in the context of sanctions, as well as to develop an indicator that allows assessing the effectiveness of existing fiscal instruments in order to activate the scientific and technological potential of economic entities.

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 tax regulation of innovative development in the countries under consideration, as well as other documents related to sustainable economic development.

To evaluate the effectiveness of tax incentives, a multi-factor IDt model was developed, calculated using the following formula(1):

$$ID_t = w_1\ln(TP_{R\&Dt}) + w_2\ln(EX_{R\&Dt}) + w_3\ln(RP_t) + w_4\ln(TP_{ITIt}) - w_5\ln(BR_t) + w_6\ln(ES_t) + w_7\ln(TP_{R\&Dt-1}) + w_8\ln(EX_{R\&Dt-1}) + w_9\ln(RP_{t-1}) + w_{10}\ln(TP_{ITIt-1}) - w_{11}\ln(BR_{t-1}) + w_{12}\ln(TP_{ITIt} \cdot ES_t) \quad (1),$$ где

- **$TP_{R\&Dt}$**: Number of taxpayers investing in R&D at time t.

- **$EX_{R\&Dt}$**: R&D expenditures according to tax accounting data at time t.

- **RP_t**: Number of registered patents for intellectual property objects at time t.

- **TP_{ITIt}**: Number of taxpayers who used a specific innovation tax incentive at time t.

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- **BR_t**: Budget revenue shortfalls due to the application of the tax incentive at time t.

- **ES_t**: External shock index at time t. (Calculated according to the formula $ES_t = \sum_{i=1}^{n} w_i Z_i$)

- **W_1-w_{12}** – Weights of the relevant indicators.

The resulting value of ID_t can be interpreted as follows:

- **Positive IDt**: Indicates that the tax incentives are effective in promoting innovative development, considering the contributions of R&D investments, expenditures, patents, utilization of incentives, and external shocks.

- **Negative IDt**: Suggests that the tax incentives are not effective, possibly due to low investments, reduced expenditures, fewer patents, high budget shortfalls, or adverse external conditions.

Trend Analysis: Monitoring IDt over time helps to understand trends and dynamics in the effectiveness of tax incentives and their response to external shocks.

RESULTS

The objectives of tax incentives for innovative development are to increase the number of companies that invest their own funds in scientific research, allowing them to improve the technologies used and improve the properties of manufactured goods, as well as to increase the volume of such expenses. In addition, in foreign and domestic practices there are examples of increasing the interest of private companies in cooperation with research centers using tax instruments, which is also beneficial to the state. The indicator of the result of the tax policy in the aspect under study is also the number of registered patents confirming the right to the result of intellectual activity.

The most promising for providing innovative benefits are the corporate income tax and insurance contributions to off-budget funds, since these fiscal payments usually have the largest share in the total tax liabilities of companies. Preferences for these payments significantly increase the volume of net profit of business entities, and therefore are incentives for compliance with the conditions for receiving them (Kiseleva et al., 2023).

It should also be noted that benefits for indirect taxes, which primarily include VAT, affect the price of goods, works and services and increase their competitiveness in this parameter, which is often decisive. But the absence of VAT in the price does not

allow buyers to deduct its amount when calculating the total payments for this tax, which is a disincentive.

The corporate income tax benefit allows to reduce the tax base mainly through the use of a special procedure for forming expenses for tax purposes, reduced rates are also used for certain categories of taxpayers, and some benefits reduce the tax amount itself.

The investment deduction for corporate income tax can be attributed to the popular tax benefits in Russian tax legislation. Since 2019, the number of taxpayers who have taken advantage of this preference has increased 15 times (Fig. 1), and the total amount of the benefit provided annually has almost doubled (Fig. 2).

The current procedure for applying the investment tax deduction makes it possible to write off expenses on the acquisition and modernization of fixed assets for the purposes of calculating corporate income tax in an accelerated manner. The mechanism for providing the benefit is such that expenses are written off not by reducing the tax base, but directly reduce the amount of corporate income tax both in terms of the federal component and the payment going to the budget of the constituent entity of the Russian Federation. This approach increases the attractiveness of the preference for taxpayers and is consistent with best international practices.

So far, the decision to introduce the benefit is made at the regional level, but from 2025, the federal investment tax deduction will come into effect, which will put all taxpayers on an equal footing, regardless of the region in which they operate. In addition, in the context of an increased corporate income tax rate of 25%, the maximum deduction will become more significant. The federal component of the income tax rate can be reduced from 8% to 3% due to the deduction.

The deduction also includes expenses on R&D, on payment for works (services) on implementation of software packages for computers, on property for development of genetic technologies. The list of these expenses confirms the innovative nature of the described preference.
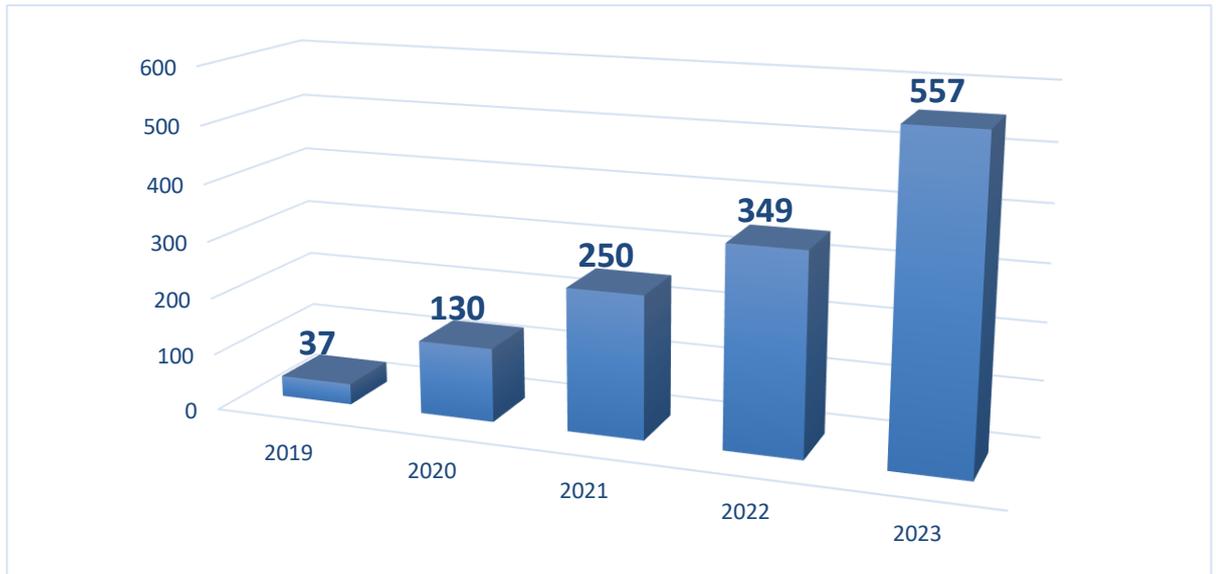
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Figure 1. Dynamics of the number of taxpayers who took advantage of the investment deduction for corporate income tax, units.
Source: data from the Federal Tax Service of Russia on form 5 P
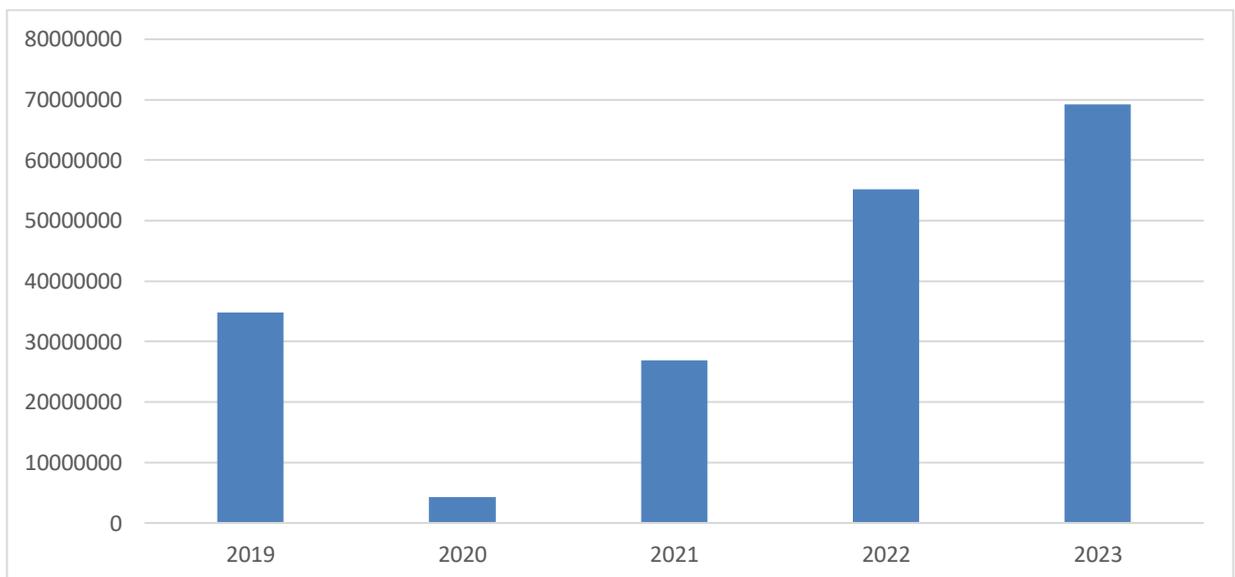https://www.nalog.gov.ru/rn77/related_activities/statistics_and_analytics/forms/

Figure 2. Dynamics of the annual amount of the benefit provided in the form of an investment deduction for corporate income tax, thousand rubles.
Source: data from the Federal Tax Service of Russia on form 5 P
https://www.nalog.gov.ru/rn77/related_activities/statistics_and_analytics/forms/

For R&D work, the amount of expenses included in the innovation deduction is 90% of the corresponding expenses both for direct performers and in the case of their payment as a customer. The amount of the benefit has a maximum value, which does not allow the regional tax rate to be reduced below 5%. The federal part of the tax can be reduced to 0 rubles, but only 10% of R&D expenses can be included in this part of

the deduction. The preference can be used only after the completion of R&D or individual stages of this work.

The direction of improvement of this benefit in terms of the innovation component could be the establishment of increased standards for R&D expenses included in the investment deduction, if they are carried out within the framework of priority areas of scientific and technological development.

Expenses on own R&D are quite burdensome for businesses, so not everyone can afford them. Taking this circumstance and the importance of own developments into account, the Tax Code of the Russian Federation includes provisions allowing taxpayers to recognize R&D expenses with an increasing coefficient (until the end of 2024 - 1.5, from 2025 - 2) if they are carried out in priority areas determined by the Decree of the Government of the Russian Federation.

Similar benefits are present in the tax laws of many countries. They allow additional virtual expenses to be included in expenses for tax purposes and thereby reduce the tax base and, consequently, the income tax itself. The higher the coefficient, the greater the savings.

However, this benefit is in demand by a relatively small number of taxpayers. Thus, in 2023, 57 companies took advantage of it, which amounted to 5.4% of the total number of organizations that independently financed scientific and technical developments. For the period from 2018 to 2023, the largest number of users of this preference was noted in 2019 and amounted to 65 organizations, which is 6.2% of all taxpayers who invested their own funds in R & D during this period. R & D expenses recognized with an increasing coefficient in 2023 were slightly more than 26% of all business expenses for these purposes. This is an impressive figure and it indicates that the benefit was used to a greater extent by large companies, since the total number of users is small. This state of affairs is explained, in our opinion, by the restrictions imposed by the RF Government Resolution of 24.12.2008 No. 988, which was discussed earlier. It is mainly large businesses that are capable of conducting research in the established priority areas. Therefore, increasing the coefficient to 2 will most likely not significantly increase the number of users of the benefit, but at the same time it will improve the situation of those taxpayers who have already used this benefit with a coefficient of 1.5.

Russian tax legislation provides for a VAT exemption for research and development carried out by scientific and educational organizations (Art. 149, Tax code

of the russian federation, 2006). It is difficult to draw a clear conclusion about the financial interest of commercial organizations in cooperation with such contractors. On the one hand, the cost of work is reduced by 20%, but, on the other hand, VAT payers do not have the opportunity to accept VAT as a deduction.

In our opinion, certain tax benefits have a negative impact on the process of import substitution. Such disincentive preferences include exemption from VAT for both the technological equipment itself and spare parts for it if its analogues are not produced in Russia (Art. 150, Tax code of the russian federation, 2006). The list of essential equipment itself is approved by the Decree of the Government of the Russian Federation (Resolution of the Government of the Russian Federation, 2009) and is regularly supplemented with new positions.

As long as such benefits exist, the development and implementation of domestic analogues will not become a matter of survival for business entities, and therefore will be constantly postponed. It is necessary to establish the validity period of such benefits and apply stimulating tax instruments not only to potential developers and manufacturers, but also to buyers in order to increase their financial interest in purchasing domestic analogues.

The more significant the tax benefits for business, the more noticeable the lost revenues of the state budget. Therefore, it is necessary to monitor whether the measures taken achieve the goal of their introduction. That is, periodically evaluate the effectiveness of existing tax instruments.

Approbation of the multifactor IDt model was carried out on the example of such a benefit as investment tax deduction. The dynamics of IDt calculations for this fiscal preference is shown in Table 1.

Table 1. IDt indicator dynamics from 2020 to 2023

Year	2020	2021	2022	2023
IDt	6,1033585	6,1343237	6,1306348	6,1531495

Source: compiled by the authors based on data from Rospatent, Bank of Russia, Federal Tax Service of Russia

The positive value of the IDt indicator indicates the effectiveness of the investment tax deduction as a tax instrument to stimulate innovative development. Analysing the obtained data, we can note the positive dynamics from 2020 to 2023,

noting a slight negative fluctuation in 2022 due to a significant number of new sanctions imposed on the Russian Federation.

CONCLUSION

Further development of tax incentive measures for innovative development seems necessary in the following areas:

1. Narrowing the circle of potential users of benefits, which will increase targeting. This will allow for targeted impact on the development of priority industries and categories of taxpayers, reduce the risk of abuse in order to reduce tax liabilities and reduce lost state revenues. Such a measure can be implemented through the development of criteria for inclusion in the lists of taxpayers entitled to a certain benefit. For example, establishing increased standards for R&D expenses included in the investment tax deduction if they are carried out within the framework of priority areas of scientific and technological development.

2. Carrying out periodic monitoring of current innovative tax incentives for their effectiveness using the proposed indicator. If there is reason to consider the preference ineffective, it is necessary to provide a mechanism for the gradual cancellation of such a benefit that would not undermine the trust of taxpayers in the state tax policy in terms of the stability of tax legislation. Thus, from the next tax period, it should cease to apply only to new users of the benefit. For those taxpayers who have already used the benefit, the possibility of using it for another 3 tax periods should remain.

3. Cancellation of benefits that destabilize the implementation of the import substitution program. First of all, this is the establishment of a period of stay of technological equipment in the list, which gives the right to exemption from VAT when it is imported into the territory of the Russian Federation, on the basis that it has no domestic analogues. Otherwise, there will be no incentive not only to create such equipment, but also to purchase it from Russian manufacturers.

4. Reduction of the corporate income tax rate in terms of income received from the commercialization of R&D results on the list of the most important science-intensive technologies, subject to separate accounting.

5. Extending tax incentives not only to developers and manufacturers of new technologies and equipment, but also to their buyers, which should increase demand for domestic products and increase interest in purchasing Russian analogues.

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6. Ensuring the availability of tax advice to potential users of tax benefits. This is due to the increasing cumbersomeness of tax legislation and the lack of opportunity for a number of taxpayers to have an employee on staff who would be competent in these matters.

The scientific novelty of the study lies in the formation of an approach to assessing the effectiveness of tax measures aimed at activating scientific and technological potential. The practical significance of the work done is the possibility of using the results obtained in developing the main directions of state tax policy aimed at increasing the effectiveness of fiscal stimulation of the import substitution process, as well as reducing budget revenues lost due to the provision of benefits.

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